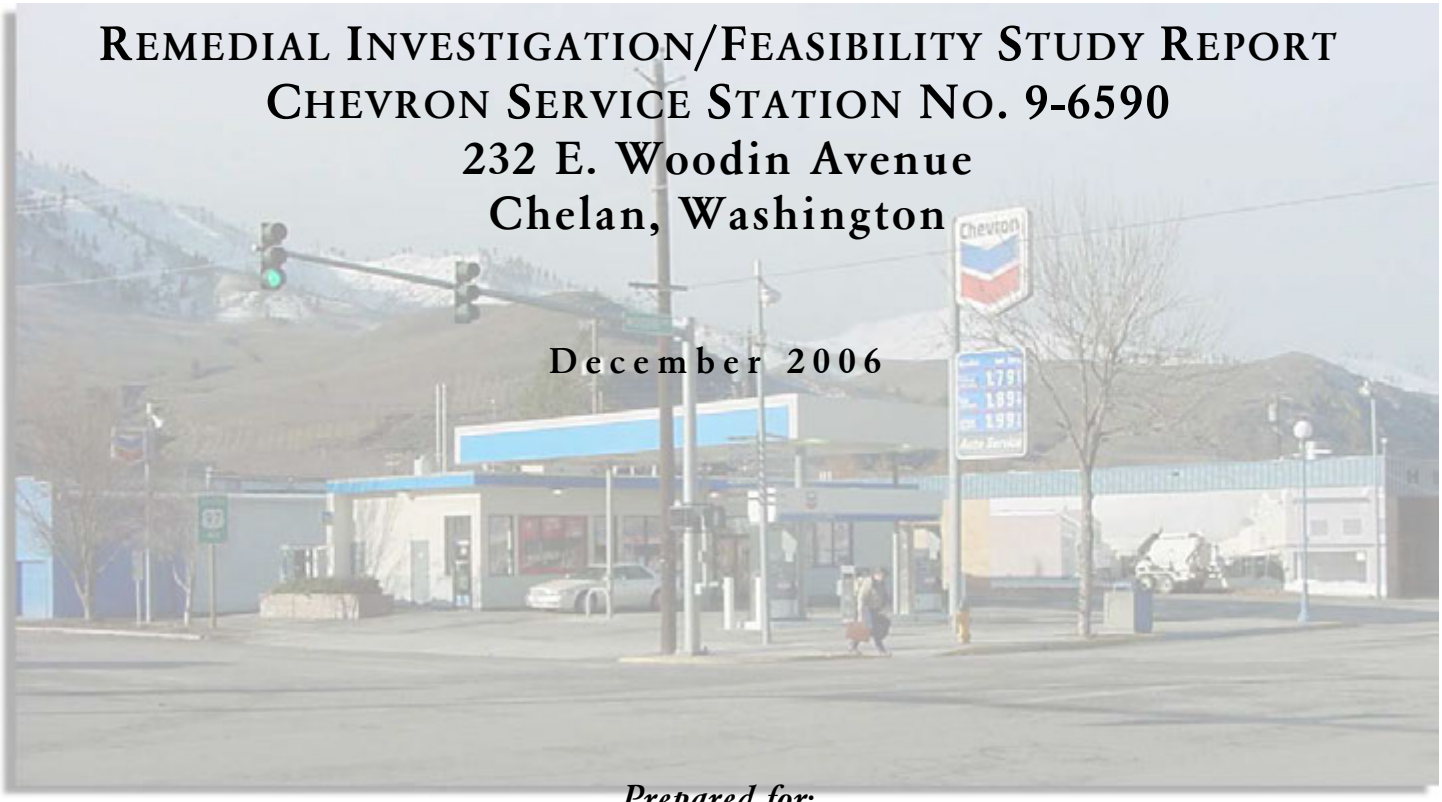
FINAL

REMEDIAL INVESTIGATION/FEASIBILITY STUDY REPORT
CHEVRON SERVICE STATION NO. 9-6590
232 E. Woodin Avenue
Chelan, Washington



December 2006

Prepared for:

Chevron

Chevron Environmental Management Company
6001 Bollinger Canyon Road, K2252
San Ramon, California

Prepared by:

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From Science to Solutions™

Science Applications International Corporation
18912 North Creek Parkway, Suite 101
Bothell, Washington

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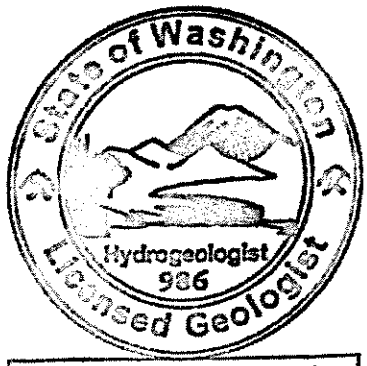

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12/15/06

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REMEDIAL INVESTIGATION / FEASIBILITY STUDY REPORT
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1.0 INTRODUCTION

This report fulfills the submittal requirements described in section 173-340-350(4) of the Washington Administrative Code (WAC) for documentation of a remedial investigation and feasibility study (RI/FS) conducted under the Model Toxics Control Act (MTCA). This RI/FS was performed according to the requirements set forth in WAC 173-340-350. The purpose of an RI/FS is to collect, develop, and evaluate sufficient information regarding a site with contamination in order to select a cleanup action. Specifically, this RI/FS was conducted to investigate soil and groundwater conditions affected by past activities at Chevron service station No. 9-6590 in Chelan, Washington. These activities, and likely those from other sources, have affected a larger area around the station. This RI/FS was completed under Agreed Order No. DE 02TCPCR-4905 between the State of Washington Department of Ecology (WDOE) and Chevron Products Company, Inc. (Chevron). This RI/FS Report has been prepared on behalf of Chevron and is being submitted to WDOE in partial fulfillment of the requirements set forth in the Agreed Order.

The draft RI/FS report for the Chelan site was initially delivered in two parts (RI and FS) in October and November 2003. This document was submitted to WDOE for review and was then placed in the public domain for comment. Following receipt of comments by WDOE and a meeting between parties in February 2004, a draft final document was submitted in the form of revised portions of the RI and FS reports in several installments between September 2004 and May 2005. Following comments by WDOE on the draft final document, this final RI/FS report is being submitted as a single merged document. The final report includes data up through approximately the middle of 2006.

1.1 Site Description

The site is an active Chevron gasoline station and mini-mart that is located in the city of Chelan in Chelan County, Washington. The station is situated at the southwest corner of the intersection of Woodin Avenue and Sanders Street, at 232 East Woodin Avenue (Figure 1-1). The area potentially impacted by subsurface releases of gasoline product from the station (and possibly from other sources) extends to the west, southwest, and northwest a maximum distance of approximately 600 feet from the center of the station. The entire impacted area is a commercial-retail district and parking area in downtown Chelan (Figure 1-2).

The Chevron facility is a paved service station on a square-shaped property that is approximately 110 feet on a side, amounting to ¼ acre (Figure 1-3). The station consists of the building/mini-mart on the south half of the property, one fuel dispenser island northeast of the station building, and three gasoline underground storage tanks (USTs) beneath the north-central portion of the property. On the southern side of the station building is a remediation enclosure that is currently used only to store one or two 55-gallon drums for collection of petroleum hydrocarbons bailed from wells, plus a storage shed for the station. The northern and eastern sides of the property are

formed by sidewalks and city right-of-ways. The station is surrounded by Woodin Avenue to the north, Sanders Street to the east, a city alleyway and Chelan Napa Auto Parts to the south, and Wells Fargo Bank to the west. A large parking lot is located southwest of the station, along with a drive-up ATM.

In this report, the term "station" or "property" is used strictly for the Chevron service station or property, and the term "site" is used for the larger area around and including the station, which is being investigated for impacts by past releases of petroleum hydrocarbons. Virtually the entire site is paved or covered with buildings. Many of the onsite buildings in this part of downtown Chelan have basements, most of which are concrete-floored but a few are earthen or wooden (Figure 1-2). The station and site are situated on a low-gradient surface at an elevation of 1,118 to 1,125 feet above mean sea level (msl). This area slopes very gently to the southwest, toward the downstream part of Lake Chelan. A small park area lies between the western portion of the site and the shoreline. The lake shoreline is approximately 750 feet southwest of the station. The lake is dammed at a point about 2,000 feet south-southeast of the station (Figure 1-1). This lower reach of the lake is sometime referred to as "Chelan River" because it occupies the former shallow river channel downstream from the old natural lake outlet. Further information on businesses and land use in the area is provided in Section 4.6.2.

The local source of domestic and municipal water is from Lake Chelan. The city and irrigation districts have pumping stations south of the station along the northern shore of the lake, which extract water from the center of the Chelan River channel. No known water wells are located in the vicinity of the Chelan site, because all water is extracted from the abundant supply in the lake. The monitoring wells and borings installed on the site are shown in Figure 1-4, and a utility map of the site with identified subsurface utilities is provided as Figure 1-5.

1.2 Site History

Besides the Chevron station property, which has a long history of petroleum retail and auto servicing, the site includes a number of locations that have operated as petroleum-related businesses in the past or continue to the present. The information in this section was obtained from Sanborn insurance maps, History Notes of the Lake Chelan Historical Society (1999, 2000), historic photos and city directories at the Chelan museum, as well as from discussions with long-time Chelan residents. Historic maps and photographs are included in Appendix A.

1.2.1 History of Chevron Station Property

Prior to the mid-1920s, this property housed a printing office for a Chelan newspaper, located in the northeast corner of the lot. About 1926 the property was sold and became the Chelan Battery Station, also called Rainbow Service, which was a battery and electric shop in this same corner of the lot, with an additional small building just to the southwest. In 1931 a "super service station" was built on the property, including the Rainbow Super Station and Chelan Body, Fender and Paint. At that time the battery shop was moved to the rear of the lot. The station business soon became Lake Chelan Service, continuing at least into the 1940s. The 1945 Sanborn map shows an auto service building in the northern half of the property, and an adjoining battery shop on the west-central portion of the property. A "gas and oils" unit (tanks and pumps) were situated on the northeast corner of the service building, where the modern

pump island is now located. The service and battery buildings had concrete floors, while a wooden-floor store occupied the southeast corner of the property along the alleyway.

Since 1931 a gasoline service station has continuously occupied this property. Standard Oil Company, which later became Chevron in 1984, owned the service station from the early 1950s until January 1988. During these years, the property itself was owned by a Chelan resident, who leased the property to Chevron, who in turn subleased the business out to various dealers. Since the early 1950s, the business has changed hands several times — including twice in 1953, then once about 1983, again about 1987, again in the early 1990s, then in 2000, and finally in 2005. The business is currently independently owned by Mr. Marty Wason, who also purchased the property in September 2005 from Mr. Samuel Rutherford. Since January 1988, Chevron has acted only as the fuel supplier to the station owners.

The three large USTs at the station were installed in 1975. In the mid-1980s, the property consisted of a station building with three service bays, two pump islands, three gasoline USTs (one 5,000-gallon unleaded and two 10,000-gallon leaded tanks) and a 2-stroke fuel UST (approximately 500-gallon tank) in the northern portion of the property, and two small USTs immediately south of the station building used for waste oil and heating oil (Figure 1-3). In October 1987, three of the UST systems reportedly failed petrotite leak testing. During the process of Chevron selling the station, in November 1987, it was discovered that a gasoline vent line had been leaking for an unknown amount of time. At this time, the gasoline lines were replaced with fiberglass lines, the dispensers were replaced, the 500-gallon 2-stroke fuel UST was removed, and one service bay was closed. During this activity, a major portion of the station property was "torn up" to accomplish this work (Rittenhouse-Zeman & Associates [RZA], 1988a, 1988c). It is not known if soil was removed and transported off-site at any time during this activity.

In the mid-1990s, the dispensers were again replaced and changed to a single pump island, the two remaining service bays were closed, and the building was remodeled for use as a food mart. At this time, the waste oil UST and possibly the heating oil UST were closed in place.

The realization in 1987 that gasoline had been released initiated a series of environmental investigations and remedial activities that continue to this date. Gasoline product was identified in 1988 within monitoring wells on the station property, and later also in offsite areas. Analysis of product in wells suggests that at least some of the leaking gasoline was manufactured between 1985 and 1987, and some gasoline was likely released before that. In January 1988, WDOE listed the station as a Leaking UST site. Gasoline- and lesser diesel-range contamination in the soil and groundwater have since been identified extending westward beyond Emerson Street. It is uncertain how much of this contamination originated from the gasoline leak at the Chevron station. These topics are discussed in more detail in Chapter 4.

1.2.2 History of Other Petroleum-Related Locations

A number of other petroleum-related businesses have operated in the vicinity of the Chevron station during the last several decades. These businesses may or may not have contributed to additional petroleum releases in the Woodin Avenue corridor (see Section 4.6.1). Information about these businesses is provided below, according to their current street addresses (Figure 1-2).

302 E. Woodin Ave. Immediately east of the station, across Sanders Street, is an active Union Oil 76 station and mini-mart. It was constructed about 1994 as a BP station, but soon after became a 76 station. Prior to 1994 the property was occupied by a few different restaurants and prior to that it was another service station. During the 1930s and 1940s, the property consisted of a church on the west half, and an auto repair shop, truck service shop, and towing company on the east half.

301 E. Woodin Ave. North of the Union 76, and northeast of the Chevron station, is an active Shell Oil station and mini-mart. This location has been used as a service station, garage, and car dealership since 1928. Initially, it was home to Ed Hall Motors, which was a Chevrolet/Buick garage and dealership, with two fuel pumps under the building overhang. In the 1930s this became the Evans Motor Company, which also pumped Union 76 gasoline from the two pumps. This became Garton Motors in the 1940s. In the 1929 and 1945 Sanborn maps, the fuel pumps were located near the street corner, and the auto sales/service building adjacent to the pumps had a concrete floor. In a 1959 photo, this property was a Dodge/Plymouth dealership, with two fuel pumps near the corner (Appendix A). The 1928 building was destroyed by fire in 1962. Prior to 1969 this property was a Chrysler dealership with auto repair garage and fuel pumps, and since 1969 it has been a Shell station with mini-mart.

229 E. Woodin Ave. On the corner across Woodin Avenue, due north of the Chevron station, is now the Stop Light Espresso. On the 1945 Sanborn map, this property was a station with a fuel pump. In photos from 1959 and 1964, this lot was a Richfield service station with two fuel pumps and two service bays (Appendix A). Richfield (ARCO) remained at this location until about the late 1970s.

221 E. Woodin Ave. West of the corner lot is Jerry's Auto Supply. In 1910 this was a Ford garage, and was one of two fuel pumps in town. In the mid-1920s, this property continued as a garage, and on the 1929 Sanborn map this property was identified as the Washington Farmers Union facility, which had fuel pumps along Woodin Avenue. Following this, it became a garage and Chevrolet dealership, with a Shell Oil service station. This business occupied a large lot extending westward to 217 E. Woodin Avenue. On the 1945 Sanborn map and a historic photo, this property was an automobile repair service facility, with an earthen floor, and which also had two fuel pumps near the street, with unpaved drive-ups. In photos from 1957 through 1961, this property included a Chevrolet dealership with two service bays, and two fuel pumps with paved drive-ups. In photos from 1964, the fuel pumps were operated as a Union Oil 76 station (Appendix A). The overall property included a dealership, garage, auto storage, and service station until the 1970s, when it became an auto parts store.

215 E. Woodin Ave. This property is presently occupied by the Sunburst Gallery. On the 1945 Sanborn map, there was an "oil and storage" facility along Woodin Avenue at this location, but it is not known if they stored or pumped gasoline. This business activity stopped by the mid-1950s.

141 E. Woodin Ave. This property on the northwest corner of Woodin and Emerson is occupied by the R.W. Little building, which houses Chelan Realty and other businesses. Prior to 1921, this property was used as a garage facility, known as the J.F. Hendricks & Sons garage. In 1922 it became the Chelan Motor Company. In a 1924 photo, this business had two fuel dispensers

adjacent to unpaved drive-ups. In 1927 the present building was constructed by the Chelan Motor Company, which served as a garage and Ford Motor Company dealership. Two fuel pumps were installed under the building overhang. In the 1930s, a pump for Standard Oil gasoline was also located on the Woodin Avenue sidewalk (Appendix A; Standard Oil later became Chevron). The 1929 and 1945 Sanborn maps list this facility as including auto repair, auto storage, a tire shop, supplies, and gasoline and oil, with a concrete floor. By the mid-1950s, this property had become an auto parts/hardware store.

125 E. Woodin Ave. This property is now occupied by Golden Florins General Store and Bear Foods Wholesale. Previously it was used as an auto garage that also pumped gasoline. About 1920 the Higgins Garage and Motor Inn was constructed on this location. This facility is reported to have pumped Red Crown gasoline from a crank siphon pump. The 1929 and 1945 Sanborn maps show this facility was used as a garage and for auto repair, with an earthen floor. This business stopped at this location by the mid-1950s.

119 E. Woodin Ave. This property is now vacant but was previously occupied by the Adagio and Lake Garden restaurants, and prior to that was a J.C. Penney store since about 1930. Between 1920 and about 1930 this property was an auto repair garage facility, known as the Barden-Huni garage and later the Huni-Wolverton garage, apparently affiliated with Chevrolet. There are no records indicating if any gasoline storage or pumping took place at this wooden-floor building.

114 to 122 S. Emerson St. This building is now occupied by Kelly's Plumbing store and three small businesses along Emerson Street. The Chelan Transfer Company used this facility beginning in 1929. The 1929 and 1945 Sanborn maps identified truck and car transfer and storage activities on a dirt floor; auto repair took place in the northwest corner of the facility on a concrete floor. The truck transfer business continued until the mid-1970s. There is no indication that fuel was pumped at this location.

115 S. Emerson St. This building is now occupied by four different businesses. On the 1929 and 1945 Sanborn maps, the northern half of this area was occupied by a garage/auto repair facility. There is no indication that fuel was pumped at this location.

Other Locations. A former Pontiac dealership with a garage facility was located northwest of the site on Johnson Avenue (in the parking area north of 115 E. Woodin Ave). In addition, according to long-time residents, most businesses in the downtown area of Chelan used heating oil for oil furnaces in the past. Some of the heating fuel USTs are still in place today and some may still be active.

1.3 Previous Environmental Investigations and Remedial Actions

A large number of environmental investigations have taken place at the site since 1987. The following summary of investigations and remedial actions is modified from that in the Supplemental RI Work Plan (Delta Environmental Consultants, Inc. [Delta Environmental], 2003). This investigation history includes all activities accomplished before the Agreed Order was established in October 2002 and before the RI/FS began. Analytical results from the environmental reports referenced in this section are tabulated and discussed in Chapter 4 of this

RI report. Boring logs from previous investigations and the RI activities are included in Appendix B.

1.3.1 Pre-RI/FS Environmental Investigations

In this section, the pertinent environmental report or reports are listed first, followed by a brief summary of the investigations and findings. The locations of borings and wells are shown in Figure 1-3 for the Chevron station, and Figure 1-4 for the entire site. A discussion of chemical contaminants of concern, including separate phase hydrocarbon (SPH), is presented in Section 1.4. A complete list of references is presented at the end of the RI text, following Chapter 4.

Rittenhouse-Zeman & Associates, *Subsurface Petroleum Hydrocarbon Evaluation, Chevron Service Station #6590, Sanders Street and Woodin Avenue, Chelan, Washington (Nov. 1987).* January 4, 1988.

Rittenhouse-Zeman & Associates, *Monitoring Well Installation and Groundwater Petroleum Hydrocarbon Evaluation, Chevron Service Station #6590, Sanders Street and Woodin Avenue, Chelan, Washington (Dec. 1987).* January 8, 1988.

In November 1987, RZA drilled five initial site borings (B-1 through B-5). These borings encountered sand to a depth of 27.5 feet below ground surface (bgs) and silty sand to sandy silt to the total depth of 31.5 feet bgs. Groundwater was encountered at a depth ranging from 22.5 to 27.5 feet bgs. RZA installed the first groundwater monitoring wells (MW-1 through MW-3) in December 1987. Groundwater flow direction beneath the site was found to be toward the southwest.

Rittenhouse-Zeman & Associates, *Summary of Additional Characterization Services, Chevron Service Station #6590, Woodin Avenue and Sanders Street, Chelan, Washington.* January 18, 1988.

RZA described the regional hydrogeologic setting and location of surface water pump stations and water supply wells. They reported that the regional groundwater flow direction was toward Lake Chelan (southwest), consistent with the site-specific information. They also reported that the City of Chelan utilizes three pumping stations near the eastern end of the lake, and that no domestic water supply wells were identified within one-half mile of the site.

Rittenhouse-Zeman & Associates, *Additional Site Characterization and Monitoring Well Installation, Chevron Service Station No. 6590, Sanders Street and Woodin Avenue, Chelan, Washington.* April 29, 1988.

In March 1988, RZA drilled a deep boring into the fine-grained deposits underlying the upper sand unit. The boring encountered sand from the ground surface to a depth of 24 feet bgs. Silt and silty clay was encountered from 24 to 75 feet bgs. Drilling refusal occurred at a depth of 75 feet on weathered granite (almost certainly a boulder within glacial till). RZA reported that: "No significant groundwater was observed within the clay-silt formation." The borehole was backfilled to a depth of approximately 25 feet bgs,

and a well (MW-4) was constructed across the interface between the upper sand and underlying clay-silt.

RZA Agra, Inc., *Evaluation of Bio-Venting System, Groundwater Sampling and Additional Site Monitoring Well Installation, Chelan Chevron, Station No. 6590, Chelan, Washington.* February 4, 1992.

In January 1992, RZA installed wells MW-5 through MW-8. These wells were 35-feet deep and screened in the 15- to 35-foot depth interval.

Delta Environmental Consultants, Inc., *Subsurface Environmental Investigation, Chevron Service Station 9-6590.* January 28, 2002.

In June 2001, Delta Environmental installed two exploratory soil borings (B-9 and B-10) off the station property. The borings were drilled to total depths of 41.5 feet bgs, and soil samples were collected in 5-foot intervals. The borings were completed as wells MW-9 and MW-10, and well screens were placed across the saturated zone, extending from approximately 15 to 40 feet bgs.

Seven additional exploratory soil borings (B-11 through B-14 and DB-1 through DB-3) were installed by Delta Environmental on September 19 and 20, 2001. These borings were drilled to total depths ranging between 26.5 and 37 feet bgs. Soil samples were collected in 5-foot intervals to depth. Four of the exploratory soil borings, B-11 through B-14, were completed as groundwater monitoring wells MW-11 through MW-14. The well screens were placed across the saturated zone, extending from approximately 17 to 37 feet bgs in wells MW-11 through MW-14.

Monitoring wells MW-9 and MW-12 were developed by bailing. Well MW-10 was not developed due to the presence of SPH. Wells MW-11, MW-13 and MW-14 were not developed due to the lack of water at the time of development.

Delta Environmental Consultants, Inc., *Subsurface Environmental Investigation, Chevron Service Station 9-6590.* March 21, 2002.

In November 2001, Delta Environmental installed three soil borings. Borings B-11D, B-15, and B-16 were drilled to total depths of 60.5 bgs, 41.5 feet bgs, and 51.5 feet bgs, respectively. Soil samples were collected in 5-foot intervals to depth.

The three soil borings were completed as groundwater monitoring wells MW-11D, MW-15, and MW-16. The well screens were placed extending from approximately 33 to 48 feet bgs in well MW-11D, from 20 to 40 feet bgs in well MW-15, and from 25 to 50 feet bgs in well MW-16.

Monitoring wells MW-15 and MW-16 were developed by pumping. Well MW-11D was not developed due to the lack of water. In addition, the following groundwater monitoring wells and vapor probes at the station were sampled for soil vapor using Tedlar bags: MW-6, MW-7, MW-9, MW-10, MW-12, P-1, and P-6.

Delta Environmental Consultants, Inc., *Subsurface Environmental Investigation, Chevron Service Station 9-6590.* August 16, 2002.

In June 2002, Delta Environmental installed five soil borings (B-17 through B-20 and B-20A). Borings B-17 through B-19 were drilled to total depths of 41.5 feet bgs. Boring B-20 was drilled to a total depth of 81.5 feet bgs. Boring B-20A was drilled to a depth of 10 feet bgs before being abandoned due to buried utilities. Because of the presence of underground and overhead utilities, and the lack of access to property beyond city boundaries, another boring could not be attempted in the area of boring B-20A.

Exploratory soil borings B-17 through B-20 were completed as groundwater monitoring wells MW-17 through MW-20. The well screens were placed across the saturated zone, extending from approximately 20 to 40 feet bgs in wells MW-17 through MW-19, and from approximately 20 to 45 feet bgs in well MW-20.

Monitoring wells MW-17 through MW-19 were developed by pumping. Well MW-20 was not developed due to the lack of water at the time of development.

Science Applications International Corporation, *Quarterly Groundwater Monitoring and Monthly Bailing Summary Report, January through May 2006, Chevron Service Station # 9-6590, 232 E. Woodin Avenue, Chelan, Washington*. July 12, 2006.

Groundwater monitoring has been ongoing since at least 1992 and was conducted quarterly until 1995, then semi-annually until 2001, when quarterly monitoring began again. The more recently installed wells have been placed on a quarterly monitoring schedule, although some older wells or those with low or non-detected concentrations have been placed on an annual schedule. All groundwater data since 1992 are summarized in the above groundwater report, and a summary table of results through May 2006 is included in Appendix C.

Based on these previous site investigations, subsurface soils at the site typically consist of three major geologic units: (1) an upper unit of variable sand, silt, and gravel; (2) a middle unit of interbedded silt and clay; and (3) a lower unit of dense silty fine-grain sand, silt, and gravel. Since 1987 groundwater beneath the site has been measured between 19.5 and 46 feet bgs, with seasonal vertical fluctuations of more than 10 feet, although the usual annual variation in any well is only 2 or 3 feet. Groundwater is most shallow at and near the Chevron station. Based on pre-RI data, groundwater migrates from the station in a southwesterly or westerly direction, and possibly also northwesterly. The water table gradient appears to drop steeply to the southwest of the station. Some of the existing monitoring wells southwest of the station (MW-11, MW-11D, MW-13, MW-14, MW-20) are dry, despite the fact that the soil at the screen depth appeared to be saturated, at least in part. Wells MW-2, MW-3, and MW-4 at the station have been dry for several years. The older dry wells in the parking lot southwest of the station were formally decommissioned in 2003 (i.e. wells MW-11, MW-11D, MW-13 and MW-14).

Previous characterization showed a plume of gasoline SPH that appears to extend from the station toward the west and the southwest. In addition, a groundwater plume with dissolved hydrocarbon constituents exists to the north and northwest of the Chevron station. Based on pre-

RI activities, SPH has been observed in wells MW-2, MW-3, MW-6, MW-7, MW-9, MW-10, MW-12, MW-15, and MW-16, although SPH has not been present in wells MW-2 and MW-3 since about 1988, and not present in well MW-6 since 1992. SPH samples have been analyzed from wells MW-3, MW-6, MW-7, MW-10, MW-12, MW-15, MW-16, and a 1988 "test hole" on the Woodin Avenue side of the station. These results indicated that SPH consists of weathered gasoline with a high lead content, but without any recent additive components. As discussed further in Chapter 4, the most definitive laboratory narratives suggest that the leak(s) occurred prior to about 1985. Contaminants at the station were found in both the upper sandy unit and the middle silty unit; however, the off-station contaminants were found within only the silty unit.

Additional investigations after October 2002 have been conducted under an Agreed Order with WDOE, through the RI/FS process. These activities are described in detail in Chapter 2 of this report. All remedial actions and related activities performed to date at the site are described in the following section.

1.3.2 Previous Remedial Actions

In this section, the pertinent environmental report or reports are listed first, followed by a brief summary of the investigations and findings.

Rittenhouse-Zeman & Associates, *Summary of Site Characterization Services and Remediation Recommendations, Chevron Service Station No. 6590, Chelan, Washington.* November 28, 1988.

RZA Agra, Inc., *Evaluation of Bio-Venting System, Groundwater Sampling and Additional Site Monitoring Well Installation, Chelan Chevron, Station No. 6590, Chelan, Washington.* February 4, 1992.

RZA Agra, Inc., *Recommendations for Remedial System Upgrades, Chevron Service Station No. 6009-6590, Chelan, Washington.* February 21, 1992.

RZA Agra, Inc., *Quarterly Status Report, Vacuum Evaluation and BVS Modification, Chevron Service Station No. 6590, Sanders Street and Woodin Avenue, Chelan, Washington.* July 20, 1992.

RZA Agra, Inc., *Quarterly Operations and Maintenance Report, First Quarter (February 1996), Chevron Service Station No. 6590, Sanders Street and Woodin Avenue, Chelan, Washington.* April 22, 1996.

In 1987 and 1988, SPH was bailed from wells MW-2 and MW-3 at the station. In January 1992, RZA began operation of a soil vapor extraction (SVE) system utilizing wells MW-2, MW-3, MW-4, and a lateral extraction vent. This horizontal extraction vent line was approximately 75 feet long at a depth of 9 to 10 feet bgs, extending north-south along the west side of the station property (Figure 1-3). RZA installed eight vapor observation probes (P-1 through P-8) to monitor the vacuum created by the SVE system. In August 1994, well MW-4 was taken off-line and replaced by well MW-6, and an air-sparge hose

was installed in well MW-7, with sparging operating 1 hour in every 24 hours, while vapor extraction remained in continuous operation.

The vapor extraction system was found to have a radius of influence of 15 to 25 feet (based on approximately 1 percent level of vacuum). Most of the screened length in this SVE system was situated in the upper sandy unit. The silty unit would have a much lower permeability and effectiveness for an SVE system. This system was operated until December 1996. During part of this time, beginning in 1992, wells MW-6 and MW-7 contained gasoline SPH up to about one foot thick. The maximum rate of petroleum hydrocarbon removal was 136 pounds per day for a few weeks, but generally was much lower. It was estimated that 12,000 pounds of petroleum hydrocarbons (approximately 1,800 gallons of gasoline) were removed largely from the upper sandy unit between January 1992 and February 1996. The reports listed above describe SVE system operations, maintenance and upgrades, which took place at the site between 1988 and 1996.

Pacific Environmental Group, Inc., *Operation and Maintenance Report – Third and Fourth Quarters 1997, Chevron USA Facility 9-6590, 232 Woodin Avenue, Chelan, Washington.* January 28, 1998.

In December 1996, Pacific Environmental Group, Inc. (PEG) converted the SVE system to a bio-venting air-sparge system by reversing the direction of the blower. This system operated until early 1998, and little information is available on its success or impact. During periods when SPH was noted in well MW-7, the SPH was removed by bailing.

Delta Environmental Consultants, Inc., *Enhanced Fluid Recovery and Product Bailing Summary, Chevron Service Station 9-6590, 232 Woodin Avenue, Chelan, Washington.* August 15, 2002.

In August 2002, Delta Environmental performed a test to evaluate the efficacy of enhanced fluid recovery (EFR) in two events on different days at wells MW-7, MW-9, and MW-10. SPH and groundwater were evacuated from these wells using a vacuum truck and stinger hose during two tests on successive days. The radius of significant vacuum influence was found to be approximately 40 feet. A total of 40 gallons of groundwater but less than 2 gallons of SPH were removed during the two tests.

Science Applications International Corporation, *Quarterly Groundwater Monitoring and Monthly Bailing Summary Report, January through May 2006, Chevron Service Station # 9-6590, 232 E. Woodin Avenue, Chelan, Washington*. July 12, 2006.

Beginning in March 1999, Chevron's groundwater monitoring and sampling contractor, Gettler-Ryan, Inc. (GRI) of Dublin, California, performed regular (usually monthly) SPH bailing and removal from all site wells. SPH has been bailed over a longer period of time from some wells, but on a less regular frequency. In July 2003, the WDOE requested that SPH bailing be increased to semi-monthly in order to accelerate the removal of SPH from the subsurface prior to completion of the RI/FS. This semi-monthly SPH bailing schedule was initiated by GRI in August 2003. SAIC continued SPH bailing and groundwater monitoring in mid-October 2003. A decision to return to monthly bailing was made by

WDOE and SAIC in late November 2003 because it became apparent that SPH in the aquifer was not adequately recharging to the wells on a semi-monthly schedule.

Absorbent socks were added to eight wells in August 2004, which includes all wells containing NAPL except wells MW-10 and MW-12 (which have relatively thick NAPL). Absorbent socks are removed monthly and wrung out, followed by bailing of any remaining SPH. A summary of all recent SPH removal activities at the site is provided in the above-referenced report, and a summary table of results to May 2006 is included in Appendix C.

1.4 Potential Contaminants of Concern

Previous investigations have identified various contaminants in the site soil and groundwater, including gasoline- and diesel-range petroleum hydrocarbons. Groundwater and soil samples have detected aromatic compounds that are components of gasoline and diesel, as well as lead used as an additive in gasoline. SPH is present onsite, which primarily consists of gasoline product, but diesel product has also been identified. This SPH is also known as light non-aqueous phase liquid (LNAPL, or more generally NAPL), which is less dense than water and will float on groundwater. The various constituents of NAPL and its impact on soil, groundwater, and soil vapor are discussed in greater detail in Chapters 3 and 4. In this report, the terms SPH and NAPL are used interchangeably.

Prior to the RI/FS, a total of 21 groundwater monitoring wells and additional soil borings and vapor probes had been installed to better characterize soil and groundwater impacts at the site. Since implementing the RI/FS, the number has grown to 37 groundwater wells (although 5 of these wells have been decommissioned), along with 13 soil vapor wells. Groundwater has been monitored routinely since 1992. The majority of known petroleum hydrocarbon impacts are on the west side of the station, and extend across the site primarily in a westerly direction, but also reach to the southwest and northwest directions.

2.0 RI/FS INVESTIGATION METHODS

The field investigations for the RI/FS were performed in accordance with the following approved plans prepared by Delta Environmental: Supplemental Remedial Investigation Work Plan (February 27, 2003), the Quality Assurance Project Plan (QAPP, February 26, 2003) and the Sampling and Analysis Plan (SAP, February 26, 2003). This was followed by a Final Remedial Investigation Work Plan prepared by SAIC (June 17, 2003). These documents specified the type of samples, sample collection methods, sample locations, and analytical methods to be used, in addition to detection limits and quality assurance measures to be implemented. The following sections summarize the field investigations, sampling, and analyses that were conducted. All samples except NAPL were submitted for analysis to Lancaster Laboratories in Lancaster, Pennsylvania. Tables 2-1 through 2-3 list the sample information and analyses performed for soil, soil vapor, and groundwater.

2.1 Field Event of March 2003

After the Agreed Order was placed on the site investigation by WDOE in October 2002, an RI/FS formally began. The Supplemental RI Work Plan, SAP, and QAPP were completed by Delta Environmental (2003a, 2003b, 2003c) and approved by WDOE in February 2003. The subsequent field investigation was undertaken by Delta Environmental and SAIC between March 3 and 7, 2003. This included drilling 11 exploratory soil borings, B-21 through B-31. Borings B-21 through B-29 were drilled to total depths of 41.5 to 55.5 feet bgs. Borings B-30 and B-31 were drilled to greater depths to explore a lower water-bearing zone, each reaching 96.5 feet bgs. Soil samples were collected at an interval of 5 feet, and analyzed as presented in Table 2-1. Sample selection for chemical analysis was based on the presence of hydrocarbon odor, visual appearance, photoionization detector (PID) readings, location, and depth.

Groundwater monitoring wells were installed in all 11 borings, labeled MW-21 through MW-31 (Figure 1-4). In the three years since installation, wells MW-24 and MW-26 have been dry. After installation, wells MW-22 and MW-25 were each found to contain NAPL; the former was brown colored and the latter was red. The latter is more typical for the site. These NAPL samples were subsequently analyzed, and the sample from well MW-22 was found to be predominantly diesel, which is the first NAPL sample from the site that contained diesel. The sample from well MW-25 was the more typical gasoline that forms a large plume on the groundwater (see Chapter 4). All wells that contained water, with or without NAPL, were developed by bailing. All wells were surveyed for elevation at the top of well casing, according to a city benchmark on an msl datum (Appendix D).

2.2 Field Event of June to July 2003

In April 2003, WDOE informed Chevron that additional field characterization would be required to further define the southern portion of the contaminant plume. The Final RI Work Plan was completed by SAIC (2003) and approved by WDOE in June 2003. This field investigation was undertaken by SAIC between June 23 and July 1, 2003. This included drilling five soil borings, B-32 through B-36. Borings B-32 through B-35 were drilled to total depths of 36.5 to 44 feet bgs. Boring B-36 was drilled to greater depths to approximately match that found at well MW-25, reaching 51.5 feet bgs. Soil samples were collected at intervals of either 2.5 or 5 feet,

and analyzed as presented in Table 2-1. Sample selection for chemical analysis was based on the presence of hydrocarbon odor, visual appearance, PID readings, location and depth, and previous sample results.

These borings were completed as groundwater monitoring wells MW-32 through MW-36 (Figure 1-4). Wells MW-32 through MW-35 were installed along the southern side of the plume in an attempt to capture shallow perched groundwater in the "dry zone" south of the alley between Woodin and Wapato Avenues. Previous attempts to capture groundwater in this area from the deeper part of the perched water zone had been unsuccessful. These four newer wells were installed in an attempt to focus on more shallow individual perched lenses containing soil contamination. In the time since installation, these four wells have also been dry. Well MW-36 was installed along Woodin Avenue to further define the northwest margin of the gasoline plume and to distinguish this plume from the diesel NAPL at well MW-22. Boring B-36 contained noticeable red NAPL on the auger flights during well installation. Well MW-36 contained NAPL immediately, which was sampled and found to be gasoline (see Chapter 4). Well MW-36 was developed by bailing, and 15 gallons of red gasoline and water were extracted. All wells were surveyed for elevation at the top of well casing, by using two nearby existing wells as benchmarks on a msl datum (Appendix D).

In addition, 13 soil borings were drilled for installation of soil vapor monitoring wells, and were placed as close as practicable to buildings with basements, particularly those with dirt-floored basements or more actively used concrete-foundation basements. Some soil samples were collected during drilling (Table 2-1). Borings VB-1 through VB-7 were drilled with paired borings (A and B) at each location. The "A" boring served for installation of the deeper vapor well (VW-1A to VW-7A), and the "B" boring served for installation of the shallow vapor well (VW-1B to VW-7B), as shown in Figure 1-4. The exception was boring VB-2, which only had a single shallow vapor well (VW-2); nearby dry well MW-33 (2-inch diameter) served as the deeper vapor well at this location. The vapor wells were constructed of ¾-inch diameter PVC with petcock valves mounted on top. The shallow vapor wells were set with the top of the 2.5-foot long screen at or shortly below the bottom depth of the adjacent building basement. The deeper vapor wells were set with the 2.5-foot screen at or just above the first indication of significant petroleum contamination, distinguished by odor and PID measurements.

All 14 vapor wells were sampled on June 30 or July 1, 2003 (Table 2-2). Soil vapors refer to the gases in pore spaces between unsaturated soil grains. The soil vapor samples were collected through the petcock valves on top of the wells and via vinyl tubing into Tedlar bags. This was accomplished by thorough purging of the well casing until several minutes after the PID readings on the exhaust vapors had stabilized. Specific methods are described in Appendix D.

An additional task was to decommission (abandon) the dry groundwater monitoring wells that had been installed two years previous, in an attempt to eliminate any potential vertical conduits in the area southwest of the station. Four wells had never contained any sampleable water. Wells MW-11, MW-11D, and MW-14 were abandoned by overdrilling, and then filling the borings with hydrated bentonite. Well MW-13 was abandoned by filling the well casing with hydrated bentonite, and filling the well box with concrete.

2.3 Field Event of May 2004

In March 2004, WDOE informed Chevron that additional field characterization would be required in order to identify another location that was downgradient from the station and the gasoline plume, with respect to flow direction in the deeper water-table aquifer. This field investigation was undertaken by SAIC on May 10, 2004. Previously, only two wells existed in the deeper aquifer. Flow direction was unknown but was assumed to be toward the southeast, based on regional topography. Therefore, well B-37/MW-37 was drilled south of the station, to a depth of 96 feet bgs. Soil samples were collected at intervals of 5 feet, and analyzed as presented in Table 2-1.

This boring was completed as groundwater monitoring well MW-37 (Figure 1-4). On the day following well installation, well MW-37 was surveyed for elevation, and all three deep wells were measured for water levels. The results showed that groundwater in the deep water-table aquifer indeed flowed to the southeast (Section 3.2.2). If groundwater was determined to flow in a different direction, the decision may have been made to install a fourth deep well. However, WDOE together with SAIC determined that an additional deep well was not necessary, because well MW-37 was located downgradient of the contaminant plume. During this event, it was realized that elevations of some existing wells were incorrect, relative to one another. Therefore, in June 2005, all site wells were resurveyed to a city benchmark (Appendix D).

2.4 Groundwater Monitoring and Testing

In conjunction with RI/FS activities, groundwater monitoring, SPH bailing, and other brief miscellaneous field investigations have taken place. GRI or SAIC has conducted quarterly sampling on most wells containing water but without SPH (Table 2-3). Groundwater and SPH levels have been measured on all accessible wells during these events. During the RI/FS, the quarterly events took place between November 2002 and May 2006. SPH bailing has taken place approximately monthly since the RI initiated, and bailing was stepped up to semi-monthly between August and November 2003. However, semi-monthly bailing was too rapid of a pace for SPH removal from the aquifer, and only minimal amounts were being retrieved at the end of this period. The optimal removal rate of SPH from the aquifer is likely to be in the range of every 3 to 8 weeks.

2.5 Field Quality Assurance Samples

As described in the two sets of RI work plans, quality assurance (QA) samples included field duplicate samples, trip blanks, a field blank, and an equipment rinsate blank. Field duplicate or "split" samples were collected during the field activities on soil and groundwater, at a frequency of approximately one per ten environmental samples. Trip blanks were submitted in each cooler chest shipped with samples of soil and groundwater.

3.0 PHYSICAL SETTING OF SITE

The site and the City of Chelan are located along the lowermost extent of Lake Chelan. The Chelan basin drains a portion of the southeastern side of the North Cascades in north-central Washington. The basin encompasses about 1,050 square miles, and Lake Chelan is the main feature of the basin. The deep elongated shape of the lake is characteristic of glacially carved fjords. Although the lake has been dammed since 1889 (raising the natural lake several feet), glacial sediments originally dammed the lower end of the basin to create Lake Chelan. The lake extends approximately 55 miles from the mouth of the Stehekin River to the terminus at the City of Chelan (Montgomery Water Group, et al., 1995). The lake water provides the source of drinking water for the City of Chelan and local irrigation districts.

3.1 Geology

The site resides in the lower portion of the Chelan valley, above the terraced valley of the Columbia River, which is located 5 miles to the southeast. The regional geology of the Chelan valley consists of Cretaceous metamorphic bedrock (migmatite) that grade northwest into igneous rock (tonalite). Overlying the bedrock are thick glacial deposits that were formed by the Okanogan lobe of the Cordilleran ice sheet during the Pleistocene epoch (Tabor et al., 1987). As the Okanogan lobe advanced through the lower Chelan valley, glacial deposits such as till and outwash were formed. Overlying these glacial deposits is a sequence of silt and clay that likely were deposited within a lake formed by glacial deposits damming the meltwater runoff from the Okanogan lobe. This lake in the lower valley formed prior to the Lake Chelan that exists today. Overlying the silt/clay lacustrine (lake-formed) deposits is a sequence of alluvial/fluvial (river-formed) material consisting of sand, silt, and gravel.

The local site geology is defined based on the large number of environmental borings that have been drilled at the site, in addition to supplementary information from previous reports, surface exposures, a geologic map, and discussions with city workers. The site geology is represented in three cross sections, with locations shown in Figure 3-1, and sections presented as Figures 3-2, 3-3, and 3-4. Three major distinct lithologic units have been identified onsite, which are labeled from top to bottom, unit A, unit B, and unit C.

3.1.1 Lithologic Unit A

Unit A consists of probable alluvial deposits and fill material. It is laterally and vertically varied, but can be divided into three different layers, from top to bottom: (1) An upper layer of *sand with some silt* that is most commonly a silty sand, but ranges from fine- to coarse-grain sand with minor gravel, to silt with some sand. It consists in part of fill material (including anthropogenic material) and is found throughout most of the site. The thickness ranges up to about 20 feet, thickest at the station where it directly overlies unit B (Figures 3-2, 3-3). (2) A middle layer of *sand and gravel* that ranges from a cobbly gravel to a sand with some gravel, and is locally silty. In places it is difficult to drill through and may cause refusal. It is overlain by the upper layer throughout the site, except at MW-31. The middle layer is absent under the northern part of the station and the area to the north, and it is absent in some areas southwest of the station. This layer is generally only a few feet thick, but up to 11 feet thick in the area immediately west and

northwest of the station. (3) A lower layer that generally consists of fine- to medium-grain *sand*, but contains some local silt and minor gravel. Where the sand is present at and near the station, it is silty and appears to grade into unit B. This lower sand layer is not as widespread as the others. It is generally only a few feet thick, but can be up to 9 feet thick.

3.1.2 Lithologic Unit B

This unit contains two distinct lithologies: silt with minor clay grading to clayey silt, and clay-rich material. The silt lithology is composed of firm to hard silt of low to moderate plasticity, with approximately 5 to 45 percent clay, and 0 to 10 percent very fine-grain sand (usually sand is not present). This lithology is present in the northern portion of the site, up to more than 60 feet in thickness and interbedded with clayey silt layers. This lithology thins southward and is deposited above glacial till (unit C). The clay-rich lithology is composed of firm to stiff clay with low to moderate plasticity, and approximately 20 to 45 percent silt. The clay beds are interbedded within the thicker silt layers. These clay beds range from 1 to more than 16 feet in thickness and are present throughout the site. Unit B appears to be more clay-rich in the vicinity of the station. Soil samples from unit B were analyzed for grain-size distribution and the results can be seen in Appendix D.

Unit B consists of lacustrine deposits, corresponding to the "bedded silt" map unit of Tabor et al. (1987). Unit B is mapped in low-lying areas on both sides of lower Lake Chelan, including underlying most of downtown Chelan. The laminated silt is exposed in the banks along the lakeshore southwest of the Chevron station, and has been found in excavations on both sides of the lake.

3.1.3 Lithologic Unit C

Unit C consists of glacially deposited material, including till and outwash. It is described here as containing the following four stratigraphic layers, from top to bottom. (1) An *upper silty fine-grain sand* that is glacial till and is composed of very dense, very fine-grain sand (grading to silt with some sand), with 10 to 30 percent silt, and 5 to 20 percent gravel. (2) An *upper fine-grain sand with gravel* is assumed to be glacial outwash, and is composed of very dense, very fine- to fine-grain sand with gravel, and trace to 5 percent fines. (3) A *lower silty sand* layer, which also is glacial till and is composed of very dense, very fine-grain sand (grading to silt with minor sand), with some fine- to coarse-grain sand and gravel, and 10 to 30 percent fines. (4) A *lower fine-grain sand* layer, assumed to be glacial outwash, is composed of very dense, very fine- to medium-grain sand, with trace to 5 percent fines. The tills range from approximately 20 to 35 feet in thickness, and the outwash thickness varies from 17 to 24 feet. Based on its occurrence in eight borings, the uppermost surface of unit C is present at shallow depth (20 feet bgs) in the southern portion of the site, but slopes gradually deeper to the north and northeast (Figure 3-5, Table 3-1). This upper till unit has been identified in all eight borings that were drilled to the depth of unit C in the entire study area. The upper till layer thus appears to be continuous throughout the area.

Unit C corresponds to the Pleistocene "glacial drift" described by Tabor et al. (1987), and is mapped near Chelan in areas peripheral to the "bedded silt." Till is common in bluffs northeast of town, along the lakeshore, and in the dry Chelan River channel below the lake dam, where it

forms near-vertical cliffs. This till consists of a matrix of very dense, fine-grain sand and silt, containing gravel and boulders as large as a house. Due to the well-graded and dense nature of the till, this material is expected to have a low permeability.

3.2 Hydrogeology

Groundwater occurs principally in two water-bearing zones at the site: a shallow perched aquifer, and a deeper main water-table aquifer. Most wells at the site are screened within or above the shallow perched aquifer, and only three wells (MW-30, MW-31, and MW-37) are screened in the deeper main water-table aquifer. Three cross sections also show the water-table elevations during July 2003 (Figures 3-2, 3-3, 3-4).

3.2.1 Shallow Perched Aquifer

Hydrostratigraphy and Groundwater Flow

This aquifer is present largely within lithologic unit B, the silt and clay unit. During very wet years, the perched water table may extend locally up into unit A. The lower part of the aquifer (saturated zone) may extend a short distance into the upper till of unit C, but the top of the dense till generally forms the base of this aquifer, acting as a confining and perching layer. The perched aquifer is present only (approximately) north of the alley between Woodin and Wapato Avenues, except near well MW-9 just south of the alley. Southward from this alley, the perched water table becomes considerably steeper and terminates against the upper till layer of unit C. This is depicted by water levels shown in two cross sections (Figures 3-2 and 3-4). Note that wells just south of this alley are dry, such as wells MW-24 and MW-11D, even though they extend deeper than the adjacent perched water table to their north.

Above the perched water table are numerous smaller saturated zones in unit B, where water is locally perched on very fine-grained layers. This is commonly seen in soil core samples above clay-rich strata. These shallower water-bearing zones almost certainly constitute infiltrating water that is pooled on top of fine-grained horizons and is temporarily retained in the fine pore spaces. This water will eventually migrate downward via a stair-step pattern, traveling mostly horizontally until reaching an underlying layer that is coarser and more permeable, and then continuing downward until reaching the next fine-grained layer and eventually the perched water table. Any contaminants in these smaller shallow wet zones would follow a similar pathway. Because some of this shallower water may be contaminated, many attempts have been made to place well screens in these local saturated zones. However, none of these wells have successfully retained water; and during drilling, groundwater does not stand in the borehole until reaching the perched water table. This stair-step infiltration and perching pattern would also apply to any infiltrating water located south of the alley, where there is no underlying perched water table.

Most of the aqueous transport in this perched aquifer likely occurs through the coarser silt, which is the coarsest material found throughout the vast majority of unit B. Soils in the upper portion of unit C south of the alley are described as dry to damp, and the upper till layer in unit C therefore forms an aquitard or confining layer that perches the shallow aquifer. The eventual fate of water in this perched aquifer is not certain, but this groundwater may slowly infiltrate through

the till of unit C and eventually reach the deep water-table aquifer. It should be noted that although perched aquifer water may eventually infiltrate down into unit C, contaminants do not appear to reach the lowest levels of unit B and thus are likely being retarded and attenuated (see Section 4.4.4 and Appendix I). In most locations, the indicators of contamination show the lowest impacted level to be above the base of unit B (Figures 3-2 and 3-4). As discussed below, the perched aquifer does not discharge to Lake Chelan.

The horizontal groundwater flow for the perched aquifer during the RI period is shown in four water-table contour maps (Figures 3-6 to 3-9). In these maps, water levels in wells with NAPL are adjusted to correct for product density in order to show the equivalent groundwater elevation. As depicted in these figures, groundwater at the water table moves downgradient from the Chevron station toward the southwest or south. Based on these contours, groundwater on the eastern side of the station moves south toward well MW-5; and groundwater in the western part of the station flows to the southwest toward well MW-9.

Farther to the west along the Woodin Avenue corridor, the water table contours indicate flow toward the southwest and south, with a local westerly component. However, groundwater flow west of Emerson Street is toward the south or southeast. As mentioned, infiltrating water above the perched water table likely moves in a more variable horizontal direction than described here, which is typical of vadose zones containing fine-grained material. The NAPL plume is present within this perched aquifer, and its features are discussed in Chapter 4.

Hydrogeologic Testing and Aquifer Usage

Short-term pumping tests were conducted to determine the sustainable yield to wells screened in the perched aquifer. Because no water wells exist in this perched aquifer, these tests were conducted in three monitoring wells on August 29, 2003, and again in two monitoring wells on September 22, 2003. The wells were selected as those having no NAPL and with the greatest amount of water at the time, plus the desire to acquire data from a wide area onsite. The tests encountered difficulty maintaining a stable low flow rate from the submersible pump, resulting from the very low yield of the silt/clay aquifer. As presented in Table 3-2 and detailed in Appendix D, two wells (MW-17, MW-21) were quickly drawn dry at average pumping rates of 0.13 and 0.23 gallon per minute (gpm). At lower pumping rates, three wells (MW-17, MW-21, MW-28) each showed sustainable yields at average rates of 0.04 to 0.07 gpm. Thus the aquifer appears to yield water to these wells at an overall sustainable rate of approximately 0.1 gpm.

The groundwater recovery rate was monitored after pumping each of two wells dry (MW-17, MW-21). The length of time for the groundwater to recover to about 97 percent of original water column height in these two wells was 160 and 280 minutes. Although the recovery data were determined to be not ideal for accurate calculations of hydraulic conductivity (due to violating some input assumptions in the test), the resultant values of approximately $1x10^{-6}$ centimeters per second (cm/s) matched the expected conductivity values for a silt/clay lithology.

Direct laboratory measurements of hydraulic conductivity were also made in September 2001 on two silt samples from lithologic unit B southwest of the station (MW-13 and MW-14; see Appendix D). Results show that the lab-measured hydraulic conductivity of these two samples is very low, $1.0x10^{-6}$ and $1.3x10^{-6}$ cm/sec (Delta Environmental 2002a). These low values of

laboratory-measured conductivity are consistent with the approximate field recovery test values of hydraulic conductivity (approximately $1x10^{-6}$ cm/sec), as well as with the low sustainable pumping rate of approximately 0.1 gpm.

Appendix D presents further hydrogeologic information for this perched aquifer. Based on laboratory and field measurements of hydraulic conductivity and porosity for unit B, and applying groundwater gradients in the vicinity of the station, the calculated horizontal flow rate for groundwater at the perched water table is very low, ranging from approximately 1.5 to 9 centimeters per year.

It should be pointed out that the rate of vertical change of groundwater elevation in wells can be faster than this horizontal flow rate. The range of groundwater flow rates presented corresponds to the average horizontal velocity at the perched water table, which is dependent on the hydraulic conductivity, gradient, and soil porosity (values that have been measured or estimated with reasonable accuracy). This is independent of the recharge rate to the water table near a well, which is affected by sources of vadose-zone water infiltrating under gravity. The vertical variation of water levels seen in wells (such as well MW-5) does not correspond to mass translation of the aquifer groundwater up or down, but merely represents a boundary that is changing via accumulation or depletion. Perched aquifers are particularly susceptible to rapid vertical changes in water level. Also, monitoring wells such as those onsite have a relatively large "collection zone" (compared to undisturbed parts of the aquifer) due to the long vertical extent of the screen and filter pack and the wide boring diameter, which together increases the vadose capture zone and the potential for rapid vertical changes in water level. Precipitation events may in part be responsible for "slugs" of infiltrating water entering the boring and well over a short time period.

No water wells or irrigation wells are currently or formerly known to exist in the shallow perched aquifer in the vicinity of the Chelan site, based on a search of well logs maintained by WDOE and through discussions with city personnel. Further, it is unlikely that this perched aquifer could or would be used as a source of drinking water or any domestic or municipal uses, for the following reasons:

- it is a localized perched aquifer with widely varying seasonal and annual water levels
- the high content of silt and clay in the aquifer (and thus low hydraulic conductivity) is not amenable to placement of water wells; it is highly unlikely that a driller would place a water well in this fine-grained material
- the difficulty in retaining groundwater in the wells, or at least a significant column of standing water
- the low sustainable yield, approximately 0.1 gpm (although this was measured in a monitoring well, not a water well)
- the nearby abundant source of water in Lake Chelan, currently and formerly used by the city and irrigation districts.

In February 2004, WDOE stated that this perched aquifer will not be classified as nonpotable, and that the perched (contaminated) groundwater may be hydrogeologically connected to an aquifer that is a current and potential future source of drinking water.

3.2.2 Deep Water-Table Aquifer

This deep, extensive water-table aquifer is situated entirely within lithologic unit C, the glacial drift unit. This deep aquifer occurs both within the sandy outwash and the silty till layers, although the base of the aquifer is poorly defined. One geotechnical boring log from the vicinity of the lower lake shows the aquifer depth as potentially extending to 120 feet or more (WDOE well log database). The deep aquifer appears to be unconfined (in areas with deep borings) based on the presence of dry soils above the water table in unit C, and because water levels in the deep wells did not rise beyond where first encountered during drilling. Since installation, depths to water in these three deep wells have ranged from 73 to 87 feet bgs (Appendix C). However, under the area of the station, the deep aquifer is likely confined beneath the upper till layer (Figure 3-2).

The deep water table is likely recharged slowly from the lake, from the shallow perched aquifer, and from other sources outside the site area. The two aquifers are separated by the till and other dry soils. Most of the aqueous transport in this deep aquifer likely occurs through coarser-grained material, including the sandy outwash and the locally coarser portions of the till. Water levels from the three deep wells indicate flow is approximately toward the southeast, with a horizontal gradient that ranges between 0.006 and 0.010 foot per foot (ft/ft, Figures 3-6 to 3-9). The deep groundwater does not recharge local surface water because the deeper water table is at least 40 feet below the lake bottom in this vicinity.

The hydraulic conductivity of the deeper water-table aquifer is unknown. However, an inference can be made for the upper till of unit C that appears to be present throughout the study area. This unit, which lies above the deep water table, forms a dense confining layer that acts to perch the shallow aquifer upon it. The conductivity of the shallow aquifer (unit B) is known to be about $1x10^{-6}$ cm/sec. Thus, the till that perches this aquifer must have a smaller conductivity value than unit B. This agrees with measured values for a number of till samples from Washington state that have been tested in the laboratory as being 10^{-7} cm/sec or lower (see Appendix I). The upper till layer of unit C acts as a confining layer that perches the upper aquifer, separating it from the deeper aquifer and the dry soils between the two. This till layer is about 20 to 35 feet thick across the site and has been identified wherever drilling has been extended deep enough (Table 3-1).

Like the shallow perched aquifer, this deep aquifer is not known to be used for water wells in the vicinity of the Chelan site, in part because of the abundant source of water available in Lake Chelan. However, in February 2004, WDOE stated that this aquifer is to be considered a current and potential future source of drinking water, because groundwater originating in this aquifer might be utilized as a source of drinking water at a downgradient locality (near Chelan Falls, about 2.5 miles to the southeast).

3.2.3 Variations in Groundwater Levels

The charts presented in Appendix D show the hydrographs for all wells since 1992. Variations in water-table levels for perched aquifer wells have been significant over the years. For older wells that are located at the Chevron station, a time of very high groundwater occurred from about 1995 to 2000, followed by lower water levels with some wells going dry. Presumably

these trends are related to local climatic changes. These long-term major climatic variations seem to overwhelm the shorter seasonal variations in these wells. During the past several years, high water levels are typically seen between fall and spring (November to mid-June), while low waters generally occur between late spring and fall (May to October); this is best defined in wells with NAPL because they are monitored more frequently. However, individual wells obviously show some exceptions. Over the last few years, the following generalized highs and lows have been identified. In many wells during 2002, a noticeable high water-level peak occurred from April to May. In 2003, there was a high water level from April to mid-June, a low level from August to September, and another high level in November. In many wells during 2004, there was a low level in June and a high level in November. In 2005, there was a low level between May and July, followed by a high level from February to March 2006. Appendix D shows water levels of wells superimposed on lake water levels since 1992.

These groundwater variations likely depend on specific rainfall or snow conditions, plus any subsurface utility leakage, and the time lag for infiltration to the perched water table. Some of the shorter-term variations in these figures may also result from SPH bailing. Others may result from slow or irregular infilling of newly installed wells. Other variations may result from the complicated relationships between NAPL and the water table. NAPL floats on and depresses the water table, like an iceberg. Depending on the stratigraphic position and thickness of the NAPL, and its distance to the well, NAPL can complicate the hydrographs. Some wells that initially infill with both NAPL and groundwater may take many months to stabilize. In these cases, the water table is commonly depressed, as the NAPL thickens in the well; and later the water level recovers and eventually stabilizes as the NAPL thins, partly through bailing. This is seen in hydrographs for wells MW-12, MW-16, MW-25, and MW-36. In addition, NAPL commonly thickens during periods of a falling water table (seen in wells MW-6, MW-7, and MW-12). Section 4.4.1 discusses NAPL distribution within unit B.

A hydrograph for wells MW-30, MW-31, and MW-37 in the deep aquifer is presented in Appendix D. Deep aquifer elevations are lowest in about April or May and highest in September or October. This is approximately opposite of the expected seasonal fluctuations related to precipitation.

3.2.4 Relationship to Lake Chelan

The spatial relationship between the two aquifers and the surface water of Lake Chelan is presented in Figure 3-10. This cross section shows the water tables for July 2003 and the lake levels at typical high and low water. Hydrographs for the years 2004 to 2006 in Lake Chelan, which is controlled by the dam, are shown in Figure 3-11. The well hydrographs in Appendix D also depict the lake water levels back in time to 1992. The high water elevations in the lake are usually close to 1,100 feet msl. Low water elevations in the lake vary more, generally between 1,083 and 1,090 feet msl. The period of low water in the lake usually occurs between mid-March and April, with high water between late July and September. Note that this is almost opposite to the recent groundwater variations described for the perched aquifer, which has high water generally from November to mid-June, and low water from late June to October; however, a number of exceptions can also be noted. Overall, this pattern shows that the perched aquifer is not related to or influenced by water levels in the lake. Perched water almost certainly follows the climatic pattern, while the lake is driven by the dam operations.

Figure 3-10 also shows the perched water table that becomes steeper and terminates in the southwest direction. In well MW-9, the water table is measured at 1,085 feet msl in May 2006. At former well MW-11D, the perched water table is deeper than 1,074 feet msl or is not even present. The farthest southwest that this water table has been found is at well MW-16, with an elevation of 1,077 feet msl in May 2006. These water levels are all significantly lower in elevation than the April 2006 lake level of 1,083 feet msl, and lower than the typical springtime lake level of approximately 1,087 feet msl (Figure 3-11). Furthermore, the bottom of Lake Chelan (the water/sediment interface) near the site lies at an elevation of approximately 1,081 feet msl. Therefore, the water from the perched aquifer on the downgradient southwest side of the site cannot physically reach the lake water. The perched water table at this location is below the lake water in elevation, and is becoming even deeper to the southwest, never reaching the lake (Figure 3-10). The waters of the perched aquifer at the site cannot discharge to the lake.

The perched aquifer was not encountered in the deep borings for wells MW-20, MW-30, MW-31, and MW-37. A deep boring and an excavation adjacent to the lakeshore south of the station confirmed that the perched aquifer does not exist between the station and the lake. In May 1995, the city contracted the drilling of an 80-foot deep boring located on the north side of the lake, at Sanders Street and Sayles Avenue (see Figure 1-1). This boring reached a depth of 50 feet below lake level and it encountered sand, gravel, silt, and probable till. No groundwater was encountered in the entire boring. The technical report (De Rubertis, 1995) states: "Not finding water in the boring (with about 50 ft of head from the lake) is surprising and not easily explained. It is possible that the lake is perched above the groundwater table by fines which have sealed the lake bottom." In summer 1996, the City of Chelan Public Works excavated a 35-foot deep pit near this location. The pit was dug for installation of a municipal water pumping station, and it extended at least 19 feet deeper than the lake level. During the many days that this pit was open, no groundwater whatsoever accumulated in it (Steve Liles, City of Chelan, personal communication with SAIC, 9/3/03). This confirms that the perched aquifer is not present near the lake, and the lake itself is perched on silts and clays. Thus the lake is not in hydraulic connection with the perched aquifer, and the lake is not a downgradient receptor from this aquifer. Instead, groundwater from the perched aquifer may slowly infiltrate into the unit C glacial till and eventually recharge the deep water-table aquifer after a significant amount of time.

The deep water-table aquifer, on the other hand, does seem to show a relationship between potentiometric water levels and the lake levels (see hydrographs in Appendix D). The patterns and amplitudes of water level changes in the aquifer are generally similar to the lake, but they lag behind the lake high/low peaks by one to two months. This relationship likely results from the changing elevation head within the downstream part of the lake. As the lake level rises, a higher pressure is exerted on the underlying silt/clay of unit B. This greater pressure would cause increased infiltration from the lake through units B and C, with this water eventually reaching the deeper aquifer. If this is the case, it may explain the time lag between the hydrograph peaks of the lake and the deeper aquifer. The three deep wells are located at some distance from the lake, but the recharge from the lake to the aquifer is likely to be fairly widespread. Note that the deep wells are all located in areas where the shallow perched aquifer is not present. Regardless, there does not appear to be a clear relationship between recharge from the perched to the deep aquifer. Instead, the lake may have a much larger impact on recharge to the deep aquifer than does the

perched aquifer. Note that the deep groundwater in the area of the station (Figure 3-10) likely acts as a confined aquifer below the upper till layer. Contaminant migration pathways and modeling in the hydrogeologic environment are discussed in Chapter 4.

4.0 DATA ANALYSIS AND INTERPRETATION

4.1 Petroleum Contamination

In this report, the term "contaminant" is used in the sense defined in MTCA: "*Contaminant* means any hazardous substance that does not occur naturally or occurs at greater than natural background levels" [WAC 173-340-200]. Thus a contaminant does not imply that the substance is above a regulatory cleanup level or is hazardous to a receptor, but merely that it is impacting some environmental media beyond natural levels.

In discussions below, reference will be made to the MTCA Method A cleanup levels. These cleanup levels are the standard formula values listed in the state regulation that are applicable as cleanup criteria at relatively simple sites. This reference does not imply that these cleanup levels necessarily pertain to the site conditions; this is further explained Section 4.7. The use of the Method A cleanup levels is utilized as a well-known benchmark for comparison purposes. The actual site-specific cleanup levels, and the full application of MTCA regarding these chemicals, will be explained in greater detail later in this report.

The discussion below involves contamination within three environmental media: soil, groundwater, and soil vapor. Contaminants include petroleum constituents of gasoline-range, diesel-range, and heavy (lube) oil-range hydrocarbons. Petroleum NAPL is present onsite, consisting largely of gasoline, but diesel has also been identified in well MW-22. NAPL directly impacts soil, groundwater, and soil vapor. The specific constituents that have been identified onsite above the Method A cleanup levels are as follows:

- Benzene, toluene, ethylbenzene, xylenes (BTEX): volatile aromatic hydrocarbons present in all fresh (unweathered) gasoline and to a lesser extent in diesel-range fuels

- Naphthalenes: semi-volatile polycyclic aromatic hydrocarbons (or PAHs) present in all fresh gasoline and diesel

- Methyl tertiary butyl ether (MTBE): an oxygenate additive in some gasoline since the late 1970s, and especially since 1995 in this country, but rarely used in Washington

- Ethylene dibromide (EDB): an anti-knock additive used in some leaded gasolines

- Lead: a very common gasoline additive used until about 1995. The U.S. Environmental Protection Agency (U.S. EPA) began reducing the lead content of gasoline in 1973, when it averaged 2 to 3 grams per gallon (g/gal); in 1985 lead content dropped from about 1 g/gal to 0.1 to 0.2 g/gal.

Other constituents were analyzed for, but were either undetected or detected below the MTCA Method A levels. Certain constituents of petroleum hydrocarbons are potentially harmful to human health as well as to animals and plants. Benzene is particularly harmful, and is known to be a human carcinogen.

4.2 Data Quality Assessment

Analytical procedures were carried out in accordance with the requirements of WAC 173-340-830, and the Agreed Order, and the appropriate Work Plans for the task. All laboratory analyses were performed by Lancaster Laboratories, except for the SPH samples, which were analyzed by Chevron's CRTC Richmond laboratory. Lancaster Laboratories is accredited by the state of Washington under WAC 173-50 for the analytical methods performed for this project. The analyses were carried out in accordance with the methods listed in the two RI Work Plans, the SAP, and the QAPP. Virtually all results, as qualified by the laboratory, were judged to be acceptable for use in the RI/FS.

The completeness of analyses submitted to the laboratory was close to 100 percent. Groundwater samples were only collected if the wells contained sufficient water and SPH was not found in the well at the time of sampling. Some wells with low concentrations or nondetected concentrations are no longer being sampled. A few groundwater samples were not collected as anticipated because wells were inaccessible due to vehicles being parked over them. A few samples did not have the entire suite of analyses performed due to delays in sample jars being shipped from the laboratory to the site (mainly pertained to analysis for total petroleum hydrocarbons [TPH] as diesel and PAHs).

As expected, a small percentage of the reporting limits for the RI sample data were elevated above the MTCA cleanup levels due to laboratory dilution, chemical interference, or insufficient sample volume. Dilution also caused some samples to have surrogate recovery values outside the standard QC limits. The 14-day holding times were exceeded by the laboratory on the two volatile petroleum hydrocarbons and extractable petroleum hydrocarbons (VPH/EPH) analyses for groundwater (for the Method B calculations), and the laboratory control sample and duplicate (LCS/LCSD) results were outside the established QC limits. These two samples are not being used in the evaluation in this report. The second of two batches of soil vapor samples were delayed by the shipper one day, which caused some of the analyses to be performed following a weekend, up to 7 days after sampling. There are no regulatory holding times for these vapor samples, although 72 hours is recommended. According to the analytical laboratory, the short holding times are more critical for the higher concentration samples; only the very low concentration samples were necessary for data interpretation in this report. These data were utilized in this report. Further information on laboratory QA/QC concerns are recorded in the analytical reports (Appendices C and E).

Field duplicate samples were collected on four different soil samples, two different soil vapor samples, and eleven different groundwater samples during the RI. The relative percent difference (RPD) between the samples and duplicates is summarized in a table in Appendix D, which shows reasonably good comparison between most sample results and their duplicate results. Out of 124 sample-analysis duplicate pairs, a total of 22 of these exceeded the RPD standard of 20 percent; 14 of these 22 exceedances are for soil, which is expected to show more variability due to natural variations in this environmental medium.

Trip blanks were submitted with each cooler that contained soil or groundwater samples for analysis by volatile methods (NWTPH-Gx, BTEX, and in some cases MTBE). The only trip blank that detected any volatile constituents was that submitted with the April 3, 2003, shipment

for groundwater, with a toluene detection of 1 microgram per liter (µg/L, Appendix C). This low level of potential cross-contamination is not of concern in this RI because (for comparison) the MTCA Method A cleanup level is 1000 µg/L. In addition, one field blank and equipment rinsate blank for soil sampling were submitted in March 2003, and these showed no detections.

4.3 Nature and Distribution of Soil Contaminants

4.3.1 General Nature and Extent

The list of soil samples collected and analyses performed for the RI are presented in Table 2-1. The full analytical reports from the laboratory are included in Appendix E. The results of all soil samples collected during the RI and all previous investigations are summarized in Table 4-1. The detections above the MTCA Method A cleanup levels are presented in Figure 4-1 for the station, and Figure 4-2 for the remainder of the site. From these results, it is noted that petroleum constituents have been identified in a wide area and at varied depths throughout the site. Note that most off-station soil boring samples are designated with a "B" which corresponds to the "MW" or "VW" well designations (e.g., B-27 is the boring for well MW-27, and VB-3A is the boring for vapor well VW-3A). Soil samples at the site were collected in 2.5 to 5-foot vertical increments.

All sample results with exceedances of the Method A cleanup levels were collected from depths of 15 feet bgs or more, with the exception of one sample at the station (12.5 to 14 feet bgs at MW-5, for benzene slightly above the cleanup level). Note that this shallow exceedance was from a sample collected in 1992. This material may have been removed by nearby soil vapor extraction, air sparging, and biodegradation that have taken place since that time. At two boring locations (B-21 and B-27) detections exceeding the cleanup levels were identified in the 15- to 16.5-foot bgs samples, but the 10- to 11.5-foot bgs samples were not analyzed because no indications of contamination were found (no odor or elevated PID readings). The deepest sample with detections and exceedances of petroleum constituents throughout the site is found in boring B-36 at 50 feet bgs.

Based on seven borings that penetrate through unit B, soil contamination does not appear to reach the lowest levels of this unit (Figures 3-2 and 3-4). One deep boring at the station, well MW-4, encountered detected contamination from about 22 to 27 feet bgs (with PID detections to 34 feet), but was uncontaminated down to 76 feet bgs at the top of unit C. The petroleum contaminants are likely being attenuated within the upper and middle portions of unit B. Any contaminants that locally happened to reach the top of unit C would be strongly retarded by the till aquitard, which appears to be present throughout the site.

Most of the MTCA Method A exceedances at the site are for gasoline-range hydrocarbons and benzene, with a small number of additional aromatic hydrocarbons. The only exception is the soil at boring B-27, which shows significant diesel-range contamination at 15 and 20 feet bgs. This location with diesel-range contamination is an isolated occurrence, likely due to a localized release. Other locations also showed lesser diesel- and heavy oil-range contamination, but these detections were below the Method A cleanup levels (Table 4-1). Some of these diesel- and oil-range detections could not be repeated in later samples from adjacent borings at the same depth (e.g., borings B-24 and B-34 at 25 feet bgs; borings B-26 and B-35 at 30 feet bgs). This reveals

that these are spurious detections, or the diesel- and oil-range contamination is very localized. In an attempt to understand the origin of some of the diesel- and oil-range detections, six samples in June 2003 were analyzed for a TPH fuel scan (C_9-C_{40}). As shown in Table 4-1, two samples showed relatively low detections in the jet fuel range (C_9-C_{19}). This is consistent with this diesel-range hydrocarbon originating from heating oil, which was commonly used in downtown Chelan. However, it is not known if this was the source of diesel-range hydrocarbon contamination at boring B-27.

4.3.2 Uppermost Soil Contamination at Site

In order to determine the possible source of onsite petroleum hydrocarbon contamination, the uppermost elevation of soil contamination was evaluated for each boring. Soil contaminants move vertically downward from their source, but also spread out laterally when they encounter a fine-grained layer such as clay. Based on the site geologic setting, any NAPL or contaminated water released to the soil would move downward and laterally, in a stair-step fashion. Therefore, any release to soil at the station would be expected to move downward and away from the source, until reaching the depth of the perched water table. Evaluating the highest elevation of soil contamination at any location would thus give a rough indication of the proximity to its source.

Table 4-2 summarizes the highest elevation of soil contamination in onsite borings. This evaluation of impacted soil is based on analytical results (detections), descriptions of hydrocarbon odors, and PID readings above background on soil samples. Although these measures of soil contamination are in part qualitative, together they define the top of soil contamination onsite. They do not correspond to the top of contamination that is above regulatory levels, but merely the uppermost impacted soil elevation.

The highest elevations of soil contamination are shown in Figure 4-3 for the Chevron station and Figure 4-4 for the remainder of the site. Bear in mind that these soil data extend back to 1987, and conditions may have changed since that time, especially at the station where remediation and biodegradation have taken place. Note that these soil elevations are above the recent level of the perched water table, with the possible exception of well VW-1. The geologic cross sections (Figures 3-2 to 3-4) also depict the top and bottom of known petroleum contamination, which is largely confined to lithologic unit B.

Figures 4-3 and 4-4 reveal that the uppermost soil contamination at the station (in the past) ranges from 1,100 to 1,114 feet above msl, but mostly between 1,101 and 1,105 feet. Moving offsite toward the southwest and west and north, the uppermost contamination is at 1,103 to 1,105 feet in wells MW-9, MW-10, VW-7, and MW-17; this pattern is compatible with a possible source at the station, although it does not rule out other sources. In the parking lot farther to the southwest of the station, the upper impacted elevations are slightly lower, 1,097 to 1,102 feet, which is also compatible with a possible source at the station. Farther west along the south side of Woodin Avenue, the elevations also decrease to 1,093 to 1,103 feet (between wells MW-15 and VW-5); again, this is compatible with a possible source at the station, but does not rule out other sources. Along the north side of Woodin Avenue, the relatively high elevation of 1,108 feet at well MW-18 suggests that this contamination is from a different source, more local to well MW-18.

Soil contamination along Emerson Street south of Woodin Avenue also appears too high in elevation to have originated from the Chevron station, ranging from 1,096 to 1,102 feet. Similarly, the contamination on Woodin Avenue west of Emerson Street is too high in elevation, at 1,096 to 1,110 feet, to have originated from the Chevron station, considering that the elevation on Woodin east of Emerson is only 1,090 to 1,093 feet (wells VW-1, VW-3, MW-15). The significant diesel-range soil contamination at well MW-27 (1,112 feet) may be related to the diesel-rich NAPL in well MW-22, which is described below. A number of sources may have contributed to petroleum impacts throughout the site, and the distance from the Chevron station to the westernmost soil contamination (wells MW-19, MW-22, MW-35) is substantial, about 600 feet. From this evaluation, it appears that at least the area from Emerson Street westward is not tied to the Chevron station, and neither is the contamination near well MW-18. There appears to be a gradual decline southward in uppermost contamination elevation from well MW-21 to the area of wells MW-24 and MW-32, as well as wells MW-26 and MW-35. This pattern is further indicated by the cross section in Figure 3-4, which shows a declining elevation of uppermost contamination from north to south.

An uncontaminated border around the south and west sides of the soil plume is established by the lack of petroleum hydrocarbon indications in wells MW-20, MW-23, MW-31, and MW-37 (Figure 4-4).

4.4 Nature and Distribution of Groundwater Contaminants and NAPL

The list of groundwater samples collected and analyses performed for the RI are presented in Table 2-3. A summary of groundwater data since 1992 and full analytical reports from the laboratory from October 2002 to May 2006 are included in Appendix C. A summary of groundwater results from July 2005 to May 2006 is shown on Figure 4-5. This figure shows maximum groundwater detections above the MTCA Method A cleanup levels for each well. It also shows the locations of SPH, and the laboratory identification of NAPL samples that were analyzed during the RI.

4.4.1 Shallow Perched Aquifer

Figure 4-6 depicts the approximate outlines of the known NAPL plumes and the dissolved groundwater plume in the perched aquifer. These outlines are simplified because they imply a single continuous gasoline NAPL plume, apparently from a single source. It is more likely that the plume originates from more than one source, and with a more complex outline. The dissolved groundwater plume is drawn as a halo around the north side of the gasoline NAPL plume, which is a simplification. The upgradient extent of this dissolved plume, to the east and northeast, has not been identified. The outline of the diesel plume around well MW-22 is also uncertain, but is shown extending toward well MW-27 because of the major soil diesel-range contamination in that boring. The thickness of NAPL in wells for May 2006 and the maximum thickness ever measured are also shown on this figure. Note that NAPL thickness has been greatest at the western end of the gasoline plume (wells MW-36, MW-25, MW-16). Between July and September 2003, well MW-36 contained NAPL that extended below the bottom of the well screen, and thus the total thickness at that time was unknown.

The charts in Appendix D depict the depth of the water table and any NAPL for each well since 1992, in addition to the NAPL thickness. These charts show that NAPL in the older wells, which are those at the station, has decreased in thickness or disappeared with time, whereas NAPL thicknesses in newer wells have varied through their shorter lifetime.

Calculations of NAPL thicknesses and volume in the aquifer are difficult to calculate from well data with any level of confidence. Thicknesses within individual wells may fluctuate significantly from month to month (Appendix D). The NAPL plume at Chelan also does not appear to consist solely of a simple layer of product floating on the water table, but rather appears to be significantly vertically distributed. Based on drilling/sampling information, the NAPL likely is in part located on the water table, in part spread out into a large smear zone by the fluctuating water, and in part perhaps locally perched on higher clay-rich wet zones in unit B. Based on this distribution and the inherent problems of calculating aquifer NAPL thickness from well thicknesses, particularly in a fine-grained aquifer, a meaningful estimate of NAPL volume at Chelan cannot be made. The American Petroleum Institute (API, 1996) guidance document states: "Thus, results of volume calculations may be in error by several multiplication factors. For this reason, calculations of NAPL volumes based on measured accumulations in wells is not recommended." The WDOE has requested that a very crude approximation of NAPL volume be made based on recent measurements; these approximate calculations and results are presented in Appendix G.

NAPL samples have been collected over the years from 12 wells, and characteristics are summarized in Table 4-3. All of these samples except well MW-22 have shown that the NAPL is leaded gasoline, with variable amounts of weathering. Most of these samples are red-colored (dyed) gasoline, with a very high lead content that generally increases westward (to well MW-15), ranging up to 4.1 g/gal. No oxygenate additives were identified. Gasoline samples from wells MW-10 and MW-12 are less weathered than a sample from well MW-7 at the station, and well MW-18 is more weathered than others. Relatively high concentrations of isooctane from alkylate blending stock are found in gasoline samples from the station westward to well MW-12 and well MW-18, but were missing or rare in well MW-15 and westward. Isooctane is generally resistant to bacterial degradation, and is unlikely to have been preferentially removed by that means.

Overall, if weathering is not considered, the NAPL samples from wells MW-15, MW-16, MW-25, and MW-36 appear generally similar to each other (alkylate-poor), while those at the station and wells MW-12 and MW-18 are generally similar to each other (alkylate-rich). Chemistry and weathering suggest that gasoline at wells MW-10 and MW-12 are similar, while well MW-18 is somewhat more weathered. This information, together with the highest soil contamination elevation at each location, suggest multiple sources of gasoline releases. It is possible that the release from the Chevron station took place in more than one episode. Based on the type of gasoline additives and weathering, at least a portion of the release at the station is believed to have occurred in the mid-1980s (Table 4-3, Appendix C). However, the exact year or years of release is not known, and it may have continued locally until 1987 when the lines were replaced. Well MW-22 was determined to be at least 60 percent diesel and 40 percent gasoline, both weathered. Because this must be a distinctly different source and plume, the NAPL in well MW-22 is not being considered in the FS, per WDOE (see Section 4.6.1).

Laboratory reports and some chromatograms for these NAPL samples are included in Appendix C.

Charts in Appendix D present groundwater sample results since 1992. This includes one chart per well for TPH results and one for BTEX compounds. Results show that for many wells, concentrations have generally decreased through time, although there has been significant variability. Well MW-18 showed an initial increase of TPH through time, but this resulted from the approach of NAPL to the well in early 2003; by early 2005, NAPL seems to have been largely removed from this well.

Some groundwater sample results show diesel-range hydrocarbons in greater concentration than gasoline-range hydrocarbons. It is not clear if this actually reflects a diesel source or the degradation through weathering of gasoline to higher-range end products. Well MW-8 shows gasoline-range hydrocarbons initially in greater concentration than diesel-range hydrocarbons, and later followed by the reverse. This may be caused by gasoline weathering to the heavier constituents, and due to overlap in the hydrocarbon ranges of these two fuel categories. Also, soon before or after NAPL appears in a well, the gasoline-range hydrocarbon concentration is always predominant over diesel-range hydrocarbon, due to the approach of the gasoline NAPL.

Based on all the information presented, the groundwater can be divided into three separate areas with differing chemistry, perhaps related to differing biodegradation. (1) Groundwater northwest of the station at wells MW-17, MW-18 (before NAPL entered well), and well MW-28 all appears to be generally similar and probably related. Samples show relatively high gasoline-range to diesel-range hydrocarbon ratios and relatively high concentrations of xylenes (compared to other BTEX compounds). At times in the past, groundwater in station wells MW-2, MW-7, and MW-8 also approximately fit this pattern, although concentration ratios have varied widely through time, perhaps due partly to SVE/air sparging causing biodegradation. (2) At the western end of the identified dissolved groundwater plume, wells MW-19 and MW-21 have relatively high gasoline-range to diesel-range hydrocarbon ratios and unusually high benzene concentrations, much higher than the other BTEX compounds. For both wells, benzene concentrations are about the same as gasoline-range hydrocarbon concentrations.
(3) Groundwater at the station overall is highly variable, both spatially and through time, with some wells showing relatively high benzene concentrations and others showing high xylenes, and with significant variations in gasoline-range to diesel-range hydrocarbon ratios. Again, the SVE/air sparging system may have had some impact, particularly in 1996 to 1997 when air sparging was vigorous and groundwater concentrations were generally low.

The unusually high amount of benzene in the western area (wells MW-19, MW-21) suggests either a localized source for this groundwater or the accumulation of benzene from the biodegradation of toluene and ethylbenzene (see Section 4.3.1). The eastern groundwater at wells MW-17, MW-18, and MW-28 may be related to releases at the Chevron station or another source. However, the NAPL recently found in well MW-18 is more weathered than that at the Chevron station and in other wells along Woodin Avenue, suggesting a separate source. Groundwater contaminants in these two areas may have two distinct sources or possibly resulted from volatilization and biodegradation processes.

4.4.2 Deep Water-Table Aquifer

Results for the groundwater samples collected from the deep aquifer are tabulated in Appendix C. Analytical results for wells MW-30, MW-31, and MW-37 are nondetected except for the following cases: two detections of oil-range hydrocarbons in April and October 2003, one diesel-range hydrocarbons detection in October 2003, and detections of toluene and ethylbenzene at the laboratory reporting limit (0.5 µg/L) in May 2005 in well MW-31; and a single detection of benzene at the laboratory reporting limit (0.5 µg/L) in October 2004 in well MW-30. None of these detections could be repeated in subsequent sampling rounds, which included duplicate samples. In well MW-37 two diesel-range hydrocarbons detections (including the duplicate sample) and a single detection of oil-range hydrocarbons were reported in May 2006. The initial detections may have been either spurious, or related to sampling contamination or other causes. Data collected to date suggest that the deep aquifer is not impacted by contaminants from the shallow aquifer.

4.4.3 Natural Attenuation of Shallow Aquifer Contaminants

Natural attenuation or passive remediation is the unaided reduction of contaminant concentration and mass by using the natural assimilative capacity of a groundwater/soil system *in situ*. The U.S. EPA (1997) stated that natural attenuation processes are used to achieve site-specific remedial objectives within a reasonable timeframe compared to other more active methods. This ubiquitous process includes a variety of physical, chemical or biological attributes under favorable conditions to reduce the toxicity, mobility and concentration of contaminants without human intervention. The reduction in concentration is due primarily to several fate and transport processes including biodegradation (the main component), simple dilution, volatilization, and dispersion (Wiedemeier, 1999). A more in-depth explanation of monitored natural attenuation (MNA) processes is presented in Appendix J.

Several chemical compounds in groundwater produced during the biodegradation of contaminants are often used as indicators of natural attenuation. These measurable compounds include electron donors/acceptors and metabolic by-products such as nitrate, sulfate, Fe^{2+}/Fe^{3+}, dissolved hydrogen, alkalinity, and methane. Natural attenuation is usually evidenced by the depletion of dissolved oxygen, nitrate, Fe^{3+} and sulfate, with an increase of alkalinity, Fe^{2+} and methane in the contaminant plume.

The results and interpretation of the MNA parameters (dissolved oxygen, nitrate, sulfate, ferrous iron, alkalinity and BTX proportions) are presented in Appendix J. The parameters of natural attenuation processes measured for this report are dissolved oxygen, nitrate, sulfate, ferrous iron and alkalinity. Many of these parameters are plotted against gasoline-range petroleum hydrocarbons (TPH-G) and the approximate distance of the monitoring well from the NAPL plume boundary, both of which are measures of the degree of contamination in each well. These plots were constructed in order to depict varying levels of biodegradation across the dissolved plume and into uncontaminated groundwater. In addition, the breakdown of BTEX compounds and changes in their proportions were also used to determine if natural attenuation is occurring through time via biodegradation and volatilization, using ternary BTX diagrams in Appendix J.

Analytical groundwater results from Chelan generally show decreasing concentrations of dissolved oxygen, nitrate and sulfate, as well as increasing concentrations of ferrous iron and alkalinity, in correlation to a decreasing distance to the approximate boundary of the NAPL plume. Additional groundwater results also generally show increasing nitrate concentrations and decreasing dissolved oxygen and sulfate concentrations, in correlation to increasing gasoline-range hydrocarbon concentrations. Ternary BTX diagrams show increasing relative proportions of benzene compared to total xylenes and toluene, and their changes through time in the NAPL plume. All of the groundwater analytical results and plotted relationships mentioned above suggest that natural attenuation due to biodegradation processes is presently occurring in the dissolved-phase plume extending at least up to the margin of the NAPL plume.

4.4.4 Hydrogeological Contaminant Modeling to Deep Aquifer

At the request of WDOE, contaminant modeling was conducted to determine the likelihood that contaminants in the perched aquifer or in the vadose zone could reach the deep water-table aquifer. In order to fully assess the probability of impact to the deep aquifer, two different contaminant transport models were applied. These models address two aspects of site conditions: contaminated groundwater migrating with petroleum compounds from the perched aquifer to the deep aquifer; and leaching of unsaturated contaminated soils in the vadose zone south of the perched aquifer.

As a result of the presence or absence of the perched aquifer in different areas of the site, the purpose of this evaluation was twofold: (1) To predict the estimated travel time for petroleum hydrocarbons within the perched aquifer to migrate through the underlying till confining layer that separates the two aquifers; this will be accomplished by modeling the dissolved phase hydrocarbon aromatic (BTEX) compounds in groundwater. (2) In the vadose zone lateral to (south of) the perched aquifer, to evaluate the potential leachability threat to groundwater of the deeper aquifer posed by BTEX compounds in soils.

To handle the first objective above, principles of the Vadose Zone Contaminant Migration Multi-Layered Model (VZCOMML) program were used (Rucker, 2002), and the model was modified for site-specific groundwater conditions. To handle the second objective, the Seasonal Soil Compartment Model (SESOIL) program was used (Bonazountas and Wagner, 1984; GSC, 1986). Details of the methodology, input parameters, assumptions and results of the models are presented in Appendix I.

The first model (VZCOMML) pertains to groundwater contaminant transport from the perched aquifer to the deep aquifer. This model evaluates the time necessary for these chemicals to reach the deep water-table aquifer. This evaluation only considers the time for water-borne contaminants to migrate downward through the one or two layers of till. It does not include time required to migrate through any portion of unit B to the contact with till, nor the time to travel through the sand or silty sand layers within unit C before reaching the deeper water table. This evaluation considers only physical attenuation of contaminants, not biodegradation. Thus, the model is conservatively biased, meaning that chemicals in the environment may actually be removed from the subsurface through biodegradation and attenuation prior to the predicted time required to reach the deeper water-table aquifer.

This modeling was based on the worst-case scenario, where the BTEX compounds are at their solubility limits in groundwater. Results of this modeling showed that it will take benzene approximately 117 years, toluene approximately 162 years, ethylbenzene approximately 196 years, and xylenes approximately 195 years to migrate in groundwater through the till confining layers before reaching the sands of the deep aquifer. Based on the model output, it is highly unlikely that BTEX originating in the perched aquifer will reach the deep aquifer at concentrations exceeding the MTCA Method A cleanup levels. For example, the modeled concentration of benzene after 117 years is $4x10^{-12}$ µg/L.

The second model (SESOIL) evaluates the expected fate and transport of contaminants in soil located in areas of the site where the perched aquifer is not present but where soil contamination has been identified. The purpose of this contaminant migration assessment was to evaluate the potential leachability threat to deeper groundwater posed by BTEX compounds in vadose zone (unsaturated) soils.

This model evaluated contaminant concentrations at the interface with the groundwater aquifer, utilizing biodegradation factors. The predicted concentrations include the maximum leachate concentration (with no dilution in groundwater) and the maximum groundwater concentration. The modeling is applied for a maximum 1,000-year period to determine if a chemical will exceed specified criteria, such as the MTCA Method A cleanup levels. The model results showed that the maximum leachate concentrations for BTEX compounds ranged from $1x10^{-6}$ to $1x10^{-9}$ µg/L. The maximum groundwater concentrations ranged from $3x10^{-8}$ to $3x10^{-11}$ µg/L.

In conclusion, the results of the two models demonstrate that the deep aquifer at the site is protected from impact by more shallow contamination. The glacial till layers above the deep water table serve to protect the deep aquifer from hydrocarbon contaminants. BTEX compounds in groundwater will take a significant amount of time to migrate from the perched to the deep aquifer, and then concentrations would be extremely low. Similarly, based on the estimated time and calculations of leachability from the vadose zone, BTEX compounds are not capable of reaching the deeper aquifer and impacting it at measurable concentrations.

4.5 Soil Vapor and Indoor Air Modeling

4.5.1 Soil Vapor Results

Figure 1-4 identifies the locations of vapor monitoring wells and the types of basements in adjacent buildings. The list of soil vapor samples collected and analyses performed for the RI are presented in Table 2-2. A summary of pre-RI sample results collected from groundwater monitoring wells and vapor probes at the station is presented in Appendix D. The results of all soil vapor samples collected during the RI are summarized in Table 4-4. The full analytical laboratory reports are included in Appendix E.

The results shown in Table 4-4 reveal that the deeper vapor well samples collected near the upper horizon of significant hydrocarbon contamination in soil were extremely high in concentrations for all petroleum constituents, as expected. The same constituents were identified in the shallow vapor samples but at significantly reduced concentrations. This is due to attenuation as the vapors rise vertically through the soil column, largely originating from the

NAPL plume at depth. Note that results of soil samples collected at the shallow vapor well screen depths all showed either non-detects or were significantly below the MTCA Method A cleanup levels (Table 4-1).

There are no MTCA cleanup levels (of any method) for soil vapor, and thus no cleanup levels are listed on Table 4-4 for comparative purposes. However, there are the Method B cleanup levels for indoor or ambient outdoor air. Indoor air is a difficult media to sample and obtain meaningful results, because a number of common indoor and outdoor activities and substances emit volatile chemicals such as benzene at relatively high concentrations, which will mask any indoor vapors that are originating from petroleum in the subsurface. As a result, shallow soil vapor samples were collected from vapor well locations adjacent to buildings of concern (as close as reasonable to those with basements), at a depth just below the basement floor. If the soil vapor analytical results for the basement-depth samples in Table 4-4 were directly compared to the Method B indoor air cleanup levels, the only results that would be greater than these cleanup levels would be the benzene values (units are in parts per billion by volume, ppbv). The Method B cleanup level for benzene is 0.32 micrograms per cubic meter ($\mu g/m^3$), which converts to approximately 0.097 ppbv. This does not imply that the soil vapor is actually out of compliance with MTCA, but it is merely stated for comparative purposes to reveal that benzene is the constituent of concern for indoor air.

4.5.2 Modeling of Vapor Intrusion to Indoor Air

In order to estimate the equivalent indoor air concentrations and resultant excess risk from the analytical data for the basement-depth soil vapor samples (Table 4-4), an indoor air vapor intrusion model was performed, using the shallow vapor well sample results. Accordance to WDOE (Zieber et al., 2003), a standard, accepted vapor pathway model is that of Johnson and Ettinger (1991). This model has also been adapted and updated by the U.S. EPA (U.S. EPA, 2003). The model uses a large number of input parameters, including sampling depth, soil types and depths, soil vapor concentration, building and basement dimensions, exposure information, and air exchange rate. The model outputs the calculated carcinogenic excess risk (benzene) or noncarcinogenic risk (toluene, ethylbenzene, xylenes) for exposure to human receptors by indoor air. The indoor air concentrations that the model determines are listed as an inter-calculation value, but these are not as useful as the resultant excess risk numbers for the Chelan site, as described below.

A number of factors affect the usefulness and accuracy of this vapor intrusion model for the Chelan site. The model is generally intended for residential and not commercial buildings. Two of the most important factors involve the thickness or presence of a concrete foundation or slab below the building, and the indoor air exchange rate with the outside. The impact of these and other parameters are evaluated and discussed in detail in Appendix F, which includes specific model input, inter-calculation results, and output sheets for the benzene model runs.

For each well and its adjacent building that was modeled, two exposure scenarios were applied (Table 4-5). These are considered to be the reasonable maximum exposure (RME) conditions for an occupational worker scenario. The default conditions built into the Method B risk-based cleanup levels are for a residential scenario, with an exposure frequency of 1.0 (exposure to a single individual for 100 percent of the year, over a number of years). Because this is not an

RME for the commercial/retail activities at the Chelan site, different exposure frequencies were selected for actual or likely site conditions, but erring on the conservative (more safe) side of exposure frequencies that are greater than expected, for added safety. MTCA allows for modifications to the exposure duration, exposure time, and exposure frequency, including that for air exposure, when use of alternative values would be more appropriate for the conditions present at the site [WAC 173-340-708(10)]. Because the Method B cleanup levels for indoor air are based on a residential exposure frequency of 1.0, comparing these levels to the calculated indoor air concentration from the model is not meaningful at this site. Instead, the MTCA acceptable risk standards are more pertinent as a measure of compliance, and these are listed at the bottom of Table 4-5. The various exposure parameters for each location are explained in Appendix F.

As shown in Table 4-5, the two different exposure scenarios applied to the site are as follows. (1) The basement and main occupied first floor of the building, using the approximate combined dimensions of the basement plus first floor, the expected air exchange rate of these two floors together, and the RME exposure frequency that any single worker would likely experience in the building (specific business hours plus an added margin of time for safety). (2) The basement only, using the approximate dimensions of the basement, the expected air exchange rate of the basement, and the RME exposure frequency that any single worker would likely experience in this basement area (plus an added margin of time for safety). The basement was considered as its own entity, instead of the larger building, in order to more conservatively model occupant risk. The calculated excess risk would be lower if the air volume were modeled as being dispersed throughout the entire building.

Results in Table 4-5 reveal that carcinogenic excess risk from benzene exposure in all locations and scenarios is lower than MTCA's single-chemical acceptable risk level of 1E-06 ($1x10^{-6}$ or one in 1,000,000), or the combined-chemical acceptable risk level of 1E-05 ($1x10^{-5}$ or one in 100,000). Similarly, the noncarcinogenic hazard quotient in all locations and scenarios is lower than MTCA's single-chemical acceptable level of 1 (one). Also the noncarcinogenic combined-chemical hazard index (HI) is below MTCA's acceptable level of 1 (one). Even for a worse-case example (for example, a single occupant visits the basement for the exposure frequency listed, and also visits the first floor for the exposure frequency listed, over the duration of decades), this does not pose an unacceptable risk. These results suggest that exposure to petroleum chemicals originating in the subsurface are not adversely impacting occupational workers breathing indoor air within these buildings, even under very conservative modeling conditions. Considering the many conservative (overly safe) input parameters and calculations used in the model, it is very likely that the model overstates the risk to these occupants.

It should be noted that business occupants have not made mention of any petroleum-type odors in basements or buildings along the Woodin Avenue corridor. Several business owners pointed out that there are other odors, such as mold/musty or carpet odors, but not any fuel-type odors.

4.6 Conceptual Site Model

In order to more fully understand the relationships between contaminants, affected environmental media, indoor media, and human receptors, a conceptual site model was developed. MTCA defines a *conceptual site model* as "a conceptual understanding of a site that

identifies potential or suspected sources of hazardous substances, types and concentrations of hazardous substances, potentially contaminated media, and actual and potential exposure pathways and receptors." These components will be discussed in the sections below, as an introduction to presenting the site model.

4.6.1 Potential Sources of Petroleum Contamination

One source of some of the petroleum contamination along the Woodin Avenue corridor is the Chevron station. The station soil and groundwater are contaminated, more so in the past than presently, and this contamination continues off-station at least toward the southwest. A number of factors suggest that other sources are involved with the large zone of petroleum contamination along the Woodin corridor, and these sources may actually contribute a significant percentage of NAPL to the overall gasoline plume (Figure 4-7).

At the western end of the site, diesel-rich NAPL is present in well MW-22, and diesel-range soil contamination is present at well MW-27. The uppermost soil contamination in this area is too high in elevation to have originated from the Chevron station. This material likely originated at a localized source, perhaps in part from heating oil, which was widely used in the downtown sector, and some USTs are still in place today and possibly still in use. The common use of heating fuel may explain some of the diesel-range detections in groundwater and soil throughout the site. Another potential source for the diesel-rich NAPL in well MW-22 is the adjacent location of the former Higgins Garage and Motor Inn, located at 125 East Woodin Avenue, or a former Pontiac dealership and garage facility located to the northwest on Johnson Avenue (see Section 1.2.1 and Appendix A).

The uppermost soil contamination in the area of wells MW-21 and MW-36 also is too high in elevation to have originated from the Chevron station, and this uppermost soil elevation slopes downward toward the south, to wells MW-24 and MW-32 and also to wells MW-26 and MW-35. Furthermore, the NAPL in wells MW-36, MW-25, and MW-16 has been the thickest encountered at the site, exceeding 13 feet in well MW-36. This is much thicker than any NAPL seen in wells closer to the station. Soil contamination in this western area of the site also extends over a great vertical distance. This information together suggests that an additional gasoline source exists in the vicinity of well MW-36 or well MW-21. Furthermore, because wells MW-21 and MW-19 contain groundwater with dissolved gasoline-range hydrocarbons and unusually high benzene concentrations, this suggests that a source of gasoline may be present in the general vicinity of well MW-21. The groundwater flow direction near wells MW-21 and MW-36 is generally southward (Figure 4-7). Therefore, this strongly implies that the high-lead gasoline found in the vicinity of wells MW-36 and MW-25 and southward originated at the former Chelan Motor/Ford Motor Company garage with fuel pumps, located at 141 East Woodin Avenue (Figure 4-7). The fuel dispensers were located just south of the building near the sidewalk close to well MW-21 and also under the southern part of the building overhang (now under the building itself; see Appendix A). Assuming the tanks were located close to the pumps, the tanks may have never been removed because the same building is still in place today.

The uppermost soil contamination at well MW-18 is also too high in elevation to have originated at the Chevron station. The NAPL found in well MW-18 is also highly weathered, more so than NAPL at the Chevron station. The dissolved petroleum constituents in groundwater at this well

(prior to appearance of NAPL) are similar in nature to that at wells MW-17 and MW-28. Based on the groundwater flow pattern, the upgradient direction is from the east and northeast. Some of this contaminated groundwater could have originated at the three former gasoline service stations located at 221, 229, and/or 301 East Woodin Avenue. Based on the groundwater flow pattern, some of the gasoline NAPL in wells MW-12, MW-15, and possibly well MW-16 could have originated at one of these three service stations, because these wells are also located directly downgradient of these stations. It is easier to explain the NAPL originating from one of these three upgradient stations on the north side of Woodin Avenue than the Chevron station.

A number of other local sources may have contributed to contamination in the Woodin Avenue corridor. For example, some of the gasoline- and diesel-range contamination in soil at wells MW-24, MW-26, MW-34, and MW-35 may have originated from the Chelan Transfer Company and auto repair facility that for many years occupied the building located at 114-122 South Emerson Street. Heating oil tanks may have also been a source there and throughout the corridor, contributing to the diesel-range hydrocarbon contamination.

4.6.2 Current and Potential Land Uses

The site has been used as a commercial/retail district for more than a century. This includes retail stores, banks, a museum, a tavern, an Eagle's lodge, other miscellaneous businesses, parking lots and streets. Surrounding the site, outside the area of contamination, is a mix of commercial/retail areas, restaurants, city facilities, parking lots, hotel properties, and a park. Some residences are located southeast of the station across Sanders Street. Hotels exist to the west of Columbia Street and to the south of Wapato Avenue, south of well MW-31. These residences and hotels are located outside the area of contamination (see Figures 1-1 and 4-6). Two small apartments are housed in the second floor of 201 East Woodin Avenue on the northeast corner of Emerson and Woodin; this is situated above the dissolved groundwater plume, but outside the NAPL plume outline. A small grassy park along the lakeshore is located to the southwest of wells MW-31, MW-20, and boring B-20A. Because the site (the Woodin Avenue corridor) is along the main downtown street of Chelan, it is highly unlikely that the area would be rezoned and redeveloped as a residential area. Therefore, the future land use for this site is expected to continue as commercial/retail and related activities. The site is almost entirely paved or covered by buildings.

4.6.3 Exposure Pathways and Potential Receptors

The core of the site conceptual model is represented by a flow-diagram depiction of the site that relates contaminants to site elements that may be impacted by these substances (Figure 4-8). This figure shows that potentially contaminated media at Chelan include soil, perched groundwater, soil vapor, and indoor air. The two shaded blocks on the figure reveal that currently contaminated media are limited to relatively shallow soil (lithologic units A and B) and groundwater in the shallow perched aquifer. In Chapter 3, it was shown that groundwater (and thus contaminants) from the shallow perched groundwater are precluded from reaching the water of Lake Chelan. It was also shown in Section 4.4.4 that perched groundwater or vadose zone contaminants are highly unlikely to reach the deep aquifer.

MTCA [WAC 173-340-200] defines an *exposure pathway* as: "the path a hazardous substance takes or could take from a source to an exposed organism. An exposure pathway describes the mechanism by which an individual or population is exposed or has the potential to be exposed to hazardous substances at or originating from a site." In Figure 4-8, three general types of exposure pathways or their components are recognized. *Primary* exposure pathways are those routes that are known to be currently transporting petroleum contaminants to or within a certain medium (such as soil contamination to soil vapor). *Secondary* exposure pathways are those routes that: (a) have transported contaminants in the past, but may not be currently (such as releases from USTs); or (b) may transport contaminants in the future, but do not currently (such as groundwater transport to the deep aquifer). *Precluded* exposure pathways are those that are not possible at any time, based on physical evidence, and are therefore considered closed pathways (groundwater discharge to surface water).

Petroleum constituents have been detected in soil, groundwater, and soil vapor samples collected at the site. Therefore, soil, groundwater (with NAPL), and soil vapor are contaminated media, but may also be considered secondary contaminant sources. The *potential* exposure pathways associated with each media/source are discussed below, along with the rationale for excluding or including that pathway.

Because soil contamination is limited virtually throughout the site to depths of 15 feet bgs or greater, and the site is entirely paved or covered by buildings, very few exposure pathways exist to any receptors. These conditions eliminate the reasonable potential for dermal contact, ingestion, and inhalation of particulates by workers or residents.

Shallow and deep groundwater at or near the site is not currently used as a source of water for any purpose by any known individuals. The perched aquifer has very low yield (approximately 0.1 gpm) and is highly unlikely to ever be used as a source of water (because the lake is an abundant economical source), and therefore no realistic potential exposure pathways exist to any receptors (see below). These conditions exclude the reasonable potential for human ingestion, dermal contact, or inhalation of dissolved volatile constituents by workers or residents. Further, groundwater discharge to surface water is not considered to be a potential exposure pathway because it is precluded based on physical site data.

Soil vapors with petroleum constituents have been measured in significant quantities at depth (more than 15 feet bgs). These vapors may move upward and enter structures, thereby exposing workers and residents via inhalation. Modeling has shown that this may be occurring, but at low indoor concentrations that do not pose a risk concern. The transport mechanism and pathways associated with this media and others are further explained below.

Figure 4-8 depicts that the Chevron station and other potential sources have released petroleum hydrocarbons to the soil and perched groundwater. Contaminated soil is virtually limited to greater than 15 feet in depth, and the site is entirely paved or covered with buildings. This contamination then moves downgradient through the perched zone, whether by lateral and downward transport to the perched water table or by lateral transport within the perched aquifer. Soil vapors within this perched zone originate in large part from NAPL and emanate upward through the soil column and encounter building foundations. Modeling shows that these vapors

likely enter basements and buildings, though at very low concentrations that do not pose a risk to occupants.

Groundwater in the shallow aquifer within unit B migrates downward over fine-grained layers or lenses, and then flows toward the southwest at the perched water table, where it is perched on top of the upper till within unit C. At this point, the contaminants likely are greatly retarded in their movement. Hydrogeological modeling shows that petroleum contaminants appear to be unable to migrate to the deep aquifer prior to degrading. Groundwater within the deep water-table aquifer, downgradient from the perched plume, has been sampled in three wells and is uncontaminated. There are no known water wells or groundwater users of either aquifer, and the city and irrigation districts instead utilize the abundant water of Lake Chelan. The shallow perched aquifer not only is unused, but is a very fine-grained aquifer that yields less than 0.5 gpm to wells on a sustainable basis, which is the MTCA criterion for definition of potability [WAC 173-340-720(2)]. Being perched and localized, the aquifer also has significant vertical fluctuations in water level, and is unsuitable for domestic use. Consequently the only potential receptors of contaminants at the entire site are occupants of buildings above the NAPL plume. Based on vapor intrusion modeling, the building occupants currently experience no significant risk (much less than $1x10^{-6}$ excess cancer risk for benzene, and much less than the HI of 1 for noncarcinogens).

4.7 Cleanup Levels

Under MTCA [WAC 173-340-200], a *cleanup level* means: "the concentration of a hazardous substance in soil, water, air, or sediment that is determined to be protective of human health and the environment under specified exposure conditions." Cleanup levels, in combination with points of compliance, typically define the area or volume of soil, water, air, or sediment at a site that must be cleaned up. MTCA further specifies that the first step in determining cleanup levels is to identify the potentially contaminated media, the current and potential pathways of exposure, the current and potential receptors, and the current and potential land and resource uses. The potentially contaminated media are discussed in Sections 4.3, 4.4, and 4.5. The current and potential pathways of exposure are discussed in Section 4.6.3 and summarized below. The potential land and resource uses are discussed in Section 4.6.2. The current potential receptors and development of the site-specific cleanup levels are presented below.

4.7.1 Groundwater

A summary of the potential groundwater exposure pathways at the site is presented in the following table. A more detailed discussion of the exposure pathways is presented in Section 4.6.3.

Potential Groundwater Exposure Pathways	
Potential Groundwater Exposure Pathways	***Applicability***
Ingestion/Household Contact	**Applicable as determined by WDOE.** Although the shallow perched aquifer is not a likely source of drinking water due to low yield, and the deep water-table aquifer is not currently used as a source of water by any known individuals or municipalities, WDOE has determined that groundwater within these aquifers must meet the drinking water criteria. Lake Chelan is currently used as the City of Chelan's drinking water source and the municipal irrigation source. Due to proximity to the lake, construction of a drinking water well into the deep water-table aquifer is not necessary or economical.
Incidental Exposure Resulting from Site Development or Utility Construction	**Precluded.** Because groundwater is not encountered above a depth of 20 to 25 feet bgs, groundwater would not be encountered during routine site development or utility construction activities.
Groundwater to Surface Water/Sediment	**Secondary**. The shallow perched aquifer does not extend to Lake Chelan; therefore, the lake is not in hydraulic connection with the shallow perched aquifer. The deep water-table aquifer is below the bottom elevation of Lake Chelan; therefore, the deep aquifer does not recharge the lake. Groundwater in the deep aquifer flows toward the southeast and is assumed to discharge to the Columbia River approximately 3 miles downgradient. Groundwater contamination has not been detected in the deep water-table aquifer despite the fact that the contaminant releases occurred more than 18 years ago. No new releases have been identified at the site since at least 1987.
Groundwater/NAPL to Vapor (Indoor Air)	**Primary.** The presence of contamination and NAPL in the shallow perched aquifer is likely contributing to the soil vapor measured in the subsurface soil. The potential risks from vapors in the basements and basement/first floor combinations were modeled using measured soil vapors at the site. The results of the model indicated that current conditions result in a HI <1 and an excess cancer risk of less than $1x10^{-6}$.

One of the four potential exposure pathways (Incidental Exposure due to Construction/ Maintenance work) presented above is precluded because the pathways are not possible based on physical evidence. Because groundwater is located at a depth of 20 to 25 feet bgs, groundwater would not be encountered during routine site development or utility construction.

Three of the potential pathways (Groundwater to Surface Water/Sediment, Groundwater/NAPL to Vapor, and Ingestion/Household Contact) although possible, pose no risk to human health resulting from contaminant releases at the site.

- The groundwater to surface water/sediment pathway is considered secondary because no contaminant transport is currently occurring via this pathway although potential contaminant transport could possibly occur in the future. Because contaminant transport from the shallow perched aquifer to the deep water-table aquifer would need to occur

before it would be possible for contaminants to reach a surface water discharge point 3 miles downgradient, no human health risk has been associated with this pathway.

- One primary pathway of concern is groundwater/NAPL to soil vapor. Potential receptors for the contaminants in soil vapor include occupants in the commercial buildings. A quantitative evaluation of the potential risk to building occupants was performed by modeling the equivalent indoor concentrations and resultant excess risk from the analytical results obtained for soil vapor samples collected at sub-basement level depths. All of the buildings within the contaminant plume area are commercial businesses. Not all of the buildings have basements; but those that do, use the basement level for storage, for store offices, for lunch break areas, and other part-time activities. Therefore, two exposure scenarios are being considered as the RME conditions for an occupational scenario modeled: occasional occupation of basement areas, and occupation of the first-floor retail space during business hours (assuming ventilation connection to the basement). Additional detail on the modeling is presented in Section 4.5.2 and Appendix F. The quantitative model indicates that current conditions result in a HI <1 and an excess cancer risk of less than $1x10^{-6}$ for both RMEs in all of the buildings within the plume. Therefore, the determination of risk-based groundwater cleanup levels for the protection of human health has been performed and has shown that current groundwater conditions are protective of human health.

- Although contaminants in the shallow perched aquifer are at concentrations which could pose a risk to human health if ingested, there is no current or potential future exposure pathway to the groundwater in the shallow perched aquifer. Currently, there are no water wells installed in the shallow perched aquifer within or downgradient of the contaminant plume. The shallow perched aquifer yields water at approximately 0.1 gpm to monitoring wells on a sustainable basis; because this is less than 0.5 gpm, it would not normally meet the definition of a potable aquifer as specified in MTCA [WAC 173-340-720(2)]. However, this testing was performed on a monitoring well and not on a well installed in accordance with normal domestic water well construction practices. Thus, WDOE does not consider the perched aquifer to be nonpotable. On the other hand, due to the very low yield and lateral discontinuity of this aquifer, installation of drinking water or production wells would not be desirable or economically feasible.

- There is no current or future human health risk due to ingestion in the deep water-table aquifer. Contaminants have not been detected in this deep aquifer (although some spurious nonrepeatable results are reported) and currently there are no known water wells or uses of this aquifer. Although the deep aquifer may be recharged slowly from the shallow perched aquifer, modeling of contaminant transport from the shallow to deep aquifer (Appendix I) demonstrates that there is minimal risk that contaminants will negatively impact the deep aquifer over time. Due to the presence of an effective aquitard between the two aquifers, transport of contaminants from the shallow perched aquifer would require such a significant time period that the concentrations are expected to attenuate to below the MTCA Method A cleanup levels before reaching the deep aquifer.

Groundwater cleanup levels are to be based on estimates of the highest beneficial use and the RME expected to occur under both current and potential future site use. Under MTCA 173-340-720, drinking water is the beneficial use requiring the highest groundwater quality. Therefore, exposure to contaminants through ingestion and other domestic uses represents the RME for all sites unless the groundwater at the site can be demonstrated to be nonpotable. Despite the low yield of the shallow perched aquifer and that there is no current or future human health risk associated with this groundwater, WDOE has determined that the highest beneficial use for this aquifer is drinking water. The MTCA Method A cleanup levels are thus applicable for both the shallow and deep aquifers.

In addition to risk-based cleanup levels, MTCA requires that for petroleum hydrocarbons the cleanup levels comply with the limitation on NAPL. Specifically, the cleanup level may not exceed a concentration that would result in NAPL being present in or on the groundwater [WAC 173-340-720(7)]. MTCA further allows that "physical observations of groundwater at or above the cleanup level, such as the lack of a film, sheen, or discoloration of the groundwater or lack of sludge or emulsion in the groundwater may be used to determine compliance with this requirement." Therefore, the groundwater cleanup level for this site is elimination of NAPL until visual confirmation of removal is achieved, in addition to eventual the Method A cleanup levels in groundwater.

In addition to evaluation of human health risk, MTCA (WAC 173-340-7490) requires that one of the following actions be taken following the release of hazardous substances to the soil at a site to determine the potential impacts to terrestrial organisms at the site:

- Documentation of an exclusion from any further terrestrial ecological evaluation using the criteria in WAC 173-340-7491.
- Completion of a simplified terrestrial ecological evaluation as specified in WAC 173-340-7492.
- Completion of a site-specific terrestrial ecological evaluation as specified in WAC 173-340-7493.

A site may be excluded from the requirement for a terrestrial ecological evaluation if <u>any</u> of the following criteria are met at the site.

- All soil contaminated with hazardous substances is, or will be, located below the point of compliance established under WAC 173-340-7490(4).
- All soil contaminated with hazardous substances is, or will be, covered by buildings, paved roads, pavement, or other physical barriers that will prevent plants or wildlife from being exposed to the soil contamination.
- There is less than 0.25 acre of contiguous undeveloped land on or within 500 feet of any area of the site contaminated with chlorinated dioxins or furans, polychlorinated biphenyls (PCB) mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, heptachlor epoxide, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, pentachlorobenzene.

- There is less than 1.5 acres of contiguous undeveloped land on the site or within 500 feet of any area of the site and the contamination at the site does not include any of the contaminants listed in the preceding bullet.

The Chelan site meets the terrestrial ecological evaluation criteria because there is less than 1.5 contiguous acres of undeveloped land on the site or within 500 feet of the site and the contamination is limited to petroleum and petroleum byproducts. MTCA defines "contiguous undeveloped land" as an area of land that is not divided into smaller areas by highways, extensive paving or structures that are likely to reduce the potential use of the overall area by wildlife.

4.7.2 Soil

Under MTCA, residential land use is generally considered the site use requiring the most protective cleanup levels and that exposure to hazardous substances under residential land use conditions represents the RME scenario. Unless a site qualifies for use of an industrial soil cleanup level under WAC 173-340-745, soil cleanup levels shall use residential land use exposure scenario. A cleanup action must address all areas where the concentration of hazardous substances in the soil exceeds cleanup levels at the relevant point of compliance.

An evaluation of the appropriate point of compliance for soil cleanup levels for the Chelan site is presented in the following table.

Determination of Point of Compliance for Soil Cleanup Levels			
Potential Exposure Pathway	***MTCA Defined Point of Compliance***	***Applicability to Chelan Site***	***Site-Specific Point of Compliance***
Protection of Groundwater	Throughout the site	Applicable. WDOE has determined that the highest beneficial use of shallow and deep aquifers is drinking water. The deep water-table aquifer has not been impacted despite the historic nature of the release.	Throughout the site

Determination of Point of Compliance for Soil Cleanup Levels			
Potential Exposure Pathway	***MTCA Defined Point of Compliance***	***Applicability to Chelan Site***	***Site-Specific Point of Compliance***
Soil to Vapors (Indoor Air)	Throughout the site from the ground surface to the uppermost groundwater saturated zone	Applicable. The potential risks from vapors in the basements and basement/first floor combinations were modeled using measured soil vapors at the site. The results of the model indicated that current conditions result in a HI<1 and an excess cancer risk of less than $1x10^{-6}$.	Throughout the site from the ground surface to the uppermost groundwater saturated zone
Human Direct Contact	Throughout the site from ground surface to 15 feet bgs	Applicable. Although the site is completely paved, subsurface soil could be potentially disturbed during utility and paving activities or future demolition and building activities. Because the site comprises city rights-of-way and private property, it is not feasible to implement an institutional control to prevent subsurface soil disturbance.	Up to 15 feet bgs
Ecological	Standard point of compliance to 15 feet bgs; conditional point of compliance to 6 feet bgs with institutional controls to prevent disturbance of subsurface soils		Up to 15 feet bgs

Based on the results presented above, the point of compliance for the Chelan site is based on the protection of groundwater, potential for direct contact by both humans and ecological receptors, and potential exposures of vapors to humans; therefore, the point of compliance for soil cleanup levels is throughout the site and within the commercial buildings (soil to indoor air pathway).

MTCA provides three approaches for establishing soil cleanup levels: Method A, Method B, and Method C.

- Method A may be used on sites involving relatively few hazardous substances or where cleanup action may be routine. Under Method A, cleanup levels are determined by the most stringent criteria specified under state and federal laws and Tables 720-1, 740-1, and 745-1 of MTCA.

- Method B is the universal method for determining cleanup levels at any site. For sites contaminated with petroleum hydrocarbons, Method B cleanup levels are determined by using the fractionated analytical approach for petroleum. This approach involves testing of the samples to determine the product composition. Cleanup levels must consider the

measured or predicted ability of the fractions to migrate from one medium to other media. When multiple exposure pathways are identified for a single media, the most stringent cleanup level is selected.

- Method C is used in situations such as industrial sites where compliance with cleanup levels developed under Method A or B may be impossible to achieve or cause greater environmental harm. Site cleanups under Method C will require restrictions placed on the property to ensure future protection of human health and the environment.

Because the potential contaminants of concern at the Chelan site are limited to petroleum products and petroleum additives, it is appropriate to use the Method A soil cleanup levels. Table 4-1 presents a comparison of analytical results obtained in soil at all depths to the Method A cleanup levels.

Three locations with soil samples exceeding the Method A cleanup levels were detected within or near the point of compliance for direct contact by humans and ecological receptors (i.e., less than 15 feet bgs).

- One of the Method A cleanup level exceedances identified was benzene detected at 12.5 to 14 feet bgs in boring MW-5. Benzene was detected in this sample at a concentration of 0.055 mg/kg, just slightly above the Method A cleanup level of 0.03 mg/kg. This sample was collected in 1992 and soil vapor extraction, air sparging, and biodegradation since that time are likely to have beneficially impacted the concentration of benzene in the soil.

- At two locations (B-21 and B-27) detections exceeding the cleanup levels were identified in the 15- to 16.5-foot bgs samples; the 10- to 11.5-foot bgs samples were not analyzed because no indications of contamination were found (no odor or elevated PID readings). Gasoline-range hydrocarbons, BTEX, and naphthalene were detected in both locations at concentrations above the respective Method A cleanup levels. Diesel-range hydrocarbons exceeding the Method A cleanup level were also detected at boring B-27.

Within the point of compliance for protection of groundwater (throughout the site regardless of depth), soil located in the shallow perched aquifer exceeding the MTCA Method A cleanup levels is much more widespread. As identified in Table 4-1, soil samples exceeding the MTCA Method A cleanup levels were detected at numerous locations at depths greater than 15 feet bgs. Soil exceeding the MTCA Method A cleanup levels is also clearly expected within the NAPL plume. Despite the number of exceedances within the shallow perched aquifer, it should be noted that no exceedances of the MTCA Method A cleanup levels have been detected in the deep water-table aquifer.

Additionally, site-specific soil cleanup levels need to consider the potential risk to humans resulting from soil vapor. Potential receptors for the contaminants in soil vapor include occupants in the commercial buildings. As discussed under the groundwater to soil vapor pathway, a quantitative evaluation of the potential risk to building occupants was performed by calculating the equivalent indoor concentrations and resultant risks from the analytical results obtained for soil vapor samples collected at sub-basement level depths. The quantitative model

indicates that current conditions result in a HI <1 and an excess cancer risk of less than $1x10^{-6}$ for the RME for all occupants of the buildings located within the plume. Therefore, the MTCA Method A soil cleanup levels are protective for this site.

5.0 EXTENT OF ENVIRONMENTAL MEDIA REQUIRING CLEANUP ACTION

Under MTCA, the purpose of a feasibility study is to develop and evaluate cleanup action alternatives to enable a cleanup action to be selected for the site**.** If concentrations of hazardous substances do not exceed the cleanup level at the standard point of compliance, then no further action is necessary [WAC 173-340-350(8)]. For media with contaminants exceeding cleanup levels, specifying the exposure route rather than just the acceptable contaminant levels is important because protectiveness can be achieved by preventing exposures (e.g., by containment or institutional controls) as well as by cleanup. Although MTCA strongly reflects a preference for permanent remedial actions to the maximum extent practicable, less permanent solutions may be accepted if controls are put into place to ensure that the solution is protective of human and ecological receptors.

5.1 Groundwater

5.1.1 Shallow Perched Aquifer

Although contaminants in the shallow perched aquifer are at concentrations which could pose a risk to human health if ingested, there is no current or potential future exposure pathway to the groundwater in the shallow perched aquifer. Despite the low yield of the shallow perched aquifer and that there is no current or future human health risk associated with this groundwater, WDOE has determined that the highest beneficial use for this aquifer is drinking water. The MTCA Method A cleanup levels are thus applicable for the shallow aquifer; thus, the selected remedial alternative will need to address the plume depicted in Figure 4-6.

Figure 4-6 depicts the approximate outlines of the known NAPL plumes and the dissolved-phase groundwater plume in the perched aquifer. These outlines are simplified because they imply a single continuous gasoline NAPL plume, apparently from a single source. It is more likely that the gasoline NAPL plume originates from more than one source, and with a more complex outline. The dissolved-phase groundwater plume is drawn as a halo around the north side of the gasoline NAPL plume, which is a simplification. The upgradient extent of this dissolved-phase plume, to the east and northeast, has not been identified.

5.1.2 Deep Aquifer

There is no current or expected future human health risk due to ingestion in the deep water-table aquifer. Contaminants have not been detected in this deep aquifer (although some spurious nonrepeatable results have been reported) and currently there are no known water wells or uses of this aquifer. No remedial alternatives are required for the deep aquifer.

5.2 Soil and Soil Vapor

As stated in Section 4.7.2, site-specific soil cleanup levels need to consider direct contact to humans and ecological receptors, protection of groundwater, and potential risk to humans resulting from soil vapor. The point of compliance and extent of contamination requiring cleanup is discussed separately for each exposure pathway.

As specified in MTCA, the point of compliance for direct contact exposures to humans and terrestrial receptors is defined at 15 feet bgs. Figure 5-1 shows the location of soil sample results exceeding the MTCA Method A levels at the point of compliance for direct contact exposures (i.e., up to a maximum depth of 15 feet bgs). As discussed in Section 4.0, the three locations with the MTCA Method A exceedances at or above 15 feet bgs do not necessarily constitute a contiguous area of contamination. In addition, the presence of buildings between the exceedance locations precludes treatment as a contiguous area. Therefore, the exceedances are best addressed as separate shallow "hot spots" centered around each individual soil sample location.

The point of compliance for protection of groundwater is throughout the site. Soil samples exceeding the MTCA Method A cleanup levels were detected at numerous locations at depths greater than 15 feet. Soil exceeding the MTCA Method A cleanup levels is also clearly expected within the NAPL plume and at least a portion of the dissolved plume. For purposes of this FS, the extent of soil requiring cleanup for protection of groundwater is assumed to be the NAPL and dissolved-phase plume area depicted in Figure 4-6. With the exception of the identified shallow exceedances discussed above, all of the soil is located within the vadose zone or shallow aquifer at depths in excess of 15 feet bgs. Soil within the deep aquifer has not been impacted and does not require cleanup.

Additionally, site-specific soil cleanup levels need to consider the potential risk to humans resulting from soil vapor. Potential receptors for the contaminants in soil vapor include occupants in the commercial buildings; therefore, the point of compliance for vapor pathway is considered the interior of the buildings within the lowest floor occupied. As discussed in Section 4.7.2, the current conditions are protective of vapor exposures at this site. No soil cleanup is required to mitigate the vapor pathway.

5.3 Non-Aqueous Phase Liquid

The MTCA requirement for removal of NAPL from the site is not based on exposure routes. Therefore, the cleanup goal for NAPL is removal until 0.05 foot or less remains in each individual well. The estimated extent of NAPL at the site is presented in Figure 4-6. The thickness of NAPL measured during the RI in the on-site monitoring wells ranges from not present to more than 13 feet. Recent bailing and use of absorbent socks have together reduced NAPL volumes to minimal levels in all wells except wells MW-10, MW-12, and MW-16.

As discussed in Section 4.4.1, the NAPL at the site is floating on the perched water table, spread out into a large smear zone by the fluctuating water table, and locally perched on higher clay-rich wet zones in lithologic unit B. Based on this distribution and the inherent problems of calculating aquifer NAPL thickness from measurements of NAPL present in monitoring wells, a *meaningful* estimate of NAPL volume at Chelan cannot be made. However, an approximate volume estimate was requested by WDOE. According to Brooks and Corey (1966), the thickness of NAPL measured in a well exaggerates the actual thickness in the aquifer, and the exaggeration is influenced by the soil type. For example, given an equivalent volume of NAPL in the aquifer, the thickness measured in a well screened in loamy silt is expected to be significantly greater (perhaps 10 times or more) than for a well screened in sand (Farr et al., 1990). This is due to the "wicking" effect of the NAPL capillary fringe, which significantly elevates the top of the fringe zone in fine-grained soils, thereby allowing a greater NAPL

elevation head that facilitates flow into the well. Therefore, a simplified approach of applying NAPL thickness in wells to the surrounding aquifer may significantly overestimate the volume of NAPL in the aquifer.

In order to make a volume calculation of NAPL in the aquifer, which is considered to be very approximate, the silty lithology of unit B was partly taken into account (see Appendix G). The equation of Brooks and Corey (1966), which factors in the aquifer porosity and residual water saturation for the prevalent soil type, was used. The porosity of the aquifer (approximately 0.5) was based on analytical data from previous sampling. The residual water saturation (approximately 0.4) was estimated based on the silty material in unit B. A representative thickness of NAPL on the groundwater surface was applied to each well (using recent data). These thicknesses were then averaged between all wells in the gasoline NAPL plume, and the overall average thickness was multiplied by the area of the plume (Figure 4-6) to calculate the maximum volume of gasoline NAPL in the aquifer.

As detailed in Appendix G, an estimated total volume of approximately 140,000 gallons of NAPL in the aquifer was calculated. However, as discussed in Section 4.4.1, results using this approach or any existing technique are not recommended or reliable. The full effect of the fine grain size (up to 10 times thickness exaggeration of NAPL) is not fully accounted for in the equation. As a result, the calculated volume should be considered extremely approximate and probably over-estimated, with a corresponding large error. It should be noted that this calculated volume does not take into account what percentage of the NAPL is immobile, and therefore cannot be extracted from the aquifer with current technology. According to the API, the volume of NAPL that can be recovered from an aquifer is substantially less than the volume present in the aquifer (API, 2003). This is primarily due to the fact that as NAPL is partially depleted from the aquifer, water moves into pore spaces previously occupied by NAPL. The remaining NAPL is trapped in discontinuous pockets and the ability of NAPL to travel to extraction points is severely diminished. Other factors influencing NAPL recovery volumes include geologic heterogeneity and physical access limitations.

Because of the inherent inaccuracies associated with estimating both the volume of NAPL present in the aquifer and the volume of NAPL that may be recovered, the estimated volume was not used in cost calculations for this FS. NAPL is currently being removed from the aquifer by monthly bailing and absorbent socks. Field data and observations collected during the NAPL bailing have been used to estimate costs and remediation time frames for this FS. Basing costs on actual data and observations provides a much more accurate assessment than utilizing an estimated value based on an over-simplified formula and undocumented assumptions.

6.0 ALTERNATIVE COMPONENTS

A cleanup action alternative is defined as one or more treatment technology, containment action, removal action, engineered control, institutional control, or other type of remedial action ("cleanup action components") that individually, or in combination, achieves a cleanup action at a site [WAC 173-340-200]. For purposes of this FS, it is convenient to think of a "cleanup action component" as dealing with a specific media/exposure pathway. The media/exposure pathway cleanup action components are then assembled into cleanup action alternatives, which address the site-wide cleanup requirements.

In accordance with MTCA, potential cleanup action components have been screened prior to assembling the components into cleanup action alternatives to reduce the number of alternatives for the final detailed evaluation in this FS. MTCA provides for an initial screening step based on the ability of the component to meet the minimum MTCA requirements and the feasibility of the component. The results of this screening are presented in Section 6.1. A subsequent screening based on MTCA's preference for the use of permanent solutions, reasonable restoration time frames, and consideration of public concerns is presented in Section 6.2.

6.1 Initial Screening of Alternative Components

According to WAC 173-340-350(8), an alternative component may be screened out of further consideration if either of the following conditions applies:

- The component does not meet the minimum requirements in WAC 173-340-360, including components in which costs are clearly disproportionate. More specifically:

    1. The component is not protective of human health and the environment, or
    2. The component does not comply with the cleanup standards, or
    3. The component does not comply with applicable state or federal laws, or
    4. The component does not provide for compliance monitoring.

- The component is not technically feasible.

The initial screenings for soil, NAPL and groundwater cleanup alternative components are presented in Tables 6-1, 6-2, and 6-3 respectively.

6.2 Secondary Screening of Alternative Components

MTCA allows the alternative components to be further screened based on the following criteria [WAC 173-340-360(2)(b)]:

- Use of permanent solutions to the extent practicable
- Provide for reasonable restoration time frames
- Consideration of public concerns

Because only two alternative components (i.e., natural attenuation and soil vapor extraction) were retained from the initial screening performed in Section 6.1 for contaminated soil

throughout the site, additional screening is not required at this time. These two components will be considered further in the following section when the cleanup action alternatives are assembled.

Two alternative components (i.e., soil management plan and off-site treatment) were retained for incidental amounts of soil which may be excavated during potential future renovation, maintenance, or demolition at properties within the site boundaries. Due to the depths and locations of the contaminated soil and the well established nature of the surrounding area, minimal disturbance of contaminated soil is expected. Therefore, these alternative components are retained to be used as required, but are not carried through into the alternatives discussed in Section 7.0.

Two of the alternative components retained by the initial screening for NAPL removal should be screened out because they will not provide a reasonable restoration time frame. NAPL removal by natural attenuation and petroleum selective sorbent socks are passive in nature and individually are expected to result in long time frames before cleanup levels would be met at the site. Although these components are not expected to attain NAPL cleanup levels on their own in a reasonable time frame, they may be useful in combination with other components. For example, once a minimum level of NAPL is attained by more aggressive measures, a petroleum selective sock may be useful in removal of the last thin layer of product. The usefulness of these cleanup action components in combination may be reevaluated in the engineering design phase.

Because the heterogeneity and fine-grained nature of the shallow perched aquifer would severely limit the effectiveness of in-situ remediation technologies for groundwater, MNA is the only remediation technology which met the initial screening requirements for technical feasibility.

The alternative components remaining following the secondary screening are summarized in Table 6-4.

6.3 Alternative Component Options

All of the retained alternative components for the removal of NAPL require installation of extraction wells in the shallow perched aquifer. By definition, recoverable NAPL is defined as the amount of NAPL that will flow from the soil into a well after the residual saturation in soil is exceeded. More specifically, only a small faction of the NAPL present at a site can be recovered because the bulk of the NAPL is tightly held within the soil pores. The NAPL plume at Chelan also does not appear to consist solely of a simple layer of product floating on the water table, but rather appears to be significantly vertically distributed. Based on drilling/sampling information, the NAPL likely is in part floating on the water table, in part spread out into a large smear zone by the fluctuating water table, and in part locally perched on higher clay-rich wet zones in unit B.

Removal of NAPL is dependent on placement of extraction wells and screened intervals in areas where the residual saturation is exceeded and the mobile NAPL can flow into the well. Ideally, the extraction wells would be placed in locations of known thick zones of recoverable NAPL or in a uniform pattern across the site; however there are many barriers to well placement at the site due to traffic flow patterns on the downtown streets, large commercial buildings, limited right-of-way space, and the location of above and below ground utilities. Traditionally, vertical

extraction wells have been used for removal of NAPL; however, angled wells may allow greater access to mobile NAPL potentially located beneath the buildings. Although installation of angled wells may provide access to NAPL beneath existing buildings that would be inaccessible with vertical wells, there are also multiple difficulties associated with this type of well installation:

- Installation of angled wells requires significantly more space at ground surface to accommodate the angle of the well and the drill rig. Because access is limited around buildings due to the proximity of the street, utilities, sidewalk structures, and adjacent buildings, the number of locations suitable for installation of angled wells is limited.
- During installation of the vertical wells at the site, large cobbles were encountered. Encountering large cobbles and boulders could require multiple attempts to install a well to the desired depth of 50 feet bgs, significantly increasing the costs. It is possible that the presence of large cobbles could make the installation of angled wells technically infeasible as occurred at multiple vertical drill sites during the RI.
- Augering beneath buildings could result in destabilization or damage to building foundations.
- To minimize the possibility of inadvertently encountering a utility during drilling, each borehole would need to be cleared to a minimum vertical depth of 8 feet bgs by hand or air knife. Clearing angled borings would be difficult, if not impossible taking into account the possibility of collapse, and the difficulty of accessibility.
- Installation of angled wells under buildings would require obtaining access permits from property owners. There is a possibility current property owners would not be willing to allow installation of an angled well beneath their property.
- Although any additional vertical wells installed at the site would be 4 inches in diameter to better accommodate NAPL collection and removal, it is not technically feasible to install an angled well with a diameter greater than 2 inches. This smaller diameter well would not be as effective at collecting NAPL from the subsurface and may limit the type of technology that can be used for removal.
- Once installed, removal of NAPL would be much more difficult from an angled well than a vertical well. Bailing and sock installation would require the use of a weighting agent, absorbent socks would be dragged along the screen and casing during removal, and belt skimmers are more likely to drip along the screen and casing during NAPL removal.
- The cost associated with installing 2-inch diameter angled wells would be approximately $3,000 more per well than a standard 4-inch diameter vertical well.

Currently two extraction well configurations for NAPL removal are being considered. Option 1 would involve installation of four new 2-inch diameter angled wells, installation of two new 4-inch diameter vertical wells and use of six existing monitoring wells (MW-10, MW-12, MW-15, MW-16, MW-18, MW-25 and MW-36) with measurable NAPL (Figure 6-1). The angled wells would be installed at an angle not to exceed 45^{o} to a total depth of approximately 50 feet bgs. The vertical wells would be installed to a depth of approximately 50 feet bgs. The total drilling cost for installation of the wells under this option is estimated to be $52,100.

Option 2 would involve installation of eight new 4-inch diameter vertical wells to a depth of approximately 50 feet bgs and use of the six existing monitoring wells (MW-10, MW-12, MW-15, MW-16, MW-25, and MW-36) with measurable NAPL (Figure 6-2). Although standard vertical wells would not facilitate removal of NAPL from as great of an area beneath the existing buildings onsite, the difficulties encountered with angled well installation and usage would not be present, and the risk associated with drilling beneath existing buildings would be eliminated. The use of standard vertical wells would also reduce the cost associated with installation activities, allowing for more wells to be placed across the site, increasing the density of NAPL-removal locations. The cost for installation of the wells under this option is estimated to be $50,600.

Because of the anticipated difficulties and limitations associated with well installation and NAPL removal for the angled wells, the alternatives developed in Section 7.0 assume the use of only vertical wells (Option 2). Selection of one well option will allow a direct comparison among the alternatives and does not necessarily imply that angled wells could not be used at the site.

7.0 DEVELOPMENT OF ALTERNATIVES

Based on the environmental media requiring cleanup action presented in Section 5.0 and the screening of cleanup action components presented in Section 6.0, remedial action alternatives have been developed that address the presence of NAPL and the contaminants in soil and groundwater at the site. Because NAPL in the soil pore spaces will act as a continued source of groundwater contamination, a phased remediation approach will be required at this site. The initial phase will consist of NAPL removal. Once the point of compliance for NAPL has been reached the groundwater remediation phase will begin. Because there is no current or anticipated future risk to humans or the environment associated with the groundwater contamination, deferring groundwater remediation until the source has been controlled is protective.

The phased remediation approach will require a measurable point of compliance for NAPL removal to determine completion of first phase of remediation. The point of compliance for NAPL removal will be consistent attainment for one year of 0.05 foot in each of the wells included under Option 2. To allow for seasonal variations in the water table and the resultant NAPL thickness fluctuations, consistent attainment is defined as measuring 0.05 foot or less at least 75 percent of the time assuming uniformly spaced monitoring events (e.g., 9 out of 12 monthly monitoring events). All wells that have had or potentially could contain NAPL will be gauged at least once per year while active NAPL removal is being conducted at the site; any wells that show a significant return of product after bailing is stopped will be returned to the NAPL removal program. After attainment is achieved, on a well-by-well basis, regular NAPL removal will be terminated and the second remedial phase will begin. Once the NAPL cleanup level (i.e., 0.05 foot) has been attained in all of the wells, gauging will be conducted once per year for two additional years. If NAPL is later found to return to the well in greater thickness, the situation will be evaluated and NAPL removal may be restarted at that well.

Due to the complexity of the site, conditional points of compliance are proposed for both groundwater and soil. The site specific point of compliance for soil and groundwater will be attainment of groundwater cleanup levels in each of the wells included under Option 2. MTCA specifies that "where a conditional point of compliance is proposed, the person responsible for undertaking the cleanup action shall demonstrate that all practicable methods of treatment are to be used in the site cleanup." As detailed in Table 6-3, the perched, discontinuous nature of the shallow aquifer precludes groundwater treatment by any method other than MNA. All of the cleanup action alternatives described below include MNA to achieve groundwater cleanup levels.

It is appropriate to use attainment of groundwater cleanup levels as the point of compliance for soil because the main risk driver for the soil contamination is protection of groundwater. With the exception of three documented soil exceedances occurring above 15 feet bgs, the risk driver for soil remediation is protection of groundwater. Typically, soil less than 15 feet bgs (i.e., the three documented exceedances discussed in Section 5.1) would need to be protective of direct contact/ingestion by humans and terrestrial receptors; however, the pavement and buildings presently on site and expected to remain on site prevent these exposures. Therefore, the risk driver for soil throughout the site regardless of depth is protection of groundwater.

MTCA allows for the use of a conditional point of compliance at a site. The cleanup action may be determined to comply with cleanup standards provided all of the following are met:

- *The selected remedy is permanent to the maximum extent practicable using a disproportionate cost analysis.* A disproportionate cost analysis on the cleanup action alternatives is presented in Table 8-1.

- *The cleanup action is protective of human health.* The cleanup action alternatives are protective of human health. More detailed information is presented in the following sections and Table 8-1.

- *The cleanup action is demonstrated to be protective of terrestrial ecological receptors.* The cleanup action alternatives are protective of terrestrial ecological receptors. More detailed information is presented in the following sections and Table 8-1.

- *Institutional controls are put in place that prohibit or limit activities that could interfere with long-term integrity of the containment system.* The cleanup action alternatives include institutional controls to prohibit or control activities that could result in exposures. More detailed information is presented in the following sections.

- *Compliance monitoring under WAC 173-340-410 and periodic reviews under WAC 173-340-430 are designed to ensure the long-term integrity of the containment system.* The cleanup action alternatives include compliance monitoring. More detailed information is included in the following subsections.

- *The types, levels and amount of hazardous substances remaining on-site and the measures that will be used to prevent migration and contact with those substances are specified in the draft cleanup action plan.* The types, levels, and amount of hazardous substances remaining on-site and the measures that will be used to prevent migration and contact with those substances are presented in the following sections and Table 8-1.

The following sections discuss each alternative with a focus on the rationale for the actions and components that have been selected. The proposed alternatives are analyzed in detail in Section 8.0 in accordance with evaluation criteria mandated under MTCA.

Each alternative includes components that are expected to be capable of accomplishing the cleanup levels established for a particular media and contaminants as identified in Section 5.0. The alternatives have been developed by assembling various cleanup alternative components in appropriate combinations from among those selected in Section 6.2. Selection of a specific cleanup action component for detailed evaluation in the FS does not preclude later consideration of similar components that are represented by the selected component. Similar cleanup action components that can achieve the same cleanup levels could be re-evaluated for cost effectiveness during the final design phase.

The alternatives developed for the site provide a range of cleanup action components within the confines of protecting the environment and human health as required by MTCA. MTCA [WAC 173-340-360] specifies that each alternative meet the following threshold requirements:

- Protect human health and the environment
- Comply with cleanup standards
- Comply with applicable state and federal laws
- Provide for compliance monitoring.

Although an extensive sampling program was completed during the RI, the available site characterization data for a large site are not always sufficient for complete definition of all contaminant sources or plumes. In these instances, assumptions have been made (and are stated herein) so that remedial alternatives can be developed in spite of logical data gaps, and detailed evaluation of the alternatives can be conducted.

The available data appear sufficient for development of rational alternatives that address the soil and NAPL contamination at the site and which form a sound basis for selection of a preferred remedy. However, additional data may need to be collected in the future for certain remedial actions to be implemented. It has been assumed that any additional data needs would be filled during the design phase for the selected alternative, and the design would be modified or refined as new data become available.

In addition, MTCA requires that a feasibility study include at least one "permanent cleanup action alternative" to serve as the baseline against which all other alternatives are evaluated for the purpose of determining whether the cleanup action selected is permanent to the maximum extent practicable (WAC 173-340-350). MTCA defines a permanent cleanup action to be one in which the cleanup standards of WAC 173-340-700 through 173-340-760 can be met without any further action, with the exception of the disposal of any treatment residue.

A range of cleanup action alternatives was developed by assembling appropriate cleanup action components from those identified and selected in Section 6.2 (Secondary Screening of Alternative Components). These alternatives are summarized in Table 7-1 and described below. Capital costs and Operation and Maintenance (O&M) costs for each alternative are presented in Appendix H.

In each of these alternatives, it is assumed that the disturbance to operating businesses will be minimized to the extent possible. To accomplish this goal the following assumptions have been made.

- No buildings will be removed.
- The cleanup action alternatives will not involve access into any building interiors.
- Numerous utilities are located in the streets and in the alley south of Woodin Avenue. Although, cleanup alternative implementation may temporarily interrupt utility service, utilities will not be rerouted (e.g., overhead power lines located in the alleyway will not be removed). This may limit the extent and efficiency of any removal action.
- Cleanup action construction will not take place during the business hours of the summer months, to the extent practicable.

A description of each alternative and the rationale for its development are given in the following subsections. A total of six alternatives for remediation of soil, NAPL and groundwater in the shallow, perched aquifer are presented (1A, 1B, 2A, 2B, 2C, and 3).

7.1 Alternative 1A

Natural Attenuation of Soil, Automatic NAPL Removal By Belt Skimmer, Monitored Natural Attenuation of Groundwater in Shallow Perched Aquifer. This alternative would reduce and control exposures to contaminants by the following cleanup alternative components:

- Meet the MTCA Method A soil cleanup levels through natural attenuation of soil
- Install additional extraction wells as needed
- Automatically remove NAPL from wells within the perched aquifer using belt skimmers
- Manage/dispose of extracted NAPL
- Manage incidental excavated soil
- Meet the MTCA Method A groundwater cleanup levels in the shallow perched aquifer through MNA
- Implement environmental monitoring.

These actions would meet the cleanup levels established for soil and NAPL. The response actions for Alternative 1A are explained in the following subsections, and belt skimmers are depicted in Figure 7-1.

7.1.1 Meet the MTCA Soil Cleanup Levels through Natural Attenuation of Soil

Relying on natural processes to achieve the Method A cleanup levels for the soil exceedances identified in Section 5.0 is appropriate because the contamination is posing a low level of risk to human health, the mobility of the contaminants beyond the current plume boundaries is not a concern, and the compounds are readily degradable. Because the contaminants are located a minimum of 12 feet bgs, there are no current exposure pathways to the soil or shallow perched aquifer, and the contaminants are not likely to ever reach the deep aquifer, the only potential exposure would be to workers during building demolition or new building construction. The contaminated soil is located in a commercial area with established buildings. Although demolition/construction activities cannot be ruled out, the established nature of the neighborhood should act to minimize activities that would result in actual contaminant exposures. A Soil Management Plan specifying notification, safe handling practices, recommended worker personal protective equipment (PPE), and appropriate disposal options will be used to mitigate potential exposures to workers during any building demolition or new building construction. The Soil Management Plan will be made available to property owners during the permitting process for demolition, remodeling, and new construction.

The primary natural attenuation mechanism for petroleum hydrocarbons is by biodegradation into less harmful constituents (typically carbon dioxide and water). Gasoline components are degraded both aerobically and anaerobically, although anaerobic degradation proceeds at a slower rate (Battelle, 1996).

7.1.2 Install New NAPL Extraction Wells

Six of the current wells (MW-10, MW-12, MW-15, MW-16, MW-25 and MW-36) located at the site were deemed to be usable for NAPL extraction with a belt skimmer. These are a combination of 2- and 4-inch monitoring wells located within the gasoline NAPL plume having a screened interval generally extending beyond the NAPL/groundwater interface. Based on the configuration of the NAPL plume and the building locations, installation of eight additional 4-inch wells for NAPL extraction is proposed (Option 2 as presented in Figure 6-2). Well boxes will be installed flush with the existing ground surface.

The newly installed wells will be screened across the identified vertical extent of NAPL. As discussed in Section 3.0, the subsurface stratigraphy in the contaminated zone is heterogeneous and fine grained, with NAPL and groundwater likely perched on various discontinuous clay-rich layers. Extending the screened zone in new extraction wells is intended to assist in capturing the maximum extent of NAPL at various depths within the subsurface.

7.1.3 Automatically Remove NAPL with Belt Skimmers

The main intent of this alternative is to remove NAPL from the shallow perched aquifer. This will be accomplished by the use of belt skimmers in existing monitoring wells and newly installed NAPL extraction wells. A skimmer will be located at the top of the well, with a belt extending beyond the NAPL/groundwater interface in the well. NAPL preferentially attaches to the surface of the belt and is brought up to the top of the well as the belt rotates by an intrinsically safe (explosion-proof) motor. The extracted NAPL is deposited into a container located in the well vault (Figure 7-1). The container will be emptied by vacuum truck on a regular basis.

The rate of NAPL recovery following removal from wells may be evaluated by bailing activity during the RI. On October 23, 2003, NAPL was bailed from ten existing wells. NAPL was carefully removed from each well until measurable amounts could no longer be detected in the bailer or until the amount stabilized at a minimal level. This resulted in total removal of only 8.5 gallons of NAPL from the ten wells. The depths to groundwater and NAPL were measured prior to bailing and at regular intervals following bailing in two wells (MW-25 and MW-12) to provide an assessment of initial recovery rates of NAPL. As indicated in Figures 7-2 and 7-3, groundwater and NAPL recovery reached initial apparent stabilization within 4 or 5 hours of bailing. Although NAPL recovery was below the level measured prior to bailing, the level remained stable over the next 24-hour period. This indicates that NAPL might be expected to partially recover relatively rapidly, but then may require a significant time to fully recover. During 2003, semi-monthly bailing results showed that only minimal volumes of NAPL were able to be removed, and volumes decreased through time (only 1 gallon total in late November 2003). A semi-monthly frequency appears to be more rapid than the shallow perched aquifer yields NAPL to wells and a longer interval appears to be more effective. The effectiveness of belt skimmers will be dependent on consistent NAPL recovery in the future.

7.1.4 Manage/Dispose of Extracted NAPL

NAPL temporarily stored in containers located in the vaults at the extraction wells will be periodically emptied by vacuum truck. Because the concentrations of lead present in the NAPL (up to 1,100 milligrams per liter [mg/L]) exceeds the Resource Conservation and Recovery Act (RCRA) regulatory limit of 5 mg/L based on toxicity, the NAPL is classified as a listed waste. Therefore, recycling is not an option. The NAPL will be transported by the vacuum truck to a hazardous waste facility for disposal.

7.1.5 Manage Incidental Excavated Material

Because the belt skimmers are powered by electricity, this alternative will include utility trenching to run electrical lines from the wellhead to tie into nearby power sources. Based on the results of the RI, it is assumed that concrete and soil excavated during utility trenching and vault installation will be below the MTCA Method A cleanup levels. This material may be used locally as fill without further restrictions.

Residual soil from drill cuttings obtained during installation of the new extraction wells will be contained in 55-gallon DOT approved drums, which will be transported to the Chevron Station on Woodin Avenue for temporary storage while awaiting laboratory results. Following receipt of laboratory analytical data, the soil will be transported for eventual treatment and disposal. For purposes of this FS, it is assumed that the drill cuttings will be transported to Wenatchee for thermal desorption at Waste Management, Inc. (WMI).

7.1.6 Meet the MTCA Method A Groundwater Cleanup Levels in the Shallow Perched Aquifer Through Monitored Natural Attenuation

MNA of groundwater at the site will include modeling, active monitoring (sampling and analysis), and evaluation of contaminant reduction to determine whether it remains a feasible method for plume treatment.

Several electron acceptors or metabolic by-products will be used as analytical parameters at Chelan to determine if natural attenuation is presently occurring. In addition, the breakdown of BTEX compounds and changes in proportions of BTEX will also be used to determine if natural attenuation is occurring through time using ternary BTX diagrams.

In the classical case of MNA documentation, wells would be positioned in a linear transect from a location with uncontaminated groundwater outside the dissolved-phase plume, extending through the dissolved-phase plume, toward the higher-concentration center of the plume (or possibly to the margin of a NAPL plume). However, at Chelan the plumes, existing monitoring wells, and proposed remediation wells are not conveniently situated to allow for a simple transect and resultant evaluation. Consequently, wells will be sampled in various areas of the dissolved-phase halo and in uncontaminated groundwater, not in a linear transect, but instead scattered around the NAPL plume at varying distances from the assumed plume boundary. The wells sampled for natural attenuation monitoring will be adjusted over time as the NAPL and dissolved-phase plumes decrease due to remediation at the site.

In addition to gasoline-range hydrocarbons and BTEX compounds, dissolved oxygen, nitrate, ferrous iron, sulfate, and alkalinity will be monitored at the site. These parameters will be interpreted by plotting their concentrations in two different ways: (1) MNA parameters versus gasoline-range petroleum hydrocarbons (TPH-G), and (2) MNA parameters versus the approximate distance of the well from the nearest NAPL plume boundary. These plots will be constructed in order to depict varying levels of biodegradation within the dissolved plume and uncontaminated groundwater, in order to evaluate possible stages of biodegradation at various distances from the NAPL plume. This method assumes a model of a dissolved-phase contaminant halo around the NAPL plume. This situation currently exists at Chelan on the northern, western, and eastern sides of the NAPL plume, but the southern boundary of the plume is dry and groundwater data in that area cannot be used. The relative degree of contamination in each well can be measured either by the amount of gasoline-range hydrocarbons dissolved in groundwater or by the distance from the monitoring well to the approximate edge of the NAPL plume. The analytical suite, field measurements, sampling frequency, and methodology will be evaluated for modification as time progresses.

7.1.7 Implement Environmental Monitoring

Under MTCA, compliance monitoring is required for all cleanup actions (WAC 173-340-410). Three categories of compliance monitoring are defined under MTCA:

- Protection monitoring to confirm that human health and the environment are protected during construction and operation of the cleanup action.

- Performance monitoring to confirm that the cleanup action has attained cleanup standards or remedial action objectives. Performance monitoring will be conducted to confirm that NAPL has been removed until 0.05 feet or less remains in any individual well. Groundwater collected from currently existing wells and the extraction wells installed as part of this cleanup action will be used for performance monitoring. The level of NAPL in the wells will be periodically monitored to assess the effectiveness of the action. In addition, soil samples will be collected from the three soil hot spots to ensure that the MTCA Method A cleanup levels for soil have been attained following sufficient time for natural attenuation to occur. The natural attenuation monitoring of the shallow perched aquifer will serve as performance monitoring.

- Confirmation monitoring to confirm the long-term effectiveness of the cleanup action after remedial action objectives have been attained. The deep water-table aquifer will be monitored to ensure that contaminant transport from the shallow perched aquifer does not occur. Annual monitoring of the deeper water-table aquifer was assumed for years 1 to 5. Because the deep aquifer has not been impacted and transport modeling indicates that the likelihood of the deep aquifer ever becoming impacted is very unlikely, the frequency of monitoring was decreased in subsequent years. For purpose of costing, following year 5 monitoring was assumed to occur only in years 10, 20, and 30.

7.2 Alternative 1B

Natural Attenuation of Soil, Automatic NAPL Removal by Pneumatic Pump, Monitored Natural Attenuation of Groundwater in Shallow Perched Aquifer. This alternative would reduce and control exposures to contaminants by the following cleanup alternative components:

- Meet the MTCA Method A soil cleanup levels through natural attenuation of soil hot spots
- Install additional extraction wells as needed
- Automatically remove NAPL from wells within the perched aquifer using pneumatic pumps
- Manage/dispose of extracted NAPL
- Manage incidental excavated soil
- Meet the MTCA Method A groundwater cleanup levels in the shallow perched aquifer through MNA
- Implement environmental monitoring.

This alternative is similar to alternative 1A with the exception that pneumatic pumps acting as in-well oil/water separators will collect and pump NAPL. The responses for this alternative are described below.

7.2.1 Meet the MTCA Soil Cleanup Levels through Natural Attenuation of Soil

This alternative includes natural attenuation of soil as described in Section 7.1.1.

7.2.2 Install New NAPL Extraction Wells

This alternative includes the installation of additional extraction wells as described in Section 7.1.2.

7.2.3 Automatically Remove NAPL with Pneumatic Pumps

The liquid in the well will enter a floating inlet and be carried by gravity to a controller-less pneumatic pump. When the pump body fills, a float triggers the air pressure to increase and the liquid is forced out of the pump body into a discharge check ball assembly. Because of the density difference between water and NAPL, the water is discharged back to the well and the NAPL discharges through a tube to a small storage container located in the vault at the wellhead. Since the entire system operates on compressed air supplied by a cylinder located in the well vault, electricity is not required at the wellhead. This will preclude the need for the utility trenching discussed in Alternative 1A.

This alternative allows the well, extraction tubing, and vault containment vessel to act as a closed system to prevent vapor buildup within the vaults. The wellhead will be completely sealed with a single sealed port to accommodate transfer of NAPL to a sealed container, such as a fuel bladder tank or other closed system. NAPL will be transferred from the wellhead to the storage container via the interior portion of double walled tubing. The exterior portion of the tubing will vent the resulting vapors back into the well.

Like automatic removal of NAPL using belt skimmers, the effectiveness of this alternative will be dependent on consistent NAPL recovery in the future.

7.2.4 Manage/Dispose of Extracted NAPL

This alternative includes management and disposal of extracted NAPL as described in Section 7.1.4.

7.2.5 Manage Incidental Excavated Material

This alternative includes management of incidental concrete and soil during vault installation and drilling activities as described in Section 7.1.5. Because the pneumatic pumps do not require electricity, this alternative does not include management of incidental soil during utility trenching.

7.2.6 Meet the MTCA Method A Groundwater Cleanup Levels in the Shallow Perched Aquifer Through Monitored Natural Attenuation

This alternative includes MNA as described in Section 7.1.6.

7.2.7 Implement Environmental Monitoring

This alternative includes environmental monitoring as described in Section 7.1.7.

7.3 Alternative 2A

Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Monitored Natural Attenuation of Groundwater in Shallow Perched Aquifer. This alternative would reduce and control exposures to contaminants by the following cleanup alternative components:

- Meet the MTCA Method A soil cleanup levels through natural attenuation of soil hot spots
- Install additional NAPL extraction wells
- Periodically remove NAPL by vacuum truck
- Manage/dispose of extracted NAPL
- Manage incidental excavated material
- Meet the MTCA Method A groundwater cleanup levels in the shallow perched aquifer through MNA
- Implement environmental monitoring.

These actions would prevent the possibility of direct contact with contaminants in the soil. Alternative 2A response actions are explained below and depicted in Figure 7-4.

7.3.1 Meet the MTCA Soil Cleanup Levels through Natural Attenuation of Soil

This alternative includes natural attenuation of soil as described in Section 7.1.1.

7.3.2 Install New NAPL Extraction Wells

This alternative includes the installation of new 4-inch NAPL extraction wells as described in Section 7.1.2.

7.3.3 Periodically Remove NAPL by Vacuum Truck

Under this alternative, a hose (stinger) will be lowered into the well casing and positioned below the water table in order to remove liquids. Each wellhead will be sealed and vacuum of 12 to 15 inches of mercury applied to the screened interval above the water table by a vacuum truck. NAPL and groundwater recovered from each well will be stored in the holding tank of the vacuum truck. NAPL removed by this alternative will take place periodically (e.g., monthly), depending on the rate of NAPL recharge to the wells.

Based on the results of "Enhanced Fluid Recovery" tests performed by Delta Environmental using a vacuum truck at the site in August 2001, a radius of influence of 38 to 63 feet was achieved by the application of 12 to 15 inches of mercury in three wells (MW-7, MW-9, and MW-10) (Delta Environmental, 2002c). During the tests, a vacuum was applied to each well until the well went dry, resulting in 10 to 15 gallons of combined groundwater and NAPL recovered per well. One gallon or less of NAPL was recovered in each of the wells. These wells near the Chevron station are screened within lithologic unit B and the lower part of unit A. Due to the heterogeneity of these units, it is difficult to predict the radius of influence and the volume of NAPL that could be recovered by the application of similar vacuum to new or existing wells screened only in unit B. These parameters would be measured in the field.

7.3.4 Manage/Dispose of Extracted NAPL

This alternative includes management and disposal of extracted NAPL as described in Section 7.1.4. In this alternative, the NAPL would not require any temporary storage container prior to transport.

7.3.5 Manage Incidental Excavated Material

This alternative will include the management of drill cuttings obtained during the installation of new NAPL extraction wells. Management of the drill cuttings is described in Section 7.1.5.

7.3.6 Meet the MTCA Method A Groundwater Cleanup Levels in the Shallow Perched Aquifer Through Monitored Natural Attenuation

This alternative includes MNA of groundwater as described in Section 7.1.6.

7.3.7 Implement Environmental Monitoring

This alternative includes environmental monitoring as described under Section 7.1.7.

7.4 Alternative 2B

Natural Attenuation of Soil, Periodic NAPL Removal by Pneumatic Pump, Monitored Natural Attenuation of Groundwater in Shallow Perched Aquifer. This alternative would reduce and control exposures to contaminants by the following remedial actions:

- Meet the MTCA Method A soil cleanup levels through natural attenuation of soil hot spots
- Install additional NAPL extraction wells
- Periodically remove NAPL by dedicated pneumatic pumps
- Manage/dispose of extracted NAPL
- Manage incidental excavated material
- Meet the MTCA Method A groundwater cleanup levels in the shallow perched aquifer through MNA
- Implement environmental monitoring.

This alternative is similar to alternative 1A with the exception that dedicated pneumatic pumps would periodically be accessed to pump NAPL for collection and later disposal. The response actions for Alternative 2B are explained below.

7.4.1 Meet the MTCA Soil Cleanup Levels through Natural Attenuation of Soil

This alternative includes natural attenuation of soil as described in Section 7.1.1.

7.4.2 Install New NAPL Extraction Wells

This alternative includes the installation of new 4-inch NAPL extraction wells as described in Section 7.1.2.

7.4.3 Periodically Remove NAPL with Dedicated Pneumatic Pumps

Under this alternative, a dedicated pneumatic pump will be initially installed in each well casing in order to remove only NAPL (see Section 7.2.3). Each wellhead will be sealed and will contain two tubing ports, one for compressed air to operate the pump, and the other for removal of NAPL. NAPL will be periodically recovered from each well by connecting tubing to the ports and pumping into temporary containers at the surface. NAPL will then be brought to a central storage area, such as the Chevron station. The frequency of pumping (e.g., monthly) will depend on the rate of NAPL recharge to the well.

7.4.4 Manage/Dispose of Extracted NAPL

This alternative includes management and disposal of extracted NAPL as described in Section 7.1.4, except the vacuum truck will retrieve NAPL from the storage area.

7.4.5 Manage Incidental Excavated Material

This alternative will include the management of drill cuttings obtained during the installation of new NAPL extraction wells. Management of the drill cuttings is described in Section 7.1.5.

7.4.6 Meet the MTCA Method A Groundwater Cleanup Levels in the Shallow Perched Aquifer Through Monitored Natural Attenuation

This alternative includes MNA of groundwater as described in Section 7.1.6.

7.4.7 Implement Environmental Monitoring

This alternative includes environmental monitoring as described under Section 7.1.7.

7.5 Alternative 2C

Natural Attenuation of Soil, Periodic NAPL Removal by Bailing, Monitored Natural Attenuation of Groundwater in Shallow Perched Aquifer. This alternative would reduce and control exposures to contaminants by the following remedial actions:

- Meet the MTCA Method A soil cleanup levels through natural attenuation of soil hot spots
- Install additional NAPL extraction wells
- Periodically remove NAPL by dedicated hand bailing
- Manage/dispose of extracted NAPL
- Manage incidental excavated material
- Meet the MTCA Method A groundwater cleanup levels in the shallow perched aquifer through MNA
- Implement environmental monitoring.

This alternative is similar to alternative 1A with the exception that NAPL would be collected by hand bailing. The response actions for Alternative 2C are explained below.

7.5.1 Meet the MTCA Soil Cleanup Levels through Natural Attenuation of Soil

This alternative includes natural attenuation of soil as described in Section 7.1.1.

7.5.2 Install New NAPL Extraction Wells

This alternative includes the installation of new 4-inch NAPL extraction wells as described in Section 7.1.2.

7.5.3 Periodically Remove NAPL with Bailers and Absorbent Socks

Under this alternative, hand bailing will be used to extract NAPL that has collected in the wells located within the site. The frequency of bailing (e.g., monthly) will depend on the rate of NAPL recharge to the well. This will be determined as hand bailing continues through time by varying

the interval. Between bailing events, absorbent socks will be placed in wells with less than 0.1 foot of NAPL. Socks will be wrung out into a container prior to bailing. This procedure is currently taking place monthly at the site. The use of absorbent socks since August 2004 appears to have aided in removing NAPL from the aquifer.

The NAPL will then be brought to a central storage area, such as the Chevron station.

7.5.4 Manage/Dispose of Extracted NAPL

This alternative includes management and disposal of extracted NAPL as described in Section 7.1.4.

7.5.5 Manage Incidental Excavated Material

This alternative will include the management of drill cuttings obtained during the installation of new NAPL extraction wells. Management of the drill cuttings is described in Section 7.1.5.

7.5.6 Meet the MTCA Method A Groundwater Cleanup Levels in the Shallow Perched Aquifer Through Monitored Natural Attenuation

This alternative includes MNA of groundwater as described in Section 7.1.6.

7.5.7 Implement Environmental Monitoring

This alternative includes environmental monitoring as described under Section 7.1.7.

7.6 Alternative 3

Soil Vapor Extraction, Groundwater Drawdown, NAPL Extraction, Monitored Natural Attenuation of Groundwater in Shallow Perched Aquifer. This alternative would reduce and control exposures to contaminants by the following remedial actions:

- Install SVE wells
- Remediate shallow (above 15 feet bgs) soil hot spots by SVE
- Meet the MTCA Cleanup Levels of deep soil (greater than 15 feet bgs) through natural attenuation
- Install new groundwater/NAPL extraction wells
- Extract groundwater and NAPL with pumps
- Treat extracted groundwater/soil vapors
- Manage/dispose of extracted NAPL
- Manage incidental excavated material
- Meet the MTCA Method A groundwater cleanup levels in the shallow perched aquifer through MNA
- Implement environmental monitoring.

These actions would prevent the possibility of direct contact with contaminants in the soil. The response actions for Alternative 3 are explained below and depicted in Figure 7-5.

7.6.1 Install Soil Vapor Extraction Wells

This alternative includes the installation of an SVE well located near the center of each of the soil hot spots located above 15 feet bgs identified in Section 5.0 (Figure 5-1). Each well would be screened to a depth of 15 feet, which is the point of compliance for direct contact.

7.6.2 Remediate Shallow (less than 15 feet bgs) Soil Hot Spots by Soil Vapor Extraction

The SVE system would include an explosion-proof blower to withdraw air and vapor from wells screened in the vadose zone (lithologic unit A). The existing concrete/asphalt pavement would act as a surface seal over the treatment zone to minimize short-circuiting of vapor flow due to entrainment of ambient air through the ground surface into the SVE wells. Without a surface seal, short-circuiting would decrease the vapor extraction efficiency significantly. A moisture separator will be used to remove entrained water from the vapor stream. The removed water will be passed through the groundwater treatment system.

7.6.3 Meet the MTCA Cleanup Levels of deep soil (greater than 15 feet bgs) through natural attenuation

This alternative includes natural attenuation of soil at depths in excess of 15 feet bgs as described in Section 7.1.1.

7.6.4 Install New Groundwater/NAPL Extraction Wells

This alternative includes the installation of new 4-inch NAPL extraction wells as described in Section 7.1.2. The existing 2-inch wells on site will not allow insertion of both groundwater and NAPL extraction pumps into the casing; therefore, it is assumed that only the existing 4-inch well will be usable for this alternative. This alternative assumes installation of eleven new 4-inch wells will be required.

7.6.5 Extract Groundwater/NAPL

Groundwater will be extracted using an electric submersible pump. The pump will be fixed at a depth near the bottom of the well screen, and will extract groundwater at a continuous slow rate, assuming recharge is sufficient to maintain a continuous pump rate. The pumps will be equipped with an automatic low-water shutoff to ensure the pump will not burn out should the well be pumped dry. Groundwater will move up the well then through tubing trenched underground to a distant system enclosure, where it will undergo treatment.

The groundwater will be extracted at the rate required to create a continuous cone of depression around the well to enhance mobilization of NAPL toward the well. Based on pumping tests performed on two existing wells, a pumping rate of approximately 0.1 gpm may create the desired drawdown without pumping the well dry. The actual pumping rate will be determined on a per well basis in the field.

A product only pneumatic pump will extract NAPL pooling in the well. The extracted NAPL will be collected in a closed fuel container system located in the well vault as described in Section 7.1.3.

An alternate implementation of this alternative would be to use a single total liquids pump to extract both groundwater and NAPL. This would facilitate pumping the combined liquids to a centralized treatment facility where the groundwater and NAPL would be physically separated. This implementation was not selected, because piping the NAPL would increase the potential for exposure of uncontaminated soil in the event of pipe leakage. This option may be more economical because it would require only one pump be installed in the well, saving capital costs associated with pump purchase and potentially allowing the use of some existing 2-inch wells.

7.6.6 Treat Extracted Groundwater

Extracted groundwater will be treated using an aeration process to volatilize dissolved contaminants. Water will be pumped from new 4-inch extraction wells and piped to a centralized system enclosure (Figure 7-5). The extracted groundwater would first pass through an oil/water separator. This would remove any NAPL from the flow stream. The groundwater would then be piped through a tray aeration system (air stripper), which allows the dissolved contaminants to transfer from liquid to gas phase by exposure to oxygen. These vapors would then be oxidized in a catalytic oxidation system, which allows oxidation of contamination by significantly increasing the air temperature. Treated groundwater from the air stripper would be discharged to the sanitary sewer, assuming contaminant levels have been reduced to below acceptable limits. If contamination is still above acceptable discharge limits, the water will flow through an activated carbon filtration system before being discharged to the sanitary sewer.

7.6.7 Manage/Dispose of Extracted NAPL

This alternative includes management and disposal of extracted NAPL as described in Section 7.1.4.

7.6.8 Manage Incidental Excavated Material

This alternative includes management of incidental excavated material as described in Section 7.1.5.

7.6.9 Meet the MTCA Method A Groundwater Cleanup Levels in the Shallow Perched Aquifer Through Monitored Natural Attenuation

This alternative includes MNA of groundwater as described in Section 7.1.6. Although some groundwater will be extracted and treated in conjunction with NAPL removal, attainment of groundwater cleanup levels in the shallow aquifer through pumping is not anticipated due to the heterogeneity and low yields of the shallow aquifer.

7.6.10 Implement Environmental Monitoring

This alternative includes environmental monitoring as described under Section 7.1.7.

8.0 ANALYSIS AND COMPARISON OF ALTERNATIVES

MTCA requires the use of permanent solutions in which cleanup levels will be attained at the site without additional remedial actions; however, MTCA also recognizes that costs of the permanent solution may be disproportionate to the benefits it provides. Disproportionate costs are defined in MTCA as cases where the incremental costs of an alternative over that of a lower cost alternative exceed the incremental degree of benefits provided by the higher cost alternative. In the case of disproportionate costs, MTCA allows selection of a lower cost alternative that "uses permanent solutions to the maximum extent practicable" (WAC 173-340-360). This lower cost alternative is selected by conducting a disproportionate cost analysis comparing the costs and benefits of all of the remedial alternatives in the feasibility study.

The disproportionate cost analysis requires that the alternatives be ranked from most to least permanent and that the permanent solution alternative serve as the baseline against which all other alternatives are evaluated. When the benefits of two or more alternatives are equal, the lower cost alternative shall be selected as the preferred alternative.

8.1 Permanence Ranking of Alternatives

All of the alternatives will result in permanent solutions at the site. Other than cost, the primary distinguishing feature of the alternatives is the time required to reach cleanup levels.

8.2 Evaluation of Alternatives Against Disproportionate Cost Criteria

MTCA specifies the various criteria for evaluation and comparison of alternatives when conducting a disproportionate cost analysis to determine whether a remedial action is "permanent to the maximum extent practicable" [WAC 173-340-360(e)]. The alternative analysis presented in Table 8-1 involves an evaluation of each alternative relative to the specified criteria listed below.

Protectiveness. Overall protectiveness of human health and the environment, including the following considerations:

- Degree to which existing risks are reduced
- Time required to reduce risks and attain cleanup standards
- On-site and off-site risks resulting from implementation of the alternative
- Improvement in the overall environmental quality.

Permanence. The degree to which the alternative permanently reduces the toxicity, mobility, or volume of hazardous substances, including the following considerations:

- Adequacy of the alternative in destroying hazardous substances
- Reduction or elimination of hazardous substance releases or sources of releases
- Degree of irreversibility of the waste treatment process
- Characteristics and quantity of treatment residuals generated.

Cost. The cost to implement the alternative, including the followings costs:

- Cost of construction (cost estimates for treatment technologies include pretreatment, analytical, labor, and waste management costs; the cost of replacement and repair of major elements for the estimated design life of the project is included)
- Net present value of any long-term costs (includes O&M costs, monitoring costs, equipment replacement costs, and the cost of maintaining institutional controls)
- Agency oversight costs that are cost-recoverable.

Long-term effectiveness. Long-term effectiveness includes the following considerations:

- Degree of certainty that the alternative will be successful
- Reliability of the alternative during the period of time that hazardous substances are expected to remain on-site at concentrations exceeding cleanup levels
- Magnitude of the residual risk with the alternative in place
- Effectiveness of controls required to manage the treatment residues or remaining wastes.

Management of short-term risks. Short-term risk includes the risk to human health and the environment associated with the alternative during construction and the implementation and effectiveness of mitigation measures.

Ability to implement technically and administratively. The ability of the alternative to be implemented includes the following considerations:

- Technical possibility of alternative
- Availability of necessary off-site facilities, services, and materials
- Administrative and regulatory requirements
- Scheduling, size, and complexity
- Monitoring requirements
- Access for construction operations and monitoring
- Integration with existing facility operations and other current or potential remedial actions.

Consideration of public concerns. Consideration of public concerns includes whether the community has concerns regarding the alternative and, if so, the extent to which the alternative addresses those concerns. This criterion includes concerns from individuals, community groups, local governments, tribes, federal and state agencies, or any other organization that may have an interest in or knowledge of the site.

An evaluation of the alternative versus the cost criterion was accomplished by preparation of estimates of probable capital cost and O&M expenses, and by estimating the life-cycle cost for each alternative using present worth analysis. The time period used in the present worth for each alternative was selected to match the estimate of the life of the remedial action; in cases where the life of the action would be indeterminate or long-term, a 30-year period was used. The present worth was calculated using a net discount rate of 2.2 percent before taxes and after inflation.

Unit costs were obtained from standard engineering cost indices for construction items (such as RS Means Co., 1997, 2000). Costs for treatment were obtained from local solid waste disposal facilities. Capital costs were developed using the factored-estimate method, in which the overall costs are derived from knowledge of the costs of major equipment or process items.

Factored estimates are generally believed to provide an accuracy of about 30 percent for specified process parameters (Peters and Timmerhaus, 1968). When process conditions are not well known or when a remedial action requires a detailed design or pilot test prior to implementation, uncertainties in the specified parameters (e.g., treatment volume or rate, concentrations of contaminants, or size of equipment) will result in additional cost uncertainty.

8.3 Comparative Evaluation of Alternatives

The remedial action alternatives are usually evaluated relative to the most permanent solution to illustrate the relative pros and cons between the alternatives and to assist in identification of the most permanent alternative to the extent practicable. However, because all six alternatives provide permanent solutions, the alternatives will simply be compared against each other. The preferred alternative will be identified based on the comparative evaluation presented in Table 8-2 and discussed in this section. The last criterion in this table, public concern, is typically addressed in the Cleanup Action Plan after comments on the FS report have been received.

Through the analysis and evaluation of alternatives using the specified criteria (Tables 8-1 and 8-2), all six of the presented alternatives are capable of permanently removing petroleum contaminants from the subsurface. The difference in risk reduction between the alternatives is minor, mainly because the only identified risk is dermal and inhalation exposures to potential future workers to shallow soil hot spots (i.e., less than 15 feet bgs) during potential future construction activities. NAPL removal is not risk-driven and no current or expected future risks associated with deeper contaminated soil and shallow perched groundwater have been identified. The analysis of these criteria show that certain significant aspects of the alternatives make them more or less suitable, and the requirement of pilot testing is necessary to determine the adequacy of the selected alternative prior to full implementation. The following text highlights the significant pros and cons of each alternative.

Alternative 1A involves the use of an automatic belt skimmer for NAPL removal and containerization within the well vault. This alternative would remove NAPL without removing groundwater. However, this system likely cannot be operated as a closed system, leading to the risk of explosion in the flush-grade well vault or vapor exposure at the surface. The system is automatically operated; however, semi-monthly bailing results suggest that NAPL is very slowly recharged to the wells, making an automated system less efficient and possibly unnecessary. This alternative relies on natural attenuation for soil and groundwater. Due to the complexities at the site, accurately predicting the time frame required to achieve cleanup levels is impossible to predict. This document assumes that monitoring natural attenuation in the shallow aquifer will be required for the next 30 years. The relative cost is moderately high and thus appears to be disproportionate to the benefits this alternative provides.

Alternative 1B involves the use of an automatic pneumatic pump within each well for NAPL removal and containerization within the well vault. This alternative would remove NAPL

without removing groundwater. This system likely can be operated as a closed system, minimizing the risk of explosion in the flush-grade well vault. The system is automatically operated; however, semi-monthly bailing results suggest that NAPL is very slowly recharged to the wells, making an automated system less efficient and possibly unnecessary. This alternative relies on natural attenuation for soil and groundwater. Due to the complexities at the site, accurately predicting the time frame required to achieve cleanup levels is impossible to predict. This document assumes that monitoring natural attenuation in the shallow aquifer will be required for the next 30 years. The relative cost is moderately high and thus appears to be somewhat disproportionate to the benefits this alternative provides.

Alternative 2A involves the use of NAPL periodic removal by a vacuum truck, which would remove NAPL but also a significant amount of groundwater. This alternative would not require the need for NAPL containerization within a well vault, thereby minimizing the risk of explosion or vapor exposure. Instead of being automatically operated, this relatively reliable process is conducted periodically and the schedule can be adapted to the optimal NAPL recharge rates of the aquifer. This alternative relies on natural attenuation for soil and groundwater. Due to the complexities at the site, accurately predicting the time frame required to achieve cleanup levels is impossible to predict. This document assumes that monitoring natural attenuation in the shallow aquifer will be required for the next 30 years. The cost is relatively low and thus appears to be proportionate to the benefits this alternative provides.

Alternative 2B involves the use of periodic NAPL removal by a dedicated pneumatic pump in each well. This alternative would remove NAPL without removing groundwater, and would not require the need for NAPL containerization within a well vault, thereby reducing the risk of explosion or vapor exposure. Instead of automatically operating, this relatively reliable process is conducted periodically and is one of the most flexible in terms of adapting to the optimal NAPL recharge rates of the aquifer and by removing only NAPL. Due to the complexities at the site, accurately predicting the time frame required to achieve cleanup levels is impossible to predict. This document assumes that monitoring natural attenuation in the shallow aquifer will be required for the next 30 years. This alternative relies on natural attenuation for soil and groundwater. The cost is relatively low and thus appears to be proportionate to the benefits this alternative provides.

Alternative 2C involves the use of periodic NAPL removal by a combination of hand bailing and absorbent socks in each well. This alternative would remove NAPL without removing groundwater, and would not require the need for NAPL containerization within a well vault, thereby reducing the risk of explosion or vapor exposure. Instead of automatically operating, this relatively reliable process is conducted periodically and is one of the most flexible in terms of adapting to the optimal NAPL recharge rates of the aquifer and by removing only NAPL. This alternative relies on natural attenuation for soil and groundwater. Due to the complexities at the site, accurately predicting the time frame required to achieve cleanup levels is impossible to predict. This document assumes that monitoring natural attenuation in the shallow aquifer will be required for the next 30 years. The cost is relatively low and thus appears to be proportionate to the benefits this alternative provides

Alternative 3 involves the use of automatic submersible/pneumatic pumps within each well, NAPL containerization within the well vault, and piping of groundwater to a central treatment

facility. This alternative would remove both NAPL and groundwater. This system likely can be operated as a closed system, minimizing the risk of explosion in the flush-grade well vault. The system is automatically operated; however, semi-monthly bailing results suggest that NAPL is very slowly recharged to the wells, making an automated system less efficient and possibly unnecessary. Until pilot testing is completed, it is unknown if drawing down groundwater in the wells will significantly increase the radius of NAPL capture and the rate of removal (radius is expected to be small due to fine-grained soils). The complexity and size of this alternative, even without SVE, is much greater than the others, involving a significant amount of trenching and piping in the downtown area, installation of a larger number of wells, and construction and maintenance of a treatment facility. The risk of release of contaminated fluids and vapors is also higher due to the greater complexity and extent of the system. The SVE system increases the rate of shallow soil cleanup thereby closing the potential future worker exposure pathway faster, but further increases complexity and the risk of explosion, vapor exposure, and other impacts to business activities in the area. Noise and traffic concerns arise from both the SVE and groundwater treatment operations. Due to greater complexity, the operational reliability of the overall system is expected to be relatively low. Although the remediation technologies for NAPL and shallow soil hot spots included in this alternative are aggressive, attainment of cleanup levels in the groundwater and deeper soil by natural attenuation will still require a long time frame. If this alternative is able to more efficiently extract NAPL from the soil pore spaces than the others, this alternative my achieve cleanup levels in a slightly shorter time frame. The successfulness of this alternative can not be determined with current knowledge; therefore, this document assumes that monitoring natural attenuation in the shallow aquifer will be required for the next 30 years. The cost is very high and thus is disproportionate to the benefits this alternative provides.

MTCA allows identification of a preferred alternative in the feasibility study [WAC 173-340-350(8)(c)]. Alternative 2C is proposed as the preferred alternative due to the proven effectiveness at the site, efficiency and flexibility of the methods and schedule to adapt to the NAPL recharge rates, the removal of only NAPL without groundwater, the low cost, the relatively low risk, the simplicity, size, and reliability of this alternative.

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Limitation of use:

SAIC's investigation was restricted to collection and analyses of a limited number of environmental samples, visual observations and field data, in addition to summarizing available information from previous site documents. Note that not all pertinent documents were available at the time of the investigation. SAIC cannot guarantee the accuracy or interpretation from previous site investigations. Because the current investigation consisted of collecting and evaluating a limited supply of information, SAIC may not have identified all potential items of concern and, therefore, SAIC warrants only that the project activities under this contract have been performed within the parameters and scope communicated by Chevron Environmental Management Company and reflected in the contract. This report is intended to be used in its entirety; taking or using excerpts from this report is not permitted and any party doing so does at its own risk.

Table 2-1
RI/FS Soil Sampling and Analysis Information

Boring No./ Sample No.	Sample Depth (ft)	Sample Date	G	D	BTEX	MTBE	Carc PAHs	Naph	PCBs	EDB EDC	Pb
B21-15	15	03/03/03	x	x	x	x	x	x		x	x
B21-20	20	03/03/03	x	x	x	x		x		x	x
B21-25	25	03/03/03	x	x	x	x		x		x	x
B21-30	30	03/03/03	x	x	x	x	x	x		x	x
B22-25	25	03/03/03	x	x	x	x	x	x		x	x
B22-30	30	03/03/03	x	x	x	x					x
B23-30	30	03/03/03	x	x	x	x					x
B23-35	35	03/03/03	x	x	x	x					x
B24-25	25	03/04/03	x	x	x	x	x	x		x	x
B25-20	20	03/04/03	x	x	x	x		x		x	x
B25-25	25	03/04/03	x	x	x	x	x	x		x	x
B25-40	40	03/04/03	x	x	x	x		x		x	x
B26-30	30	03/05/03	x	x	x	x	x	x	x	x	x
B26-35	35	03/05/03	x	x	x	x	x	x		x	x
B27-15	15	03/05/03	x	x	x	x	x	x		x	x
B27-20	20	03/05/03	x	x	x	x	x	x		x	x
B27-30	30	03/05/03	x	x	x	x	x	x		x	x
B28-25	25	03/05/03	x	x	x	x					x
B28-40	40	03/05/03	x	x	x	x		x		x	x
B29-15	15	03/06/03	x	x	x	x					x
B29-25	25	03/06/03	x	x	x	x					x
B30-25	25	03/06/03	x	x	x	x		x		x	x
B30-30	30	03/06/03	x	x	x	x		x		x	x
3603001 (B30-30 dup)	30	03/06/03	x	x	x	x	x	x		x	x
B30-80	80	03/06/03	x	x	x	x					x
B30-85	85	03/06/03	x	x	x	x					x
B31-80	80	03/07/03	x	x	x	x					x
B31-85	85	03/07/03	x	x	x	x					x
3703003 (B31-85 dup)	85	03/07/03	x	x	x	x					x
MW-37-25	25	05/10/04	x	x	x	x					
MW-37-35	35	05/10/04	x	x	x	x					x
MW-37-50	50	05/10/04	x	x	x	x					
Trip Blanks	---	03/05/03	x		x	x					
		03/07/03	x		x	x					
		03/08/03	x		x	x					
		05/10/04	x		x	x					
Field Blank	---	03/11/03	x	x	x	x	x	x	x	x	x
Rinsate Blank	---	03/11/03	x	x	x	x	x	x	x	x	x

G = TPH gas (NWTPH-Gx, 8015B mod)
D = TPH-diesel extended (NWTPH-Dx, ECY 97-602 mod)
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes (Method 8021B)
Carc PAHs = Carcinogenic PAHs, 7 compounds (Method 8270C)
MTBE = Methyl tertiary butyl ether (Method 8021B)
Sample depths are for top of samples
x indicates that one or more of those analyses was measured on that date

EDB = 1,2-Dibromoethane (Method 8260B)
EDC = 1,2-Dichloroethane (Method 8260B)
Naph = Naphthalene (Method 8260B)
Pb = Lead (Method 7421 mod)
PCBs = PCB Aroclors (Method 8082)

Table 2-1
RI/FS Soil Sampling and Analysis Information

Boring No./ Sample No.	Sample Depth (ft)	Sample Date	G	D	BTEX	MTBE	Carc PAHs	EDB EDC	Pb	TPH Fuels
B-32-27.5	27.5	06/24/03	x	x	x	x		x	x	x
B-32-35	35	06/24/03	x	x	x	x	x	x	x	
B-33-25	25	06/25/03	x	x	x	x	x	x	x	x
B-33-37.5	37.5	06/25/03	x	x	x					
B-34-22.5	22.5	06/25/03	x	x	x	x	x	x		
B-34-25	25	06/25/03	x	x	x	x		x		x
B-062503-D (B-34-25 dup)	25	06/25/03	x	x	x	x	x			
B-34-35	35	06/25/03	x	x	x	x				
B-35-30	30	06/26/03	x	x	x	x		x	x	x
B-36-15	15	06/26/03	x	x	x	x		x	x	
B-36-17.5	17.5	06/26/03								x
B-36-30	30	06/26/03	x	x	x					
B-36-35	35	06/26/03	x	x	x	x		x	x	
B-36-42.5	42.5	06/26/03	x	x	x	x		x	x	x
B-36-45	45	06/26/03	x	x	x					
B-36-50	50	06/26/03	x	x	x					
VB-1A-9.5	9.5	06/24/03	x	x	x					
VB-1A-25	25	06/24/03	x	x	x		x			
VB-1A-32.5	32.5	06/24/03	x	x	x	x		x	x	
VB-2A-12.5	12.5	06/24/03	x	x	x					
VB-3A-10	10	06/25/03	x	x	x					
VB-3A-22.5	22.5	06/25/03	x	x	x					
VB-3A-30	30	06/25/03	x	x	x	x	x	x		x
VB-4A-10	10	06/26/03	x	x	x	x				
VB-4A-25	25	06/26/03	x	x	x	x		x		
VB-5A-10	10	06/27/03	x	x	x	x				
VB-5B-20	20	06/27/03	x	x	x	x				
VB-062703-D (VB-5B-20 dup)	20	06/27/03	x	x	x	x				
VB-6A-10	10	06/30/03	x	x	x					
VB-6A-17.5	17.5	06/30/03	x	x	x	x	x	x	x	
VB-7A-25	25	07/01/03	x	x	x	x	x	x	x	
Trip Blanks	----	06/25/03	x		x					
		06/26/03	x		x					
		06/28/03	x		x					
		07/03/03	x		x					

G = TPH gas (NWTPH-Gx, 8015B mod)
D = TPH-diesel extended (NWTPH-Dx, ECY 97-602 mod)
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes (Method 8021B)
MTBE = Methyl tertiary butyl ether (Method 8021B)
Carc PAHs = Carcinogenic PAHs, 7 compounds (Method 8270C)
EDB = 1,2 Dibromoethane (Method 8260B)
EDC = 1,2 Dichloroethane (Method 8260B)
Pb = Lead (Method 7421 mod)
TPH Fuels = C9-C40 hydrocarbons (GC, 8015B mod.)
Sample depths are for top of samples
x indicates that one or more of those analyses was measured on that date

Table 2-2
RI/FS Soil Vapor Sampling and Analysis Information

Well/ Sample Number	Sample Date	Screen Interval (ft bgs)	Depth Location[1]	C_2-C_{10} Hydro-carbons	Benzene, Toluene, Ethylbenzene	Total Xylenes	m/p- & o-Xylenes
VW-1B	6/30/2003	9 - 11.5	Basement	x	x		x
VW-1A	6/30/2003	25 - 27.5	Deeper	x	x	x	
VW-2	6/30/2003	12.5 - 15	Basement	x	x		x
VW-MW-33	6/30/2003	23.5 - 33.5	Deeper	x	x	x	
VW-3B	6/30/2003	8.5 - 11	Basement	x	x		x
VW-3A	6/30/2003	22.5 - 25	Deeper	x	x	x	
VW-4B	7/1/2003	8 - 10.5	Basement	x	x		x
VW-4A	7/1/2003	22.5 - 25	Deeper	x	x	x	
VW-5B	7/1/2003	8.5 - 11	Basement	x	x		x
VW-070103-1 (VW-5B dup)				x	x		x
VW-5A	7/1/2003	18.5 - 21	Deeper	x	x	x	
VW-070103-2 (VW-5A dup)				x	x	x	
VW-6B	6/30/2003	9.5 - 12	Basement	x	x		x
VW-6A	6/30/2003	16.5 - 19	Deeper	x	x	x	
VW-7B	7/1/2003	11.5 - 14	Basement	x	x		x
VW-7A	7/1/2003	21 - 23.5	Deeper	x	x	x	

[1] For basement depths, the well screen was set just below the floor level of the basement. Well screens for deeper depths were set near the uppermost contaminated zone.

Benzene, Toluene, Ethylbenzene, Xylenes (EPA Method TO-14 mod for basement depths, or TO-18 for deeper depths)

C_2-C_{10} Hydrocarbons (EPA Method TO-25 mod)

x indicates that one or more of those analyses was measured on that date

Table 2-3
RI/FS Groundwater Sampling and Analysis Information

Well No.	Sample Date	G	D	BTEX	MTBE	Pb	Carc PAHs	Naph	nH	EDC EDB	VPH EPH	MNA	Comments
MW-2	10/13/04												Dry
MW-3	10/13/04												Dry
MW-4	10/13/04												Dry
MW-5	11/11/02	x	x	x	x								
	02/24/03	x	x	x	x								
	4/2/2003 and dup	x x	x x	x x									
	07/15/03												Not sampled due to bent casing
	10/23/03	x	x	x									
	01/13/04												Insufficient Water
	04/14/04												Insufficient Water
	07/12/04												Entered into annual sampling
MW-6	11/11/02	x	x	x	x								
	02/24/03	x	x	x	x								
	04/02/03	x	x	x	x					x			
	07/15/03	x		x	x					x			
	10/23/03	x	x	x		x							
	01/13/04	x	x	x	x	x							
	04/14/04	x	x	x	x	x						x	
	07/13/04	x	x	x	x	x						x	
	10/13/04	x	x	x	x	x						x	
	01/12/05	x	x	x	x	x						x	
	03/15/06	x	x	x								x	
	05/24/06	x	x	x								x	
MW-7	multiple dates												Not sampled due to the presence of SPH
MW-8	11/11/02	x	x	x	x								
	02/24/03												Well inaccessible
	04/02/03	x	x	x									
	07/15/03	x	x	x									
	10/23/03	x	x	x									
	01/13/04	x	x	x									
	04/13/04	x	x	x									
	07/12/04											x	Entered into annual sampling
	10/26/05	x	x	x	x	x						x	
	05/25/06	x	x	x									
MW-9	multiple dates												Not sampled due to the presence of SPH
MW-10	multiple dates												Not sampled due to the presence of SPH
MW-11	multiple dates												Dry
MW-11D	multiple dates												Dry
MW-12	multiple dates												Not sampled due to the presence of SPH
MW-13	multiple dates												Dry
MW-14	multiple dates												Dry
MW-15	multiple dates												Not sampled due to the presence of SPH

Table 2-3
RI/FS Groundwater Sampling and Analysis Information

Well No.	Sample Date	G	D	BTEX	MTBE	Pb	Carc PAHs	Naph	nH	EDC EDB	VPH EPH	MNA	Comments
MW-16	multiple dates												Not sampled due to the presence of SPH
MW-17	11/11/02	x	x	x	x	x							
	02/24/03	x	x	x	x	x							
	04/02/03	x	x	x	x					x			
	07/15/03	x	x	x	x	xx		x	x	x	x		
	10/23/03	x	x	x		x							
	and dup	x	x	x		x							
	01/13/04	x	x	x	x	x							
	04/14/04	x	x	x	x	x						x	
	07/13/04	x	x	x	x	x						x	
	10/13/04	x	x	x	x	x						x	
	01/12/05	x	x	x	x	x						x	
	05/04/05	x	x	x	x	x						x	
	07/13/05	x	x	x	x	x						x	
	10/27/05	x	x	x	x	x						x	
	03/15/06	x	x	x								x	
	05/24/06	x	x	x								x	
MW-18	11/11/02	x	x	x	x	x							
	02/24/03	x	x	x	x	x							
	04/02/03												LNAPL Present
	05/14/03												LNAPL Present
	06/14/03												LNAPL Present
	07/15/03												LNAPL Present
MW-19	11/11/02	x	x	x	x	x							
	02/24/03												Well inaccessible
	04/02/03												Well inaccessible
	07/15/03	x	x	x	x	x				x			
	10/24/03	x	x	x	x	x							
	and dup	x	x	x	x	x							
	1/13/04	x	x	x	x	x							
	and dup	x	x	x	x	x							
	04/13/04	x	x	x	x	x							
	07/14/04	x	x	x	x	x							
	10/13/04	x	x	x	x	x						x	
	01/13/05	x	x	x	x	x							
	05/04/05	x	x	x	x	x						x	
	07/13/06	x	x	x	x	x						x	
	10/27/05	x	x	x	x	x						x	
	03/15/06	x	x	x								x	
	05/25/06	x	x	x									
MW-20	multiple dates												Dry
MW-21	04/02/03	x	x	x	x	x	x			x			
	07/15/03	x	x	x	x	xx		x	x	x	x		
	10/24/03	x	x	x	x	x							
	01/13/04	x	x	x	x	x							
	04/14/04	x	x	x	x	x						x	
	07/13/04	x	x	x	x	x						x	
	10/13/04	x	x	x	x	x						x	
	01/12/05	x	x	x	x	x						x	
	05/04/05	x	x	x	x	x						x	
	07/13/05	x	x	x	x	x						x	
	10/27/05	x	x	x	x	x						x	

Table 2-3
RI/FS Groundwater Sampling and Analysis Information

Well No.	Sample Date	G	D	BTEX	MTBE	Pb	Carc PAHs	Naph	nH	EDC EDB	VPH EPH	MNA	Comments
MW-21	03/15/06	x	x	x								x	
(cont)	05/24/06	x	x	x								x	
MW-22	multiple dates												Not sampled due to the presence of SPH
MW-23	04/02/03	x	x	x			x						
	07/15/03	x	x	x									
	10/24/03	x	x	x									
	01/14/04	x	x	x									
	04/14/04	x	x	x	x								
	07/13/04												Entered into annual sampling
	01/12/05											x	
	05/04/05	x	x	x	x	x						x	
	07/13/05	x	x	x	x	x						x	
	05/24/06	x	x	x								x	
MW-24	04/02/03												Dry
	10/13/04												Dry
MW-25	multiple dates												Not sampled due to the presence of SPH
MW-26	04/02/03												Dry
	10/13/04												Dry
MW-27	04/02/03	x	x	x									
	07/15/03	x	x	x									
	10/24/03	x	x	x									
	01/14/04	x	x	x									
	04/13/04	x	x	x	x								
	07/12/04												Entered into annual sampling
	05/02/05	x	x	x	x	x						x	
	10/27/05	x	x	x	x	x						x	
MW-28	04/02/03	x	x	x	x	x	x			x			
	7/15/2003	x	x	x	x	x				x			
	and dup	x	x	x									
	10/24/03	x	x	x	x	x							
	01/14/04	x	x	x	x	x							
	04/14/04	x	x	x	x	x						x	
	07/13/04	x	x	x	x	x						x	
	10/13/04	x	x	x	x	x						x	
	01/13/05	x	x	x	x	x						x	
	05/02/05	x	x	x	x	x						x	
	07/13/05	x	x	x	x	x						x	
	10/27/05	x	x	x		x						x	
	03/15/06	x	x	x								x	
	05/24/06	x	x	x								x	
MW-29	04/02/03	x	x	x									
	07/15/03	x	x	x									
	10/24/03	x	x	x	x	x							
	01/13/04	x	x	x		x							
	04/13/04												Discontinued from sampling for safety reasons
MW-30	4/2/2003	x	x	x									
	and dup	x	x	x									
	07/15/03	x	x	x									
	10/24/03	x	x	x	x								
	01/13/04	x	x	x	x								

Table 2-3
RI/FS Groundwater Sampling and Analysis Information

Well No.	Sample Date	G	D	BTEX	MTBE	Pb	Carc PAHs	Naph	nH	EDC EDB	VPH EPH	MNA	Comments
MW-30 (cont)	04/13/04	x	x	x	x								
	07/13/04	x	x	x	x								
	10/13/04	x	x	x	x							x	
	1/12/05	x	x	x	x	x							
	and dup	x	x	x	x	x							
	05/03/06	x	x	x	x	x						x	
	07/14/06	x	x	x	x	x						x	
	10/27/05	x	x	x	x	x						x	
	03/16/06	x	x	x									
	05/24/06	x	x										
MW-31	04/02/03	x	x	x			x						
	07/15/03	x	x	x									
	10/24/03	x	x	x	x								
	1/13/04	x	x	x	x								
	and dup	x	x	x	x								
	4/13/04	x	x	x	x								
	and dup	x	x	x	x								
	07/13/04	x	x	x	x								
	10/13/04	x	x	x	x							x	
	01/12/05	x	x	x	x	x							
	05/03/05	x	x	x	x	x						x	
	07/13/06	x	x	x	x	x						x	
	10/27/05	x	x	x	x	x						x	
	03/16/06	x	x	x									
	05/24/06	x	x	x									
MW-32	07/15/03												Dry
MW-33	07/15/03												Dry
MW-34	07/15/03												Dry
MW-35	07/15/03												Dry
MW-36	multiple dates												Not sampled due to the presence of SPH
MW-37	7/13/04	x	x	x	x								
	and dup	x	x	x	x								
	10/13/04	x	x	x	x							x	
	and dup	x	x	x	x							x	
	01/12/05	x	x	x	x	x							
	05/03/05	x	x	x	x	x						x	
	07/14/06	x	x	x	x	x						x	
	10/27/05	x	x	x	x	x						x	
	3/16/2006	x	x	x									
	and dup	x	x	x									
	5/24/2006	x	x	x									
	and dup	x	x	x									
Trip Blanks	02/24/03	x		x	x								
	04/02/03	x		x									
	07/15/03	x		x									
	10/23/03	x	x	x									
	01/14/04	x	x	x									
	01/14/04	x	x	x									
	04/13/04	x	x	x	x								
	04/14/04	x	x	x	x								
	04/14/04	x	x	x	x								

Table 2-3
RI/FS Groundwater Sampling and Analysis Information

Well No.	Sample Date	G	D	BTEX	MTBE	Pb	Carc PAHs	Naph	nH	EDC EDB	VPH EPH	MNA	Comments
Trip Blanks (cont)	07/13/04	x	x	x	x								
	07/14/04	x	x	x	x								
	10/13/04	x	x	x	x								
	10/14/04	x	x	x	x								
	01/12/05	x	x	x	x								
	01/13/05	x	x	x	x								
	05/05/05	x	x	x	x								
	03/15/06	x		x									
	03/16/06	x		x									
	05/24/06	x		x									
	05/25/06	x	x	x									

G = TPH-gasoline (Method NWTPH-Gx, 8015B mod)
D = TPH-diesel-extended with heavy oils (Method NWTPH-Dx, 8015B mod)
nH = n-Hexane (Method 8260B)
MTBE = Methyl tertiary butyl ether (Method 8021B, confirmed by 8260B)
EDB = 1,2-Dibromoethane (Method 8260B)
Naph = Naphthalene and 2-Methylnaphthalene (Method 8260B)
EDC = 1,2-Dichloroethane (Method 8260B)
Pb = Lead (Method 7421 mod) (x = dissolved, xx = dissolved & total)
x indicates that one or more of those analyses was measured on that date
VPH/EPH = Volatile/Extractable Petroleum Hydrocarbons, Aliphatic and Aromatic Hydrocarbons (WDOE)
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes (Method 8021B)
Carc PAHs = Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)anthrancene, Dibenzo(a,h)anthracene (Method 8270C)

MNA Parameters include: Ferrous Iron (SM-3500-Fe-D), Alkalinity (EPA 310.1), Sulfate and Nitrate Nitrogen (EPA 300.0), and field parameters (DO, ORP).

Table 3-1
Depth and Elevation of Upper Surface of Lithologic Unit C

Monitoring Well	Ground Elevation (feet msl)	Depth to Top of Unit C (feet bgs)	Elevation of Top of Unit C (feet msl)
MW-4	1124	75	1049
MW-11D	1123	50	1073
MW-20	1117	30	1087
MW-24	1121	52	1069
MW-26	1120	44	1076
MW-30	1122	43	1079
MW-31	1121	20	1101
MW-37	1123	51	1072

Note: The upper layer of unit C consists of glacial till. Surveyed elevations from June 2005.

Table 3-2
Pumping Test Results for Shallow Perched Aquifer

Monitoring Well	Sustainable Pumping Rate August 29, 2003 (gpm)	Non-sustainable Pumping Rate[1] September 22, 2003 (gpm)
MW-17	0.05 (Trial #1) 0.07 (Trial #2)	0.23 (Trial #1) 0.19 (Trial #2)
MW-21	0.04	0.13
MW-28	0.06	NM

Sustainable pumping rates measured on August 29, and non-sustainable on September 22, 2003.
NM = Not Measured
[1] Well was pumped dry at these pumping rates; dry is defined as being drawn down to a point about one foot above the bottom of well, where the pump was positioned.

Table 4-1
Analytical Results for Soil Samples
Units in mg/kg (ppm)

Boring Number/ Sample Number	Sample Depth (feet bgs)	Sample Date	Total Oil & Grease	Petroleum Hydrocarbon	Benzene	Toluene	Ethyl-benzene	m- & p-Xylene	o-Xylene
B-1/S-6 (and dup)	15.5	11/13/87	<5, <5	<5, <5	<0.005	<0.005	<0.005	<0.005	<0.005
B-1/S-8	23.5	11/13/87	<5	<5	<0.005	<0.005	<0.005	<0.005	<0.005
B-2/S-5	13	11/13/87	<5	<5	<0.005	<0.005	<0.005	<0.005	<0.005
B-2/S-7	18	11/13/87	<5	<5	<0.005	<0.005	<0.005	<0.005	<0.005
B-2/S-8	21	11/13/87	<5	<5	<0.005	<0.005	<0.005	<0.005	<0.005
B-2/S-9	23	11/13/87	<5	<5	0.0183	0.0194	<0.005	0.0270	0.0593
B-3/S-5	15.5	11/14/87	<5	<5	<0.005	<0.005	<0.005	<0.005	<0.005
B-3/S-6	18	11/14/87	18.9	18.9	<0.005	<0.005	<0.005	<0.005	<0.005
B-3/S-8	23	11/14/87	23.0	23.0	**0.087**	<0.005	0.142	0.57	0.0054
B-3/S-9	26	11/14/87	14.8	<5	**0.435**	1.05	<0.005	2.39	0.557
B-4/S-5	13	11/14/87	87.8	87.8	<0.005	<0.005	<0.005	<0.005	<0.005
B-4/S-6 (and dup)	15.5	11/14/87	<5, 8.3	<5, <5	<0.005	<0.005	<0.005	<0.005	<0.005
B-4/S-8	21	11/14/87	83.8	83.8	<0.005	<0.005	<0.005	<0.005	<0.005
B-4/S-9	23	11/14/87	<5	<5	**0.872**	1.835	0.042	0.758	0.154
B-4/S-10	26	11/14/87	<5	<5	**2.08**	3.24	0.041	1.145	0.068
B-4/S-11	28.5	11/14/87	<5	<5	**2.65**	<0.005	0.077	0.683	0.147
B-4/S-12	30.5	11/14/87	<5	<5	**1.51**	1.64	0.029	0.468	0.037
B-5/S-5	13	11/14/87	<5	<5	<0.005	<0.005	<0.005	<0.005	<0.005
B-5/S-7	18.5	11/14/87	<5	<5	<0.005	<0.005	<0.005	<0.005	<0.005
B-5/S-8	20.5	11/14/87	230	157	**0.043**	**9.14**	<0.005	**28.0**	**14.5**
B-5/S-9	23	11/14/87	<5	<5	**0.399**	3.04	0.339	0.395	0.768
MW-4	22.5	03/30/88	----	19	----	----	----	----	----
MW-4	25	03/30/88	----	6.0	----	----	----	----	----
MW-4	27.5	03/30/88	----	<5	----	----	----	----	----
MW-4	30	03/30/88	----	<5	----	----	----	----	----
MW-4	32.5	03/30/88	----	<5	----	----	----	----	----
MTCA Method A Cleanup Levels	----	----	----	----	*0.03*	*7*	*6*	*9*	

References: Rittenhouse-Zeman & Associates, 1988a, 1988d

Bold values exceed MTCA 2001 Method A cleanup levels; italicized values have detection limits greater than cleanup levels

Table 4-1
Analytical Results for Soil Samples
Units in mg/kg (ppm)

Boring Number/ Sample Number	Sample Depth (feet bgs)	Sample Date	HCID	TPH-g	Benzene	Toluene	Ethyl-benzene	Xylenes
MW-5/S-3	12.5	01/06/92	ND	----	**0.055**	ND	ND	ND
MW-5/S-5	22.5	01/06/92	ND	----	ND	ND	ND	ND
MW-5/S-6	27.5	01/06/92	ND	----	ND	ND	ND	ND
MW-6/S-5	22.5	01/07/92	Gasoline	**62**	**0.44**	**10**	1.3	**17**
MW-6/S-6	27.5	01/07/92	ND	----	**1.8**	6.7	0.50	3.7
MW-6/S-7	32.5	01/07/92	ND	----	**0.62**	0.086	0.13	1.5
MW-7/S-4	17.5	01/07/92	ND	----	ND	ND	ND	ND
MW-7/S-6	27.5	01/07/92	Gasoline	**77**	**5.3**	**22**	4.9	**30**
MW-7/S-7	32.5	01/07/92	Gasoline	**43**	**1.5**	0.86	1.1	6.5
MW-8/S-4	17.5	01/06/92	ND	----	ND	ND	ND	ND
MW-8/S-5	22.5	01/06/92	ND	----	ND	ND	ND	0.61
MW-8/S-7	32.5	01/06/92	ND	----	ND	ND	ND	ND
P-1/S-5	25	01/08/92	ND	----	**1.2**	3.0	0.2	1.7
P-2/S-2	17.5	01/08/92	ND	----	ND	ND	ND	ND
P-2/S-3	25	01/08/92	ND	----	**1.9**	4.8	0.38	2.6
P-3/S-4A	20	01/09/92	ND	----	ND	ND	ND	ND
P-3/S-5	25	01/09/92	ND	----	**0.86**	3.6	0.29	1.9
P-4/S-2	17.5	01/08/92	ND	----	ND	ND	ND	ND
P-5/S-4	25	01/08/92	ND	----	**1.8**	4.7	0.42	2.6
P-6/S-3	15	01/09/92	ND	----	ND	ND	ND	ND
P-7/S-3	15	01/09/92	ND	----	ND	0.045	ND	ND
P-8/S-3C	13.5	01/09/92	ND	----	ND	ND	ND	ND
MTCA Method A Cleanup Levels	----	----	----	*30/100*	*0.03*	*7*	*6*	*9*

Reference: Rittenhouse-Zeman & Associates,1992a

ND = Not Detected (actual detection limits not available)

Bold values exceed MTCA 2001 Method A cleanup levels; italicized values have detection limits greater than cleanup levels

Table 4-1
Analytical Results for Soil Samples
Units in mg/kg (ppm)

Boring Number/ Sample Number	Sample Depth (feet bgs)	Sample Date	TPH-g	TPH-d	TPH-o	Benzene	Toluene	Ethyl-benzene	Xylenes	Lead	MTBE
B-9-20	20	06/01/01	**219**	21	<25	**0.517**	0.5	0.352	5.47	----	----
B-10-5	5	06/01/01	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	----	----
B-10-20	20	06/01/01	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	----	----
DB1-21.5	21.5	09/19/01	<5	<10	<25	<0.03	<0.05	<0.05	<0.1	----	----
DB2-21.5	21.5	09/19/01	<5	<10	<25	<0.03	<0.05	<0.05	<0.1	----	----
DB3-21.5	21.5	09/19/01	<5	<10	<25	<0.03	<0.05	<0.05	<0.1	----	----
B11-21.5	21.5	09/19/01	<5	<10	<25	<0.03	<0.05	<0.05	<0.1	----	----
B11-26.5	26.5	09/19/01	**8,800**	39.6	<25	**2.56**	**53.7**	**82.5**	**482**	----	----
B12-21.5	21.5	09/20/01	<5	<10	<25	<0.03	<0.05	<0.05	<0.1	----	----
B12-26.5	26.5	09/20/01	<5	<10	<25	**0.225**	0.0635	<0.05	0.168	----	----
B13-21.5	21.5	09/20/01	<5	<10	<25	<0.03	<0.05	<0.05	<0.1	----	----
B14-21.5	21.5	09/20/01	<5	<10	<25	<0.03	<0.05	<0.05	<0.1	----	----
B11D-35	35	11/14/01	**210**	<3	<10	*<0.2*	2.2	1.7	11	4.6	----
B11D-55	55	11/14/01	<1	<3	<10	<0.005	<0.005	<0.005	<0.015	----	----
B15-30	30	11/15/01	**190**	4.1	<10	*<0.2*	<0.2	0.34	2.1	----	----
B16-30	30	11/15/01	3.8	<3	<10	0.0074	0.19	0.09	0.75	----	----
B16-40	40	11/15/01	7.8	<3	<10	**0.046**	0.6	0.25	1.5	----	----
B16-45	45	11/15/01	<1	----	----	<0.005	<0.005	<0.005	<0.015	----	<0.05
B-17-25	25	06/12/02	8.4	5.5	60	0.023	0.1	0.15	0.96	----	----
B-18-15	15	06/12/02	4	<3	<10	0.0057	0.0065	0.016	0.05	----	----
B-18-30	30	06/12/02	5.4	<3	<10	<0.005	<0.005	<0.005	0.17	----	----
B-19-30	30	06/13/02	<1	<3	<10	**0.11**	<0.005	<0.005	<0.015	----	----
B-20-30	30	06/13/02	<1	<3	<10	<0.005	<0.005	<0.005	<0.015	----	----
MTCA Method A Cleanup Levels	----	----	*30/100*	*2,000*	*2,000*	*0.03*	*7*	*6*	*9*	*250*	*0.1*

References: Delta Environmental Consultants, 2002a, 2002d

Bold values exceed MTCA 2001 Method A cleanup levels; italicized values have detection limits greater than cleanup levels

Table 4-1
Analytical Results for Soil Samples
Units in mg/kg (ppm)

Boring Number/ Sample Number	Sample Depth (feet bgs)	Sample Date	TPH-g	TPH-d	TPH-o	Benzene	Toluene	Ethyl-benzene	Xylenes	Lead	MTBE
B21-15	15	03/03/03	**11,000**	17	<10	**19**	**79**	**54**	**280**	7.4	*<0.13*
B21-20	20	03/03/03	**190**	<3	<10	**0.45**	<0.4	0.40	2.2	3.7	<0.001
B21-25	25	03/03/03	4.0	<3	<10	**0.75**	0.030	0.099	0.11	4.1	<0.001
B21-30	30	03/03/03	**32**	3.1	<10	**0.27**	0.16	0.10	0.51	3.8	<0.1
B22-25	25	03/03/03	8.6	9.6	<10	**0.14**	<0.02	<0.02	<0.06	4.2	<0.001
B22-30	30	03/03/03	<1	<3	<10	0.0072	<0.02	<0.02	<0.005	6.6	<0.005
B23-30	30	03/03/03	<1	<3	<10	<0.02	<0.02	<0.02	<0.005	5.3	<0.005
B23-35	35	03/03/03	<1	<3	<10	<0.02	<0.02	<0.02	<0.005	4.1	<0.005
B24-25	25	03/04/03	9.0	99	<10	<0.02	0.18	0.055	1.2	7.5	<0.002
B25-20	20	03/04/03	**360**	<3	<10	*<0.04*	<0.04	<0.25	<0.1	5.2	<0.1
B25-25	25	03/04/03	**790**	120	<10	*<0.04*	<0.2	1.7	6.5	4.6	*<0.12*
B25-40	40	03/04/03	21	<3	<10	<0.002	0.010	0.059	0.23	7.6	<0.001
B26-30	30	03/05/03	1.5	340	19	<0.002	0.0087	0.0048	0.043	6.3	<0.001
B26-35	35	03/05/03	1.8	14	<10	<0.002	0.0071	0.0021	0.089	4.5	<0.002
B27-15	15	03/05/03	**3,100**	**22,000**	*<5,000*	**350**	**220**	**1,600**	**7,700**	5.5	*<0.12*
B27-20	20	03/05/03	**1,800**	**9,200**	<1,000	*<0.08*	<0.08	1.1	5.1	5.6	<0.005
B27-30	30	03/05/03	6.9	120	<10	<0.002	<0.002	0.0021	0.012	5.5	<0.001
B28-25	25	03/05/03	<1	<3	<10	<0.002	<0.002	<0.002	<0.005	4.2	<0.005
B28-40	40	03/05/03	4.5	<3	<10	<0.002	0.0037	0.0027	0.54	7.8	<0.001
B29-15	15	03/06/03	<1	<3	<10	<0.002	<0.002	<0.005	<0.005	3.6	<0.005
B29-25	25	03/06/03	<1	<3	<10	<0.002	<0.002	<0.002	<0.005	4.4	<0.005
B30-25	25	03/06/03	16	<3	<10	<0.002	0.14	0.16	1.6	8.9	<0.005
B30-30	30	03/06/03	**32**	<3	<10	<0.002	0.27	0.24	2.4	6.8	<0.005
3603001 (B30-30 dup)	30	03/06/03	**32**	120	<10	<0.02	0.081	0.19	1.3	6.5	*<0.13*
B30-80	80	03/06/03	<1	<3	<10	<0.002	<0.002	<0.002	0.009	2.3	<0.005
B30-85	85	03/06/03	<1	<3	<10	<0.002	<0.002	<0.002	0.0066	1.7	<0.005
B31-80	80	03/07/03	<1	<3	<10	<0.002	<0.002	<0.002	<0.005	1.4	<0.005
B31-85	85	03/07/03	<1	<3	<10	<0.002	<0.002	<0.002	<0.005	2.5	<0.005
3703003 (B31-85 dup)			<1	<3	<10	<0.002	<0.002	<0.002	<0.005	2.5	<0.005
MTCA Method A Cleanup Levels	----	----	*30/100*	*2,000*	*2,000*	*0.03*	*7*	*6*	*9*	*250*	*0.1*

Reference: This RI/FS Report.

Bold values exceed MTCA 2001 Method A cleanup levels; italicized values have detection limits greater than cleanup levels

Table 4-1
Analytical Results for Soil Samples
Units in mg/kg (ppm)

Boring Number/ Sample Number	Sample Depth (feet bgs)	Sample Date	TPH-g	TPH-d	TPH-o	Benzene	Toluene	Ethyl-benzene	Xylenes	Lead	MTBE
B-32-27.5	27.5	06/24/03	12	<3	43	<0.02	0.5	0.1	1.5	7.59	<0.05
B-32-35	35	06/24/03	8.8	<3	47	**0.03**	0.4	0.1	1.8	4.95	<0.05
B-33-25	25	06/25/03	3.0	<3	26	<0.005	0.01	0.02	0.1	5.87	<0.05
B-33-37.5	37.5	06/25/03	16	<3	<10	**0.1**	1.6	0.4	2.4	----	----
B-34-22.5	22.5	06/25/03	3.4	3	98	<0.005	0.03	0.02	0.1	----	<0.05
B-34-25	25	06/25/03	9.8	<3	19	0.02	0.4	0.2	1.5	----	<0.05
B-062503-D (B-34-25 dup)	25	06/25/03	9.7	<3	27	0.02	0.4	0.2	1.5	----	<0.05
B-34-35	35	06/25/03	**210**	28	24	*<0.4*	1.0	0.7	7.9	----	*<1*
B-35-30	30	06/26/03	**90**	<3	<10	<0.02	0.1	0.2	0.8	5.93	*<0.2*
B-36-15	15	06/26/03	15	<3	<10	<0.005	<0.005	<0.02	<0.05	5.36	<0.05
B-36-30	30	06/26/03	<1	<3	<10	**0.3**	0.006	<0.005	0.03	----	----
B-36-35	35	06/26/03	**30**	<3	<10	**0.4**	0.07	0.1	1	5.28	<0.05
B-36-42.5	42.5	06/26/03	4.5	<3	<10	**0.7**	0.02	0.05	0.3	5.81	<0.05
B-36-45	45	06/26/03	3.9	<3	<10	**1.1**	0.02	0.06	0.3	----	----
B-36-50	50	06/26/03	2.2	<3	<10	**1.6**	0.03	0.05	0.2	----	----
MW-37-25	25	05/10/04	<1.0	<3	<10	<0.005	<0.005	<0.005	<0.02	----	<0.05
MW-37-35	35	05/10/04	<1.0	<3	<10	<0.005	<0.005	<0.005	<0.02	5.65	<0.05
MW-37-50	50	05/10/04	<1.0	<3	<10	<0.005	<0.005	<0.005	<0.02	----	<0.05
VB-1A-9.5	9.5	06/24/03	<1	<3	<10	<0.005	<0.005	<0.005	<0.02	----	----
VB-1A-25	25	06/24/03	<1	<3	42	<0.005	<0.005	<0.005	<0.02	----	----
VB-1A-32.5	32.5	06/24/03	2.8	<3	<10	<0.005	<0.005	<0.005	0.2	6.77	<0.05
VB-2A-12.5	12.5	06/24/03	<1	<3	<10	<0.005	<0.005	<0.005	<0.02	----	----
VB-3A-10	10	06/25/03	<1	<3	<10	<0.005	<0.005	<0.005	<0.02	----	----
VB-3A-22.5	22.5	06/25/03	<1	<3	<10	<0.005	<0.005	<0.005	<0.02	----	----
VB-3A-30	30	06/25/03	**42**	<3	34	*<0.08*	<0.08	0.05	0.6	----	*<0.2*
VB-4A-10	10	06/26/03	<1	4.0	51	<0.005	<0.005	<0.005	<0.02	----	<0.05
VB-4A-25	25	06/26/03	7.7	<3	<10	<0.005	0.02	0.07	0.5	----	<0.05
VB-5A-10	10	06/27/03	<1	<3	<10	<0.005	<0.005	<0.005	<0.02	----	<0.05
VB-5B-20	20	06/27/03	1.6	<3	38	**0.3**	0.04	0.08	0.2	----	<0.05
VB-062703-D (VB-5B-20 dup)	20	06/27/03	1.3	<3	<10	**0.2**	0.02	0.05	0.1	----	<0.05
VB-6A-10	10	06/30/03	<1	<3	17	<0.005	<0.005	<0.005	<0.02	----	----
VB-6A-17.5	17.5	06/30/03	**230**	37	<10	<0.02	0.3	0.4	1.3	3.54	*<0.2*
VB-7A-25	25	07/01/03	5.6	<3	14	**0.4**	0.03	0.3	0.5	4.48	<0.05
MTCA Method A Cleanup Levels	----	----	*30/100*	*2,000*	*2,000*	*0.03*	*7*	*6*	*9*	*250*	*0.1*

Reference: This RI/FS Report.

Bold values exceed MTCA 2001 Method A cleanup levels; italicized values have detection limits greater than cleanup levels

Table 4-1
Analytical Results for Soil Samples
Units in mg/kg (ppm)

Boring Number/ Sample Number	Sample Depth (feet bgs)	Sample Date	*2003 RI Special Analyses*				
			Carc PAHs	Naph	EDB	EDC	TPH Fuels
B21-15	15	03/03/03	<0.033	**64**	*<0.13*	<0.13	----
B21-20	20	03/03/03	----	1.7	**0.009**	<0.001	----
B21-25	25	03/03/03	----	0.12	**0.006**	<0.001	----
B21-30	30	03/03/03	<0.033	0.2	*<0.12*	<0.12	----
B22-25	25	03/03/03	<0.033	<0.15	<0.001	<0.001	----
B24-25	25	03/04/03	<0.033	0.099	<0.002	<0.002	----
B25-20	20	03/04/03	----	<1.5	**0.13**	<0.12	----
B25-25	25	03/04/03	<0.033	<5	*<0.12*	<0.12	----
B25-40	40	03/04/03	----	<0.08	<0.001	<0.001	----
B26-30	30	03/05/03	<0.033	<0.01	<0.001	<0.001	----
B26-35	35	03/05/03	<0.033	<0.02	<0.002	<0.002	----
B27-15	15	03/05/03	*<0.67*	**90**	*<0.12*	<0.12	----
B27-20	20	03/05/03	*<0.33*	*<32*	<0.005	<0.005	----
B27-30	30	03/05/03	<0.033	<0.25	<0.001	<0.001	----
B28-40	40	03/05/03	----	0.087	<0.001	<0.001	----
B30-25	25	03/06/03	----	0.12	<0.005	<0.005	----
B30-30	30	03/06/03	----	0.19	<0.005	<0.005	----
3603001 (B30-30 dup)	30	03/06/03	<0.033	0.29	*<0.13*	<0.13	----
B-32-27.5	27.5	06/24/03	----	----	<0.005	<0.005	<4, <10
B-32-35	35	06/24/03	<0.0003	----	<0.001	<0.001	----
B-33-25	25	06/25/03	<0.0003	----	<0.001	<0.001	9.5
B-34-22.5	22.5	06/25/03	<0.0003	----	<0.001	<0.001	----
B-34-25	25	06/25/03	----	----	<0.001	<0.001	<4, <10
B-062503-D (B-34-25 dup)	25	06/25/03	<0.0003	----	----	----	----
B-35-30	30	06/26/03	----	----	<0.001	<0.001	14
B-36-15	15	06/26/03	----	----	<0.001	<0.001	----
B-36-35	35	06/26/03	----	----	<0.001	<0.001	----
B-36-42.5	42.5	06/26/03	----	----	<0.001	<0.001	<4, <10
VB-1A-25	25	06/24/03	<0.0003	----	----	----	----
VB-1A-32.5	32.5	06/24/03	----	----	<0.001	<0.001	----
VB-3A-30	30	06/25/03	<0.0003	----	<0.001	<0.001	<4, <10
VB-4A-25	25	06/26/03	----	----	<0.001	<0.001	----
VB-6A-17.5	17.5	06/30/03	<0.003	----	*<0.13*	<0.13	----
VB-7A-25	25	07/01/03	<0.0003	----	0.001	0.01	----
MTCA Method A Cleanup Levels	----	----	*0.1*	*5*	*0.005*	----	----

Reference: This RI/FS Report.

Carc PAHs = Carcinogenic polycyclic aromatic hydrocarbons (7 compounds)

Naph = Naphthalene

EDB = Ethylene dibromide (1,2-dibromoethane) EDC = Ethylene dichloride (1,2-dichloroethane)

TPH Fuels include C9-C40 hydrocarbons, with two different detection limits applied; the detections for B-33 and B-35 were for jet fuel (C9-C19)

Bold values exceed MTCA 2001 Method A cleanup levels; italicized values have detection limits greater than cleanup levels

Table 4-2
Uppermost Indication of Soil Contamination in Borings

Boring/Well	*Top of Soil Sample*[1]		*Analytical Detections*[2]	*Hydrocarbon Odor*	*PID Reading (ppm)*	*Comment*
	Depth (ft bgs)	*Elevation (ft MSL)*				
B-1	23	1102	ND	slight	---	
B-2	22.5	1101	<MTCA	very slight	---	
B-3	12.5 15	1111 1108	na ND	slight slight	---	
B-4	12.5 20	1113 1105	PH ND	none moderate	---	
B-5	15 17.5	1109 1107	na ND	slight slight	---	
MW-4	22.5	1101	<MTCA	---	280	
MW-5	12.5 22.5	1111 1101	B ND	none strong	0 12	
MW-6	22.5	1103	G,B,T,X	strong	631	
MW-7	22.5 27.5	1102 1098	na G,B,T,X	very strong very strong	705 888	
MW-8	22.5	1102	<MTCA	strong	146	
P-1	20 25	1105 1100	na B	strong strong	33 766	
P-2	25	1100	B	moderate	109	
P-3	20.5	1105	ND	strong	212	
P-4	25	1100	na	strong	---	
P-5	18.5 25	1106 1100	na B	strong strong	0 158	Assume contam. top is at 1103 ft
P-6, P-7, P-8	>16.5	<1109	ND	none	0	No contamination to depth of 16.5 ft
DB-1	20	1105	ND	moderate	2	
DB-2	---	---	ND	none	0	No contamination to depth of 26.5 ft
DB-3	25	(1098)	na	none	10	May be free of contamination
B-9/MW-9	20	1103	G,B	moderate	18	
B-10/MW-10	20	1104	ND	moderate	20	
B-11/MW-11	21 25	1102 1098	ND G,B,T,E,X	slight moderate	1 2000	
B-12/MW-12	20 25	1103 1098	ND B	none slight	7 37	Assume contam. top is at 1100 ft
B-13/MW-13	35	(1088)	na	none	30	May be free of contamination
B-14/MW-14	25 30	1097 1092	na na	slight moderate	5 56	
B-15/MW-15	30	1093	G	moderate	958	
B-16/MW-16	25 30	1097 1092	na <MTCA	slight moderate	35 67	
B-17/MW-17	20 25	1104 1099	na <MTCA	slight slight	74 72	
B-18/MW-18	15	1108	<MTCA	slight	52	

Table 4-2
Uppermost Indication of Soil Contamination in Borings

Boring/Well	*Top of Soil Sample*[1]		*Analytical Detections*[2]	*Hydrocarbon Odor*	*PID Reading (ppm)*	*Comment*
	Depth (ft bgs)	*Elevation (ft MSL)*				
B-19/MW-19	25 30	1096 1091	na B	moderate moderate	44 53	
B-20/MW-20	30 35	(1087) (1082)	ND na	none none	14 25	Apparently free of contamination
B-21/MW-21	10 15	1112 1107	na G,B,T,E,X,N	none moderate	9 >2000	Assume contam. is at top of silt layer at 1110 ft
B-22/MW-22	20 25	1101 1096	na B	slight slight	37 140	
B-23/MW-23	---	---	ND	none	1	No contamination to depth of 41.5 ft
B-24/MW-24	25	1096	<MTCA	strong	200	
B-25/MW-25	20	1102	G,ED	strong	60+	
B-26/MW-26	30	1090	<MTCA	moderate	16	
B-27/MW-27	15	1111	G,D,B,T,E,X,N	moderate	461	
B-28/MW-28	35 40	1090 1085	na <MTCA	none none	16 52	
B-29/MW-29	15	(1110)	ND	none	16	Apparently free of contamination
B-30/MW-30	25	1097	<MTCA	moderate	41	
B-31/MW-31	---	---	ND	none	---	No contamination
B-32/MW-32	25 27.5	(1095) 1094	na <MTCA	none moderate	21 1750	
B-33/MW-33	25	1098	<MTCA	strong	1470	
B-34/MW-34	22.5	1099	<MTCA	strong	42	
B-35/MW-35	25 30	1095 1090	na G	mod. weak moderate	4 535	
B-36/MW-36	15	1107	<MTCA	mod. weak	25	
B-37/MW-37	---	---	na	none	---	No contamination
VB-1/VW-1	32.5	1090	<MTCA	mod. weak	30	
VB-2/VW-2	>24	<1098	ND	none	0	No contamination to depth of 24 ft
VB-3/VW-3	30	1093	G	strong	450	
VB-4/VW-4	25	1096	<MTCA	strong	152	
VB-5/VW-5	20	1103	B	strong	25	
VB-6/VW-6	15 17.5	1106 1104	na G	moderate strong	60 >2000	
VB-7/VW-7	20 25	1104 1099	na B	strong mod. strong	64 101	

1 Elevation above mean sea level for top of the soil sample; elevations in parentheses correspond to soil with possibly spurious PID readings that are not accompanied by a hydrocarbon odor or any analytical detections (all samples in that boring may be uncontaminated).

2 Abbreviations for analytical detections or regulatory exceedances:
ND = hydrocarbon constituents not detected
na = sample not analyzed
<MTCA = hydrocarbon constituent(s) detected at concentrations below MTCA 2001 Method A cleanup levels
The following refer to constituents detected at concentrations above MTCA Method A soil cleanup levels:
G = TPH-gasoline-range hydrocarbons, D = TPH-diesel-range hydrocarbons, PH = petroleum hydrocarbons,
B = benzene, T = toluene, E = ethylbenzene, X = xylenes, M = MTBE, N = naphthalene, ED = ethylene dibromide

Table 4-3
Laboratory Results for NAPL Samples from Chelan

Well/ Boring	Sample Date	Lead Content (g/gal)	Weathering	Chemistry/Comment
Woodin test hole (MW-2)	2/1988	0.3	About 50% evaporated; xylenes still common	Dissimilar to MW-3 and MW-7 (2000), but with similar high alkylate, isooctane, and olefins; lead as five isomers, with TEL about 60%; probably manufactured since 1985, in ground for more than 1 year
MW-3	8/14/88	0.43	About 40% evaporated; xylenes still common	Dissimilar to MW-2 and MW-7 (2000), but with similar high alkylate, isooctane, and olefins; lead as five isomers, with TEL about 60%; fuel manufactured in 1986 or 1987 (Chevron); fuel at least 3 years old (RZA, 1988e)
MW-7	6/17/92	---	---	Gasoline with significant light-end volatile constituents (RZA, 1992c)
MW-7	3/1996	---	Evaporated gasoline (in a water sample)	Water sample with 0.9 ppm evaporated gasoline; no alkylate blending stock (no isooctane); dissimilar to MW-7 (2000)
MW-7	8/16/00	0.46	Old biodegraded gasoline; significantly evaporated and water-washed; lost most BTEX	Mixture of lead isomers; contains high alkylate (isooctane common) and olefins; similar to 1980s gasoline blends, prior to early 1986; dissimilar to MW-2 and MW-3, but may be due to weathering; considerably more weathered than MW-10 and MW-12
MW-6	6/17/92	---	---	Gasoline with significant light-end volatile constituents (RZA, 1992c)
MW-10	11/2001	1.44	Partially evaporated; lost some toluene to water-washing; xylenes present	Mixture of lead isomers plus TEL; less weathered than MW-7; closely resembles MW-12, but has more alkylate blending stock (isooctane)
MW-12	11/2001	1.25	Partially evaporated; lost some toluene to water-washing; xylenes present	Mixture of lead isomers plus TEL; less weathered than MW-7; closely resembles MW-10, but has less alkylate blending stock (isooctane)
MW-18	5/14/03	2.84	Evaporated; BTEX significantly depleted to water-washing; significantly weathered	92% of lead is TEL isomer, with small amounts of others; more weathered than other gasolines onsite; contains more alkylate blending stock (isooctane) than MW-15, MW-16, MW-25, MW-36, similar to MW-12, less than MW-7 and MW-10
MW-15	4/26/02	4.1	Evaporated and water-washed; lost all benzene and toluene	Lead is present as TEL isomer; no isooctane, suggesting no alkalate blending stock; similar to MW-16, MW-25, MW-36
MW-16	5/2002	3.7	Evaporated and water-washed; lost part of benzene and toluene; xylenes present	Lead is primarily as TEL isomer, with small amounts of others; low isooctane, poor in alkalate blending stock; similar to MW-15, MW-25, MW-36
MW-25	4/03/03	2.5	Evaporated; toluene largely absent due to water-washing	Lead is mostly TEL isomer, but with traces of others; low isooctane, poor in alkalate blending stock; similar to MW-15, MW-16, MW-36; slightly more evaporated than MW-15 and MW-16

Table 4-3
Laboratory Results for NAPL Samples from Chelan

MW-36	6/27/03	3.03	Partially evaporated; lost toluene, ethylbenzene, xylenes to water-washing and biodegradation	97% of lead is TEL isomer; very low isooctane (second lowest after MW-15), with little/no alkalate blending stock; similar to MW-15, MW-16, MW-25
MW-22	4/03/03	0.03 (diluted by diesel)	Weathered, partially biodegraded diesel; gasoline is evaporated	Predominantly diesel (at least 60%), some evaporated gasoline; distinct from all other samples

Available reports are included in Appendix C.
Wells/borings are listed in order from roughly east to west down Woodin Avenue (from Chevron station westward).
Oxygenates were not identified in any analyses.

Table 4-4
Analytical Results for Soil Vapor Samples
Analytical units in ppbv

Well/ Sample Number	Screen Interval (feet bgs)[1]	Stable PID Value (ppm)[2]	C_2-C_{10} Hydrocarbons	Benzene	Toluene	Ethyl-benzene	m/p-Xylene	o-Xylene	Total Xylenes
VW-1B	9 - 11.5 (basement depth)	2.1	<1,000	1	2	0.5	1	0.4	----
VW-1A	25 - 27.5 (deeper)	1005	1,900,000	4,000	6,000	1,000	----	----	5,000
VW-2	12.5 - 15 (basement depth)	1.1	<1,000	0.7	2	0.4	1	0.5	----
VW-MW-33	23.5 - 33.5 (deeper)	>2000	13,000,000	20,000	60,000	20,000	----	----	110,000
VW-3B	8.5 - 11 (basement depth)	4.0	16,000	<10	31	12	35	11	----
VW-3A	22.5 - 25 (deeper)	1990	13,000,000	20,000	8,000	2,000	----	----	5,000
VW-4B	8 - 10.5 (basement depth)	4.0	2000	1	5	2	17	2	----
VW-4A	22.5 - 25 (deeper)	>2000	12,000,000	20,000	20,000	20,000	----	----	70,000
VW-5B	8.5 - 11 (basement depth)	13	4,500	10	6	2	3	3	----
VW-070103-1 (VW-5B dup)			4,000	10	6	2	4	3	----
VW-5A	18.5 - 21 (deeper)	>2000	7,100,000	90,000	10,000	10,000	----	----	30,000
VW-070103-2 (VW-5A dup)			6,600,000	80,000	10,000	10,000	----	----	30,000
VW-6B	9.5 - 12 (basement depth)	6	7,900	4	5	2	3	1	----
VW-6A	16.5 - 19 (deeper)	1800	2,600,000	3,000	5,000	9,000	----	----	30,000
VW-7B	11.5 - 14 (basement depth)	0.2	<1,000	5	4	2	6	1	----
VW-7A	21 - 23.5 (deeper)	1560	6,400,000	40,000	8,000	20,000	----	----	40,000

Reference: This RI/FS report.

[1] For basement depths, the well screen was set just below the floor level of the basement. The deeper depths were near the uppermost contaminated zone.

[2] Stabilized field reading on the PID meter at completion of purging, just prior to sampling.

Table 4-5
Vapor Intrusion Modeling Results

Vapor Well/ Address	Modeling Parameters				Carcinogenic	Non-Carcinogenic Hazard Quotient				Non-Carc.
	Enclosed Space Type and Height (cm)	Basement Floor Type and Seam Crack Width (cm)	Air Exchange Rate (/hr)	Exposure Frequency (days/yr) [1]	Excess Risk from Benzene	Toluene	Ethyl-benzene	m/p-Xylene	o-Xylene	Hazard Index [2]
VW-1B										
209 Woodin	Bsmt+1st Floor, 518	Concrete, 0.1	0.25	143	6.E-10	1.E-06	1.E-07	4.E-08	2.E-08	1.E-06
	Basement only, 244	Concrete, 0.1	0.25	17	1.E-10	3.E-07	4.E-08	1.E-08	4.E-09	4.E-07
VW-2										
113 Emerson	Bsmt+1st Floor, 610	Concrete, 0.1	0.25	104	2.E-09	8.E-06	7.E-07	3.E-07	1.E-07	9.E-06
	Basement only, 305	Concrete, 0.1	0.05	4	9.E-10	3.E-06	3.E-07	1.E-07	5.E-08	3.E-06
VW-3B										
206 Woodin	Bsmt+1st Floor, 579	Dirt/Concrete, 333	0.25	104	2.E-07	7.E-04	1.E-04	5.E-05	2.E-05	9.E-04
	Basement only, 213	Dirt/Concrete, 333	0.05	4	9.E-08	4.E-04	5.E-05	2.E-05	8.E-06	4.E-04
VW-4B										
108 Emerson	Bsmt+1st Floor, 488	Concrete, 0.1	0.25	117	6.E-09	3.E-05	6.E-06	8.E-06	9.E-07	5.E-05
	Basement only, 244	Concrete, 0.1	0.05	4	2.E-09	1.E-05	2.E-06	3.E-06	3.E-07	2.E-05
VW-5B										
212 Woodin	Bsmt+1st Floor, 518	Concrete, 0.1	0.25	137	3.E-08	2.E-05	3.E-06	7.E-07	7.E-07	3.E-05
	Basement only, 213	Concrete, 0.1	0.25	68	4.E-08	3.E-05	4.E-06	9.E-07	9.E-07	3.E-05
VW-6B										
140 Woodin	Bsmt+1st Floor, 564	Dirt/Concrete, 324	0.25	137	1.E-07	3.E-04	4.E-05	9.E-06	3.E-06	3.E-04
	Basement only, 259	Dirt/Concrete, 324	0.05	4	4.E-08	7.E-05	1.E-05	3.E-06	9.E-07	9.E-05
VW-7B										
222 Woodin	Bsmt+1st Floor, 640	Concrete, 0.1	0.25	98	9.E-09	8.E-06	2.E-06	8.E-07	1.E-07	1.E-05
	Basement only, 259	Concrete, 0.1	0.25	49	1.E-08	1.E-05	2.E-06	9.E-07	2.E-07	1.E-05
MTCA Acceptable Risk Standards:					*1.E-06*	*1.E+00*	*1.E+00*	*1.E+00*	*1.E+00*	*1.E+00*

1 Exposure Frequency is calculated based on equivalent number of full 24-hour days (see Appendix F).

2 Hazard Index is the summation of all Hazard Quotient values for that sample model run.

Table 6-1 Initial Screening of Cleanup Alternative Components – Soil			
Category	**Cleanup Alternative Component**	**Description of Action**	**Technical Feasibility Screening Comment**
Institutional Controls	Physical Access Controls	Use of fencing, signs, and security measures to limit or prevent public access.	Rejected. The site is located in the middle of a busy commercial area, limiting public access is not technically feasible.
	Deed Restrictions	Covenants to limit conveyance of property and the type of future land uses and construction.	Retained. The site encompasses various parcels of land owned by various owners, currently deed restrictions and restrictive covenants are not technically feasible; however, deed restrictions should not be excluded at this time.
	Soil Management Plan	Written document specifying correct procedures for handling and disposal of incidental petroleum contaminated waste resulting from potential demolition, redevelopment, or construction at the site.	Retained. Potentially useful for minimizing hazards associated with petroleum contaminated soil that may be exposed during future construction, maintenance, or development at the site. The Soil Management Plan will be made available to property owners during the permitting process for demolition, remodeling, and new construction.
Containment	Vegetated Soil	Maintain plantable soil layer supporting healthy grass or similar vegetation.	Rejected. The site is in the middle of a busy commercial area and is currently paved. Changing the site to vegetation is not technically feasible.
	Pavement	Cover surface of contaminated zone to preclude direct contact exposures and prevent surface transport of contaminants by erosion mechanisms.	Rejected. Although the site is currently covered by pavement or buildings which act to partially mitigate the risk to humans and terrestrial receptors, ChevronTexaco does not have authority to require the pavement remain in place. Potential disturbances to the pavement may occur during renovation, remodeling or maintenance activities at any of the properties within the site boundaries.
Removal	Hot Spot Removal	Use of mechanical equipment to unearth soil for on-site treatment, off-site treatment or disposal in order to achieve significant reduction in risk.	Rejected. This component would result in contaminants being brought to the surface potentially resulting in exposures to the public. Minimal exposure is currently occurring because the contaminated soil is located a minimum of 12 feet below ground surface. This technology increases the exposure risk, and therefore, is not protective of human health.

Table 6-1 Initial Screening of Cleanup Alternative Components – Soil			
Category	**Cleanup Alternative Component**	**Description of Action**	**Technical Feasibility Screening Comment**
On-Site Treatment	Natural Attenuation	Reduction in mass, mobility, and concentration of contaminants in the subsurface by intrinsic processes.	Retained. The soil exceeding the cleanup levels is located a minimum of 12 feet below ground surface and there is no current exposure route to groundwater in the shallow perched aquifer, the only human exposure risk is limited to demolition/construction activities. The historic nature of the releases and limited extent of soil contamination suggests that contaminant migration is not an issue. By nature, petroleum components are readily biodegradable and will attenuate in time.
	Soil Vapor Extraction (SVE)	Reduce the toxicity, volume, or mobility of contaminants by the use of processes that remove, destroy, or stabilize the contaminants of concern.	Retained. Potentially applicable for remediation of soil hot spots within the point of compliance for direct contact (i.e., above 15 feet bgs). This technology is not technically feasible for remediation of the widespread contamination at greater depths due to the heterogeneity of the subsurface. The presence of impermeable layers and perched lenses of groundwater would create preferential pathways limiting the effectiveness of the SVE system. Additionally, the presence of buildings, streets, and utilities would further reduce the overall effectiveness by limiting extraction point placement.
	Bioremediation	In-situ injection and mixing of specific acclimated microorganisms into the contaminated soil to enhance biodegradation breaking the contaminants down into carbon dioxide and water.	Rejected. Distribution of the microorganisms would require extensive mixing of the soil by augers or heavy equipment. The mixing would result in some contaminants being brought to the surface resulting in potential exposures to the public. Minimal exposure is currently occurring because the contaminated soil is located a minimum of 12 feet below ground surface. This technology is not protective of human health.
	In-Situ Thermal Heating/ Soil Vapor Extraction	Heating the soil to increase the rate of volatilization and capturing the resultant vapors with a soil vapor extraction system.	Rejected. This technology would increase the vapors in an occupied area. If the soil vapor extraction system did not capture all of the increased vapors, this alternative would increase risk to human health. This technology is not protective of human health.

Table 6-1 Initial Screening of Cleanup Alternative Components – Soil			
Category	**Cleanup Alternative Component**	**Description of Action**	**Technical Feasibility Screening Comment**
Disposal	Off-Site Disposal	Disposal of any incidental contaminated soil that may be unearthed during renovation, redevelopment, or maintenance at the site.	Retained. Although Hot Spot Removal (above) was rejected due to the increase in exposure risk, small quantities of contaminated soil may be excavated during potential future redevelopment. This technology is retained for potential use in conjunction with a soil management plan.

Table 6-2
Initial Screening of Cleanup Alternative Components – NAPL

Category	Cleanup Alternative Component	Description of Action	Technical Feasibility Screening Comment
Institutional Controls	Deed Restrictions on Construction of New Wells	Covenants to limit conveyance of property and the type of future land uses and construction.	Rejected. Component does not comply with MTCA's requirement to remove NAPL.
Containment	Vertical Barrier	Subsurface impermeable vertical wall constructed of various materials designed to minimize movement of contaminants.	Rejected. Component does not comply with MTCA's requirement to remove NAPL.
Removal	Hand Bailing	Removal of NAPL through hand bailing methods.	Retained. Potentially useful for elimination of NAPL. Short term risk of exposure to humans and the environment during bailing can be mitigated by engineering controls.
	Extraction by Vacuum Truck	Removal of groundwater, NAPL, and soil vapors by periodically applying a vacuum to wells. The contaminants are pulled directly into the holding tank of a vacuum truck and disposed of off-site.	Retained. Potentially useful for elimination of NAPL with relatively low risk of exposure to humans and the environment.
	Petroleum Selective Sorbent Socks	Passive collection of NAPL by placement of an oil selective absorbent material down the well.	Retained. Potentially useful for elimination of NAPL.
	Belt Skimmers	Mechanical device with a belt extending down a well into the NAPL. The NAPL adheres to the belt and is removed from the well as the belt is rotated.	Retained. Potentially useful for elimination of NAPL.

Table 6-2
Initial Screening of Cleanup Alternative Components – NAPL

Category	Cleanup Alternative Component	Description of Action	Technical Feasibility Screening Comment
Removal (continued)	Product Only Pumps	Device inserted into well which pneumatically or mechanically extracts only NAPL (no groundwater) from the water table.	Retained. Potentially useful for elimination of NAPL.
	Total Fluid Extraction (Groundwater Drawdown, NAPL Removal)	Pumping groundwater to depress the water table at a location to allow NAPL to pool into the well. Pooled NAPL is removed as a separate phase.	Retained. Potentially useful for elimination of NAPL.
	Thermal Enhanced Extraction	Heating the soil to increase the rate of NAPL volatilization and capturing the resultant vapors with a soil vapor extraction (SVE) system.	Rejected. This technology would increase the vapors in an occupied area. If the SVE system were unable to capture all of the increased vapors, an increased risk to human health would occur. This technology is not protective of human health.
	Natural Attenuation	Reduction in mass, mobility, and concentration of contaminants in the subsurface by natural intrinsic processes.	Retained. Potentially useful for elimination of NAPL.
On-Site Treatment of Extracted Groundwater	Air Stripping	Removes volatile substances from groundwater through aeration, by causing contaminant mass transfer from liquid to vapor.	Retained. Potentially useful for treating off-gas from SVE system.
	Oil/Water Separator	Allows NAPL to separate from groundwater naturally by density in a low-flow holding tank.	Retained. Potentially useful for separating any residual NAPL from extracted groundwater.
	Catalytic Oxidation	Heating of the air stream to cause oxidation of hydrocarbons to CO_2 and H_2O.	Retained. Potentially useful for treating soil vapors removed from ground through vapor extraction, and vapors discharged from air stripper.

Table 6-2
Initial Screening of Cleanup Alternative Components – NAPL

Category	Cleanup Alternative Component	Description of Action	Technical Feasibility Screening Comment
On-Site Treatment of Extracted Groundwater (continued)	Carbon Adsorption	Removal of soluble compounds from water as they adhere to the surface of carbon particles.	Retained. Potentially useful for treating extracted groundwater.
NAPL Disposal	Recycling	Use as fuel source.	Rejected. The presence of high concentrations of lead in the NAPL preclude recycling.
	Disposal at a Hazardous Waste Facility	Disposal at a hazardous waste facility.	Retained. Due to presence of lead in the NAPL, disposal at a hazardous waste facility is currently the only disposal option available.

Table 6-3
Initial Screening of Cleanup Alternative Components – Groundwater

Category	Cleanup Alternative Component	Description of Action	Technical Feasibility Screening Comment
Institutional Controls	Deed Restrictions on Construction of New Wells	Covenants to limit conveyance of property and the type of future land uses and construction.	Rejected. There are numerous property owners within the site boundaries; therefore, implementation and enforcement of deed restrictions would be very difficult. In addition, there are currently no water wells within the plume boundary. Given the nature of the area, the low yield of the aquifer, and the availability of city water it is highly unlikely that any new water wells within the site boundary would ever be installed.
Containment	Vertical Barrier	Subsurface impermeable vertical wall constructed of various materials designed to minimize movement of contaminants.	Rejected. The groundwater plume appears to be stable. A vertical barrier would not provide any additional protection to humans or the environment.
Extraction	Groundwater Extraction	Extracting groundwater from the shallow perched aquifer for ex-situ treatment.	Rejected. Due to the discontinuous, stratified and fine-grained nature of the water bearing zones in the shallow perched aquifer, extraction of a sufficient amount of water to achieve any reduction in contaminant concentrations would be technically infeasible.
In-situ	Air Sparge	Injection of air into the saturated zone to remove contaminants by stripping and volatilization.	Rejected. The heterogeneous, stratified and fine-grained nature of the subsurface is not amenable to air sparging. Any reduction in contaminant concentrations would be very localized and would not decrease contaminant concentrations over the site as a whole. Additionally, this technology could result in increased risk of vapors into nearby basements.
	Oxygen Enhanced In-situ Remediation	Introducing reagents (e.g., oxygen reducing compounds) into the aquifer to enhance degradation of contaminants.	Rejected. Effectiveness of technology in a heterogeneous, fine-grained subsurface environment would be short-term and very localized to point of delivery at best.
	Natural Attenuation	Reduction in mass, mobility, and concentration of contaminants in the subsurface by natural intrinsic processes.	Retained. There are no current exposure routes to groundwater in the shallow perched aquifer. By nature, petroleum components are readily biodegradable and will attenuate in time.

Table 6-4 Applicability of Retained Cleanup Alternative Components		
Media	**Applicability**	**Cleanup Alternative Component**
Soil	Contaminated Soil throughout Site	Natural Attenuation
		Soil Vapor Extraction
	Incidentally Excavated Soil	Soil Management Plan
		Off-Site Disposal
NAPL	NAPL in subsurface	Natural Attenuation
	NAPL Extraction	Petroleum Selective Sorbent Socks
		Hand Bailing
		Extraction by Vacuum Truck
		Belt Skimmers
		Product Only Pumps
		Total Fluids Extraction
	Extracted NAPL and Groundwater	Air Stripper
		Oil/Water Separator
		Catalytic Oxidation
		Carbon Adsorption
	Extracted NAPL	Disposal at Hazardous Waste Facility
Groundwater	Contaminated Groundwater in Perched Aquifer	Natural Attenuation

Table 7-1
Summary of Cleanup Action Alternatives

Action	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal By Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal by Pneumatic Pump, Groundwater MNA	Alternative 2C Natural Attenuation of Soil, Periodic NAPL Removal by Bailing, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Soil						
Natural Attenuation	•	•	•	•	•	•
Soil Vapor Extraction						•
NAPL						
Extraction by Vacuum Truck			•			
Belt Skimmers	•					
Product Only Pumps (pneumatic pumps)		•		•		
Hand Bailing					•	
Total Fluids Extraction (groundwater drawdown and NAPL extraction using submersible/pneumatic pumps)						•
Air Strippers						•
Oil/Water Separator						•
Catalytic Oxidation						•
Off-Site Disposal	•	•	•	•	•	•
Groundwater						
Monitored Natural Attenuation	•	•	•	•	•	•

Table 8-1
Cleanup Action Alternative Analysis for NAPL and Soil

Evaluation criteria	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal By Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2C Natural Attenuation of Soil, Periodic NAPL Removal By Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Degree of existing risk reduction	This alternative will reduce the risk associated with soil and groundwater contamination via natural attenuation. The requirement to remove NAPL at this site is not based on current or potential exposure risk; however, NAPL removal will minimize the likelihood of future contaminant migration into the deep water-table aquifer.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	This alternative will reduce the potential risk to humans and ecological receptors by remediating the soil contamination above 15 feet bgs with a soil vapor extraction system. Soil contamination below 15 feet bgs and contaminated groundwater will be remediated by monitored natural attenuation. The requirement to remove NAPL at this site is not based on potential exposure or risk.

Table 8-1
Cleanup Action Alternative Analysis for NAPL and Soil

Evaluation criteria	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal By Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2C Natural Attenuation of Soil, Periodic NAPL Removal By Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Time required to reduce risk and attain cleanup levels	Due to the subsurface conditions, the volume of NAPL, and the established nature of the neighborhood, it is impossible to predict the time required for complete removal of NAPL. The presence of NAPL on perched clay layers above the water table and beneath existing buildings is expected to significantly increase the cleanup time frame. Belt skimmers would achieve immediate effects at the individual wells. NAPL collection in inaccessible locations (i.e., beneath existing buildings) would rely entirely on NAPL migration; therefore, NAPL may remain in these areas. This alternative relies on natural attenuation for soil and groundwater, making prediction of the cleanup time frame difficult to predict. Because the site is currently paved and expected to remain paved into the future, the only risk identified is during potential demolition or excavation activities, which might expose workers to the contaminated soil. There is no current risk associated with the contamination in the shallow aquifer.	Identical to Alternative 1A (NAPL and soil).	Under this alternative, the application of a vacuum at the wellhead by a vacuum truck would result in NAPL removal. Previous tests performed at existing on-site wells suggested a radius of influence of approximately 38-63 feet (screened partly in unit A); the actual radius of influence at each well would be expected to vary. This could result in NAPL within the vacuum radius of influence being actively drawn into the well. On the other hand, NAPL extraction by vacuum truck would be periodic as opposed to the potential for relatively continuous extraction performed by belt skimmers and pneumatic pumps. The periodic removal rate may be readily adjusted to best suit the NAPL recovery rate. Because this alternative relies on natural attenuation of soil and groundwater, the time frame to achieve soil cleanup levels would be identical to Alternative 1A.	Similar to Alternative 1A, but the periodic nature of NAPL removal may result in a slightly longer cleanup time frame. However, the periodic removal rate may be readily adjusted to best suit the NAPL recovery rate.	Identical to Alternative 2B.	This alternative may achieve NAPL cleanup levels in a shorter time frame than Alternatives 1 and 2. Under this alternative the groundwater would be extracted at a rate required to maintain a depressed water table at the well. NAPL is expected to pool on the top of the depressed water table, resulting in increased NAPL flow to the well. It is impossible to accurately predict the radius of groundwater depression and the expected recovery rate of pooled NAPL. However, the silt-clay lithology of the perched aquifer will likely result in a very narrow cone of depression. SVE would decrease the time required to achieve cleanup levels in soil above 15 feet bgs. Attainment of cleanup levels for this alternative relies on natural attenuation of soil below 15 feet bgs and groundwater. The time frame required to attain cleanup levels is difficult to predict; however, there are no risks identified for these media.

Table 8-1
Cleanup Action Alternative Analysis for NAPL and Soil

Evaluation criteria	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal By Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2C Natural Attenuation of Soil, Periodic NAPL Removal By Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
On-site and off-site risks resulting from implementation	This alternative has high on-site risks due to the potential for vapor buildup within the vaults. Due to the nature of belt skimmers, it would be difficult to engineer a completely closed system. The buildup of petroleum vapors could result in a potential explosion risk. A small potential for spilling resulting in a risk to humans and the environment may occur while the vacuum truck empties NAPL from the drums. Potential risk to humans and the environment may occur from contamination in drill cuttings during installation of new extraction wells.	Under this alternative, on-site and off-site risks would be minimized by temporarily storing extracted NAPL in a vault at the wellhead within a completely closed system (i.e., the well, NAPL transfer tubing, and containment vessel would function as one sealed system to prevent vapor buildup within the vault). A small potential for spilling resulting in a risk to humans and the environment may occur while the vacuum truck empties NAPL from the drums. Potential risk to humans and the environment may occur from contamination in drill cuttings during installation of new extraction wells.	A small potential for spilling resulting in a risk to humans and the environment may occur while the vacuum truck recovers NAPL from the wells. Potential risk to humans and the environment may occur from contamination in drill cuttings during installation of new extraction wells. Also, temporary drawdown and rebound would trap additional NAPL beneath water table and result in greater NAPL mass dissolution.	Similar to Alternative 2A with a slight increase in exposure risk resulting from pumping NAPL into a temporary container and transferring into a centralized short-term storage container. Product only pumping would minimize trapping of NAPL beneath the water table due to temporary drawdown.	Similar to Alternative 2B.	This alternative would result in an increased risk to human health and the environment. Treatment of extracted groundwater would require piping to extend from each extraction well to a centralized treatment facility. If the piping were to fail or the fluids freeze, contaminated groundwater could be released to soil, potentially exposing uncontaminated subsurface soil to petroleum products. Potential risks to workers involved with trenching and constructing the centralized treatment facility would occur. Additionally, drawing down the water table could increase the smear zone, potentially exposing additional soil to NAPL. Remediation by SVE could increase the potential for explosion resulting from the generated SVE vapors.
Improvement in overall environmental quality	This alternative will result in substantial improvement to the environmental quality of the site by removing NAPL and attaining cleanup levels for groundwater and soil.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.

Table 8-1
Cleanup Action Alternative Analysis for NAPL and Soil

Evaluation criteria	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal By Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2C Natural Attenuation of Soil, Periodic NAPL Removal By Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Adequacy of hazardous substances destruction	NAPL will be removed from the aquifer and destroyed off-site. Contaminants in soil and groundwater will be degraded through naturally occurring processes.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A
Reduction or elimination of releases or sources of releases	NAPL will be removed from the shallow perched aquifer. The primary release sources were eliminated prior to initiating this RI/FS.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A
Degree of irreversibility of waste treatment process	Off-site NAPL disposal and natural attenuation of soil and groundwater are not reversible.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Off-site NAPL disposal, soil remediation by SVE, and natural attenuation of soil and groundwater are not reversible.
Treatment residual characteristics and quantity	N/A. There is no treatment residual associated with this alternative.	N/A. There is no treatment residual associated with this alternative.	N/A. There is no treatment residual associated with this alternative.	N/A. There is no treatment residual associated with this alternative.	N/A. There is no treatment residual associated with this alternative.	N/A. There is no treatment residual associated with this alternative; however, one option would generate spent carbon for groundwater polishing.
Cost of construction	$374,400	$324,100	$95,400	$149,900	$95,600	$683,500
Net present value @ 2.2% discount rate	$718,400	$670,100	$401,400	$431,900	$371,600	$1,338,500
Degree of certainty of alternative success	This alternative uses commonly employed remedial actions. The success of the NAPL removal will be dependent on the mobility of contaminants and the results of treatability and pilot tests. Natural attenuation is commonly used to remediate petroleum contaminants in soil and groundwater.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Similar to Alternative 1A. Hand bailing has been used as an interim action for NAPL removal at the site for several years. Use of absorbent socks appears to have increased NAPL removal rates. NAPL levels in all of the wells have dropped significantly indicating this is an effective remediation technology for the site.	The success of the NAPL removal is dependent on the mobility of contaminants and the results of treatability and pilot tests. SVE is commonly used to remediate petroleum contaminants in soil. Natural attenuation is commonly used to remediate petroleum contaminants in soil and groundwater.

Table 8-1
Cleanup Action Alternative Analysis for NAPL and Soil

Evaluation criteria	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal By Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2C Natural Attenuation of Soil, Periodic NAPL Removal By Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Reliability while hazardous substances remain on-site at concentrations above cleanup levels	The reliability for this alternative is dependent on the mobility of NAPL.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Similar to Alternative 1A, but complexity of this alternative is expected to result in a lower relative reliability than the others.
Magnitude of residual risk with the alternative in place	Removal of NAPL and contaminants in soil and groundwater will take years. It is not possible to predict the time required to attain cleanup levels due to the complexity of the site and the uncertainties in volume and distribution of NAPL.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Similar to Alternative 1A; however, NAPL removal and attainment of soil and groundwater cleanup levels may be completed slightly sooner. It is not possible to predict the time required to attain cleanup levels due to the complexities of the site and the uncertainties in volume and distribution of the NAPL.
Effectiveness of controls required to manage treatment residues or remaining wastes	NAPL will be disposed at an off-site hazardous waste facility. No other treatment residues will be generated.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Similar to Alternative 1A with the addition of extracted groundwater. Petroleum contaminants in the extracted groundwater will be remediated to concentrations below the influent requirements for the City of Chelan POTW using standard treatment processes. If needed, a carbon filter will be used to further lower contaminant concentrations prior to discharge to the POTW.

Table 8-1
Cleanup Action Alternative Analysis for NAPL and Soil

Evaluation criteria	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal By Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2C Natural Attenuation of Soil, Periodic NAPL Removal By Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Management of short-term risks	The largest potential risk to human health and the environment is the potential for vapors to accumulate in the vault resulting in an explosive environment or vapor exposure at the surface. Additionally, potential risks to human health and the environment during installation of new extraction wells include potential worker and public exposures to contaminated drill cuttings and vapors. All drill cuttings will be immediately drummed and moved to the Chevron station to await analytical results and disposal. Potential risks associated with vault installation and utility trenching include the potential for falls and traffic hazards. Additional hazards such as accidentally breaking an existing electrical line or underground piping may be encountered during utility trenching.	Similar to Alternative 1A; however, the closed system in the well vault will significantly minimize the explosion potential. Additionally, trenching for electrical line installation will not be required.	The potential risks to human health and the environment during installation of new extraction wells include potential worker and public exposures to contaminated drill cuttings and vapors. All drill cuttings will be immediately drummed and moved to the Chevron station to await analytical results and disposal. Additional risks due to traffic will be minimized by providing adequate traffic control and performing remedial actions during nonpeak hours.	Similar to Alternative 2A, with the additional risk involved with transferring NAPL from a temporary container to a short-term storage area.	Similar to Alternative 2B; however additional risk of public exposure to contaminants may occur by bringing NAPL to the surface during bailing. These risks would be mitigated by engineering controls to minimize the release of vapors and by bailing at off-peak business hours.	Similar to Alternative 1B with the additional risks associated with pumping contaminated groundwater to a centralized treatment facility and the installation/ operation of an SVE system. Because this alternative includes piping contaminated groundwater through underground piping to a centralized treatment facility, there is the potential for leaks or breaks in the piping to occur resulting in a release of contaminants into the shallow subsurface soil. Additionally, there is the potential for treated groundwater to exceed the City of Chelan POTW limits. Treating soil hot spots by SVE includes potential exposure of the public and workers to contaminated drill cuttings brought to the surface during SVE well installation and additional trenching for piping. Vapors generated during SVE could increase the potential for explosion.

Table 8-1
Cleanup Action Alternative Analysis for NAPL and Soil

Evaluation criteria	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal By Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2C Natural Attenuation of Soil, Periodic NAPL Removal By Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Technical possibility of alternative	This alternative relies on standard techniques and is not expected to be technically difficult to implement. The heterogeneity of the shallow perched aquifer and the presence of existing buildings may make complete removal of NAPL difficult and will significantly increase the remediation time frame.	Identical to Alternative 1A.	Similar to Alternative 1A with the increased difficulty of applying vacuum to the desired target area. The heterogeneous nature of the subsurface is likely to draw vapors from higher permeability zones, potentially leaving pockets of trapped NAPL in lower permeability zones. NAPL trapped below the water table may result in a decrease in the volume of NAPL ultimately recovered from the site.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A with the exception of the SVE system. Because the soil hot spots are located in a busy commercial area, there will be a significant distance between the location of the SVE blower and the vapor extraction wells. This distance may reduce the effectiveness of the extraction system, resulting in less satisfactory contaminant removal rates.
Availability of necessary off-site facilities, services, and materials	All necessary services are expected to be available locally or within the state.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.
Administrative and regulatory requirements	This alternative is expected to comply with all regulatory requirements.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Similar to Alternative 1A with additional concerns from the City of Chelan POTW.
Scheduling, size, and complexity	Because the site is located in an active commercial area that relies on tourist trade, installation of all remedial components should be conducted during the slow season or off-hours. Additionally, vacuum truck collection of NAPL during the tourist season should occur in off-hours.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Similar to Alternative 1A. Bailing of NAPL during the tourist season should occur in off-hours.	Similar to Alternative 1A. with the addition of complexity and size related to trenching, piping, additional wells, and treatment facility; greater complexity of system may impact success or schedule.

Table 8-1
Cleanup Action Alternative Analysis for NAPL and Soil

Evaluation criteria	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal By Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2C Natural Attenuation of Soil, Periodic NAPL Removal By Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Monitoring requirements	Performance monitoring will be conducted to confirm that NAPL has been removed until 0.05 inches or less is consistently achieved in each of the extraction wells. The deep water-table aquifer will be monitored to confirm that contaminants are not migrating beyond the shallow perched aquifer. Groundwater from the shallow perched aquifer will be monitored to ensure natural attenuation is occurring. Additionally, after a sufficient time period, the soil will be sampled to ensure soil cleanup levels have been met through natural attenuation.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Similar to Alternative 1A with the addition of monitoring the treated groundwater prior to discharge to the city POTW. In addition, soil will be collected from the soil hot spots above 15 feet bgs to document attainment of cleanup levels following completion of remediation by SVE.
Access for construction operations and monitoring	Consideration of the area's reliance on the tourist trade will be a large factor for site access. The number of existing buildings limits the available locations for NAPL extraction wells, further complicating the removal actions.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Similar to Alternative 1A with the added consideration for placement of the treatment system and underground piping.

Table 8-1
Cleanup Action Alternative Analysis for NAPL and Soil

Evaluation criteria	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal By Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal By Pneumatic Pump, Groundwater MNA	Alternative 2C Natural Attenuation of Soil, Periodic NAPL Removal By Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Integration with existing facility operations and other potential remedial actions	Extraction well placement will be limited due to the existing buildings, utilities, and traffic right of way. All wells would be located to minimize disturbance within the commercial district. Natural attenuation will not affect the business area.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to alternative 1A.	Similar to Alternative 1A with the exception that SVE and treatment of extracted soil vapors will be used to remediate soil hot spots above 15 feet bgs. The SVE wells will be placed to minimize disturbance within the commercial area. The SVE system will require a large blower; noise dampening will be used to reduce the impact of blower noises to the extent possible. Most existing wells (all but one) could not be utilized. Groundwater treatment components will be located in a fenced area off the normal roadways (such as the City of Chelan parking lot north of Wapato Ave near well MW-33, if access can be arranged; noise and traffic issues are also a concern in this busy lot).
Consideration of public concerns	Public concerns will be addressed following the public comment period.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to alternative 1A.	Identical to Alternative 1A.

Table 8-2
Comparison of Alternatives

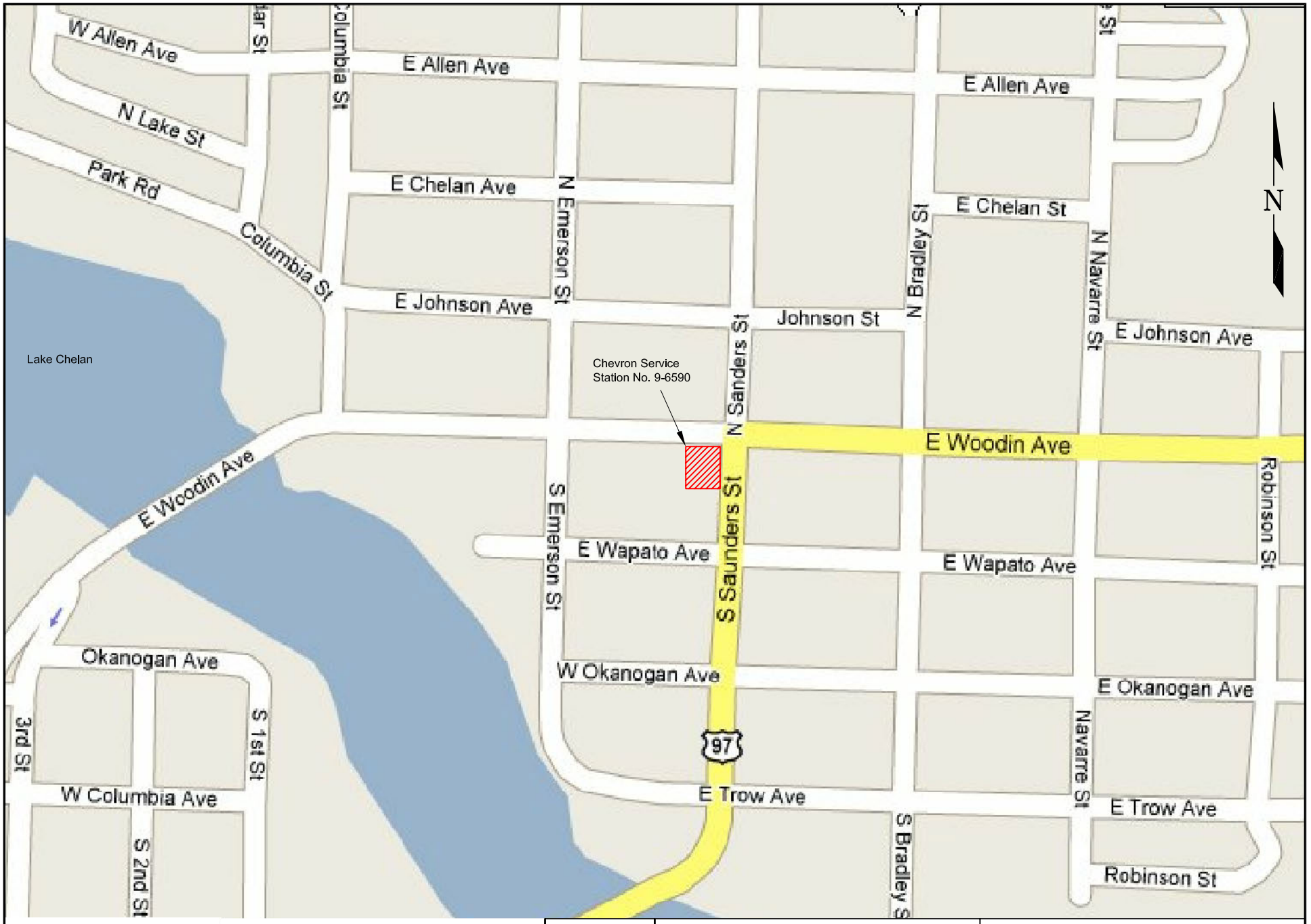
Evaluation Factor	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal by Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal by Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal by Pneumatic Pump, Groundwater MNA	Alternative 2 C Natural Attenuation of Soil, Periodic NAPL Removal by Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Protectiveness	There are no current or potential future exposure risks associated with the NAPL identified. Implementation possible within 1 year; cleanup levels will be met upon completion. Low probability of additional risks due to implementation. High degree of environmental quality improvement due to prevention of exposures to soil contamination within the point of compliance. It is not possible to predict the cleanup time frame due to site complexities and the access restrictions created by the existing buildings.	Identical to Alternative 1A.	Similar to Alternative 1A with increased potential to increase the smear zone and reduce ultimate NAPL recovery by cyclic groundwater drawdown.	Identical to Alternative 1A.	Identical to Alternative 1A.	There are no current or potential future exposure risks associated with the NAPL identified. It is not possible to predict the cleanup time frame due to site complexities and the access restrictions created by the existing buildings; however, cleanup levels may be attained more rapidly than in the other alternatives. Implementation possible in 1-2 years; cleanup levels will be met upon completion. Moderate probability of additional risks due to implementation (e.g., potential for release of contaminated groundwater to soil along piping to centralized treatment facility and potential to increase the smear zone caused by groundwater drawdown). High degree of environmental quality improvement due to prevention of exposures to soil contamination.

Table 8-2
Comparison of Alternatives

Evaluation Factor	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal by Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal by Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal by Pneumatic Pump, Groundwater MNA	Alternative 2 C Natural Attenuation of Soil, Periodic NAPL Removal by Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Permanence	NAPL and soil contamination will be permanently destroyed. Releases to secondary media at levels exceeding cleanup levels have not been indicated. No irreversibility associated with off-site disposal of NAPL or soil remediation. Does not include waste treatment process, so no treatment residual.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Similar to Alternative 1A with the exception that this alternative includes treatment of extracted groundwater and soil vapors. The only potential treatment residual would be spent carbon if groundwater polishing is required to meet the requirements for the City of Chelan's POTW.
Cost	• $374,400 Capital Cost • $718,400 Present Value @ 2.2%	• $324,100 Capital Cost • $670,100 Present Value @ 2.2%	• $95,400 Capital Cost • $401,400 Present Value @ 2.2%	• $149,900 Capital Cost • $431,900 Present Value @ 2.2%	• $95,600 Capital Cost • $371,600 Present Value @ 2.2%	• $683,500 Capital Cost • $1,338,500 Present Value @ 2.2%
Long-Term Effectiveness	Good degree of success; however, pilot testing will be used to determine effectiveness. Contaminants will be removed from the site. Low magnitude of residual risk through removal of contaminants.	Identical to Alternative 1A.	Similar to Alternative 1A, but greater reliability of method due to simplicity.	Identical to Alternative 2A.	Identical to Alternative 2A.	Unknown degree of success; pilot testing would be required to determine effectiveness. Adequate reliability for remediation lifetime, but complexity may impact success or schedule; contaminants will be removed from the site. Low magnitude of residual risk through removal of contaminants.

Table 8-2
Comparison of Alternatives

Evaluation Factor	Alternative 1A Natural Attenuation of Soil, Automatic NAPL Removal by Belt Skimmer, Groundwater MNA	Alternative 1B Natural Attenuation of Soil, Automatic NAPL Removal by Pneumatic Pump, Groundwater MNA	Alternative 2A Natural Attenuation of Soil, Periodic NAPL Removal by Vacuum Truck, Groundwater MNA	Alternative 2B Natural Attenuation of Soil, Periodic NAPL Removal by Pneumatic Pump, Groundwater MNA	Alternative 2 C Natural Attenuation of Soil, Periodic NAPL Removal by Bailing and Absorbent Socks, Groundwater MNA	Alternative 3 SVE Remediation of Soil, Total Fluid Extraction, Groundwater MNA
Management of Short-Term Risks	High potential for short-term risks, including explosion potential, vapor exposure, worker soil exposures, releases to the deep water-table aquifer.	Low potential for short-term risks, worker soil exposures, releases to the deep water-table aquifer.	Identical to Alternative 1B.	Identical to Alternative 1B.	Identical to Alternative 1B.	Similar to Alternative 1B, but with added risk of potential releases from piping fluids. SVE would be expected to attain soil cleanup levels faster than natural attenuation, thereby reducing potential short-term risks.
Technical and Administrative Implementability	High technical possibility, uses standard construction techniques. All off-site services are readily available. Expected to comply with all regulations. Schedule impacted by tourist season. Long-term monitoring required to ensure that deep water-table aquifer is not impacted and that cleanup levels are maintained in the future. Access within the site is limited due to existing buildings and traffic. No integration issue.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Identical to Alternative 1A.	Similar to Alternative 1A, but greater complexity and size due to treatment of soil and groundwater and significant subsurface trenching and piping of fluids.
Consideration of Public Concerns	To be addressed after public comment period.	To be addressed after public comment period.	To be addressed after public comment period.	To be addressed after public comment period.	To be addressed after public comment period.	To be addressed after public comment period.



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CHEVRON SERVICE STATION
NO. 9-6590
232 EAST WOODIN AVENUE
CHELAN, WASHINGTON

FIGURE 1-1
Site Location and Vicinity Map

FILE NAME:	DATE:
96590VicinityMap.dwg	12/14/2006

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N

LEGEND

N	NO BASEMENT
CB	CONCRETE-FLOORED BASEMENT
DB	DIRT-FLOORED BASEMENT
CS	CRAWL SPACE (DIRT)
204	STREET ADDRESS

NOTES

Base Map from City of Chelan, 1994

Additional Reference Material:
Aerial Photograph from September 1991
(Washington State Department of Natural Resources)

0 80' 160'

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Chelan, Washington

FIGURE 1-2
Chelan Site Map

FILE NAME: 96590_SiteMap.dwg

DATE: 11/13/2006

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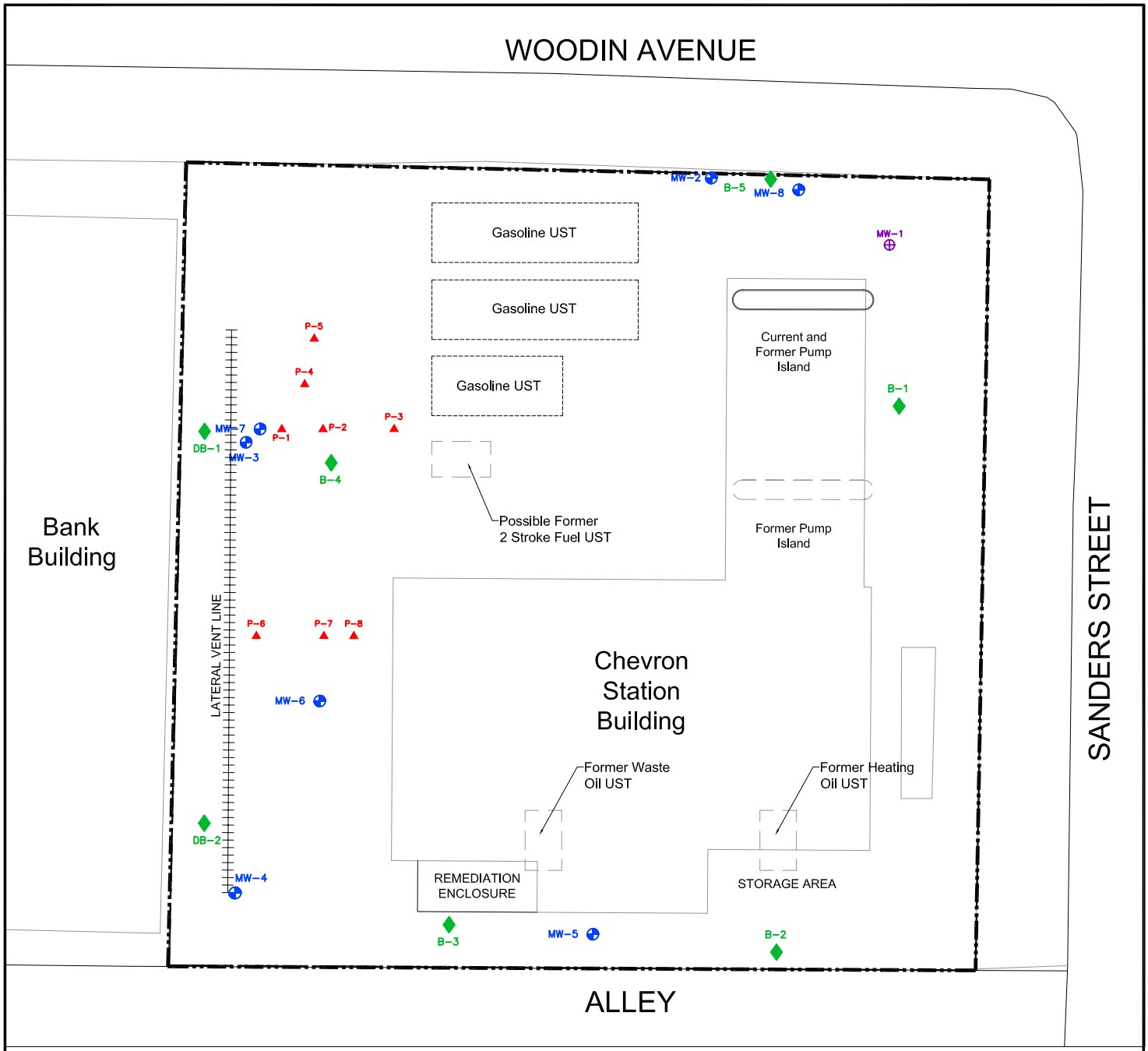

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FIGURE 1-3
Chevron Station Map

FILE NAME: 96590_SiteMap.dwg

DATE: 11/13/2006

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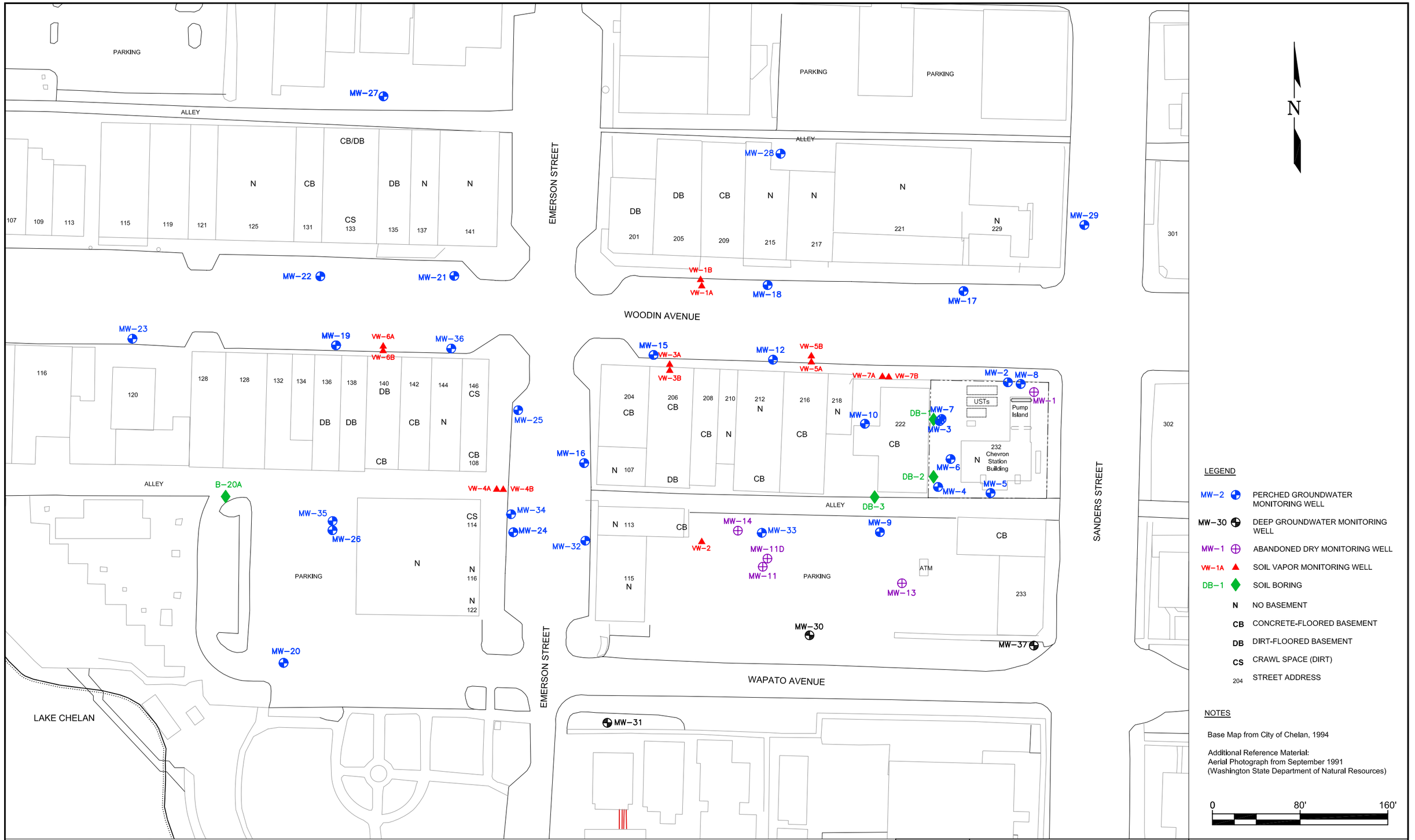

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FIGURE 1-4
Well Location and Identification

FILE NAME: 96590_SiteMap.dwg

DATE: 11/13/2006

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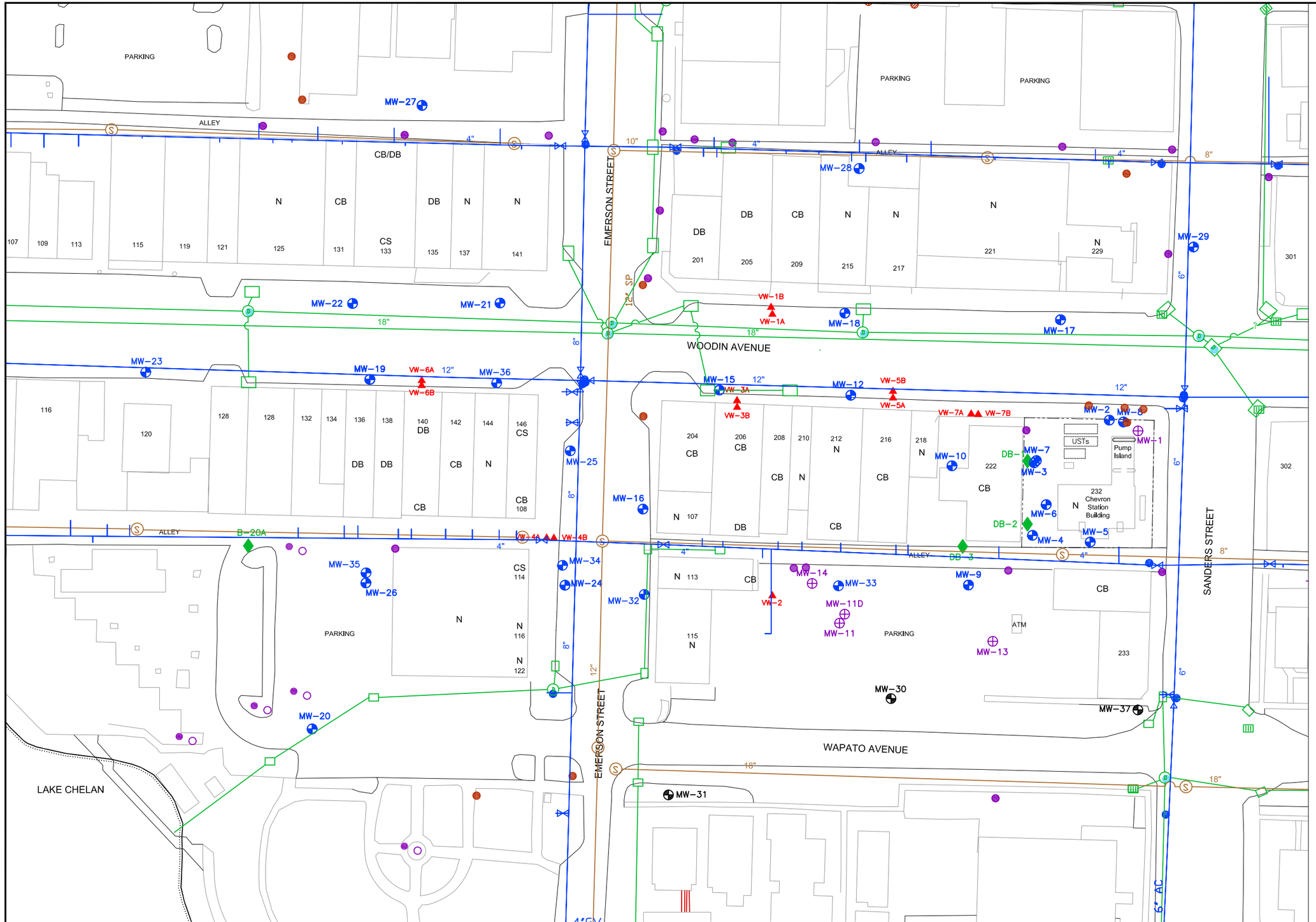

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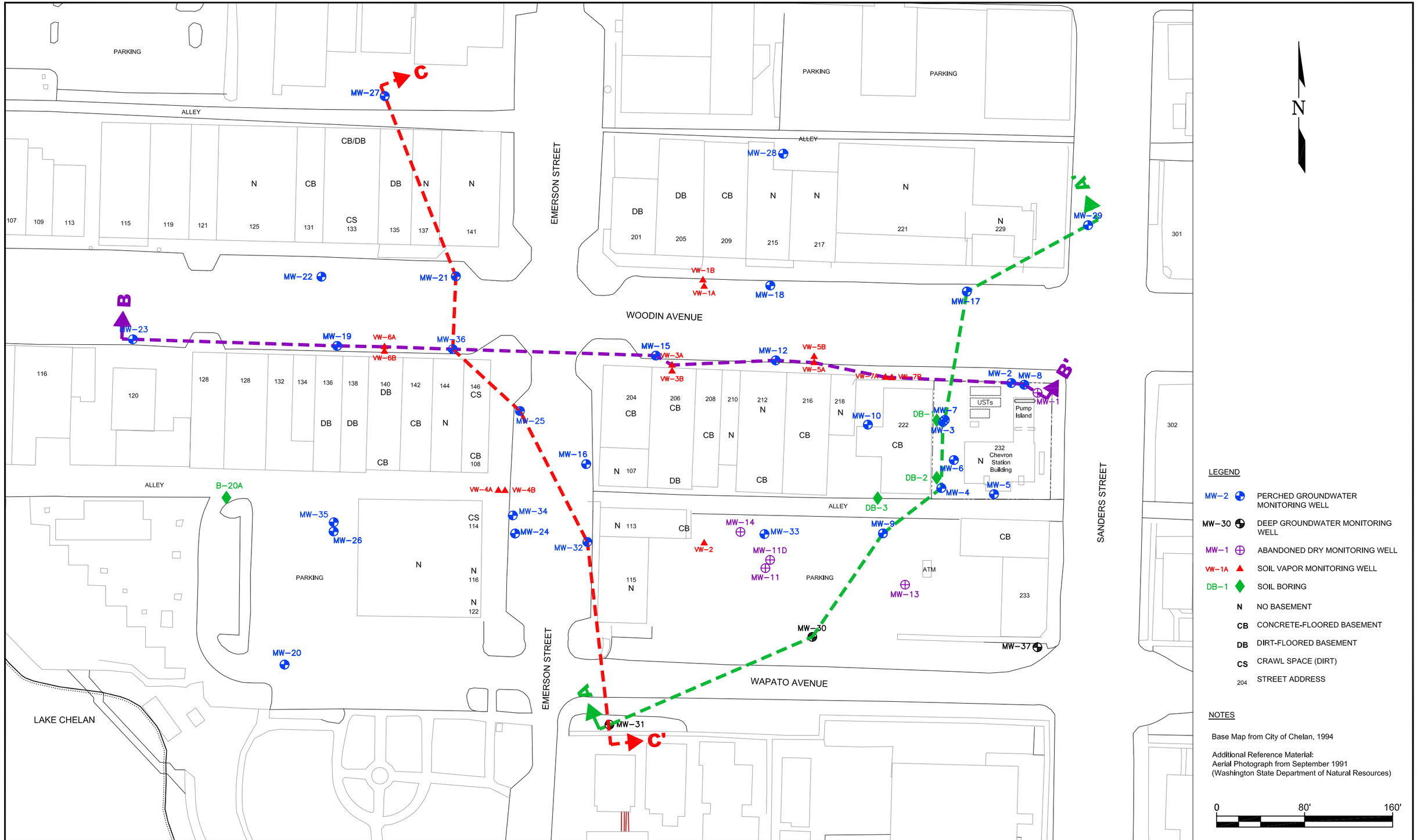
FIGURE 1-5
Utility Location and Identification

FILE NAME: 96590_SiteMap.dwg

DATE: 11/13/2006



LEGEND

MW-2	PERCHED GROUNDWATER MONITORING WELL
MW-30	DEEP GROUNDWATER MONITORING WELL
MW-1	ABANDONED DRY MONITORING WELL
VW-1A	SOIL VAPOR MONITORING WELL
DB-1	SOIL BORING
N	NO BASEMENT
CB	CONCRETE-FLOORED BASEMENT
DB	DIRT-FLOORED BASEMENT
CS	CRAWL SPACE (DIRT)
204	STREET ADDRESS

NOTES

Base Map from City of Chelan, 1994

Additional Reference Material:
Aerial Photograph from September 1991
(Washington State Department of Natural Resources)

0 80' 160'

A - A' CROSS SECTION "A" LOCATION AND DIRECTION

B - B' CROSS SECTION "B" LOCATION AND DIRECTION

C - C' CROSS SECTION "C" LOCATION AND DIRECTION

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FIGURE 3-1
Location of Geologic Cross Sections

FILE NAME: 96590_SiteMap.dwg

DATE: 11/13/2006

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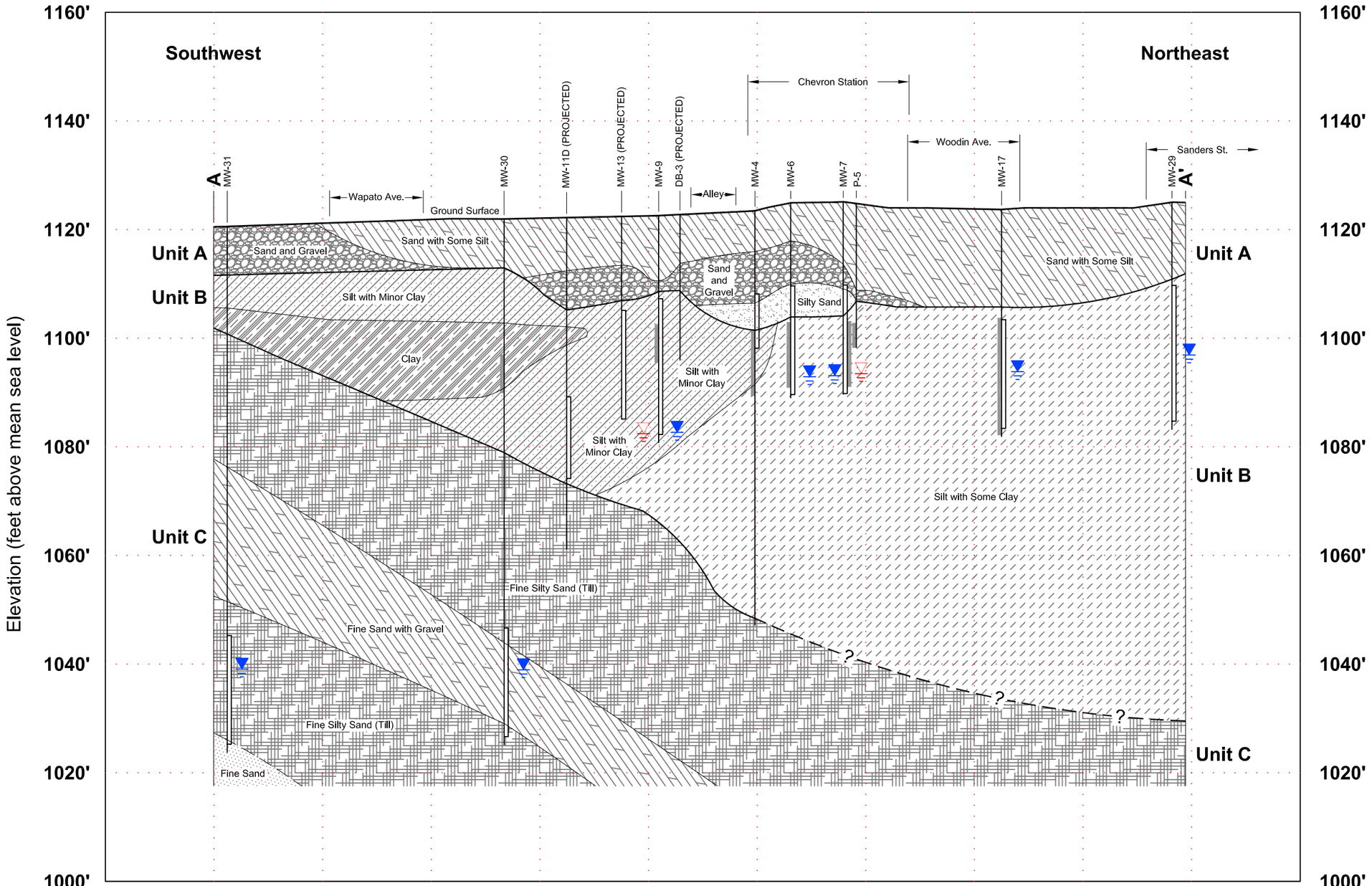

SCALE: 0 80' 160'

4 X VERTICAL EXAGGERATION

LEGEND

- TOP OF NAPL ELEVATION 07/15/03
- TOP OF WATER ELEVATION 07/15/03
- BORING / WELL SCREEN
- ZONE OF CONTAMINATION (BASED ON ANALYSES, PID READINGS, AND ODOR)

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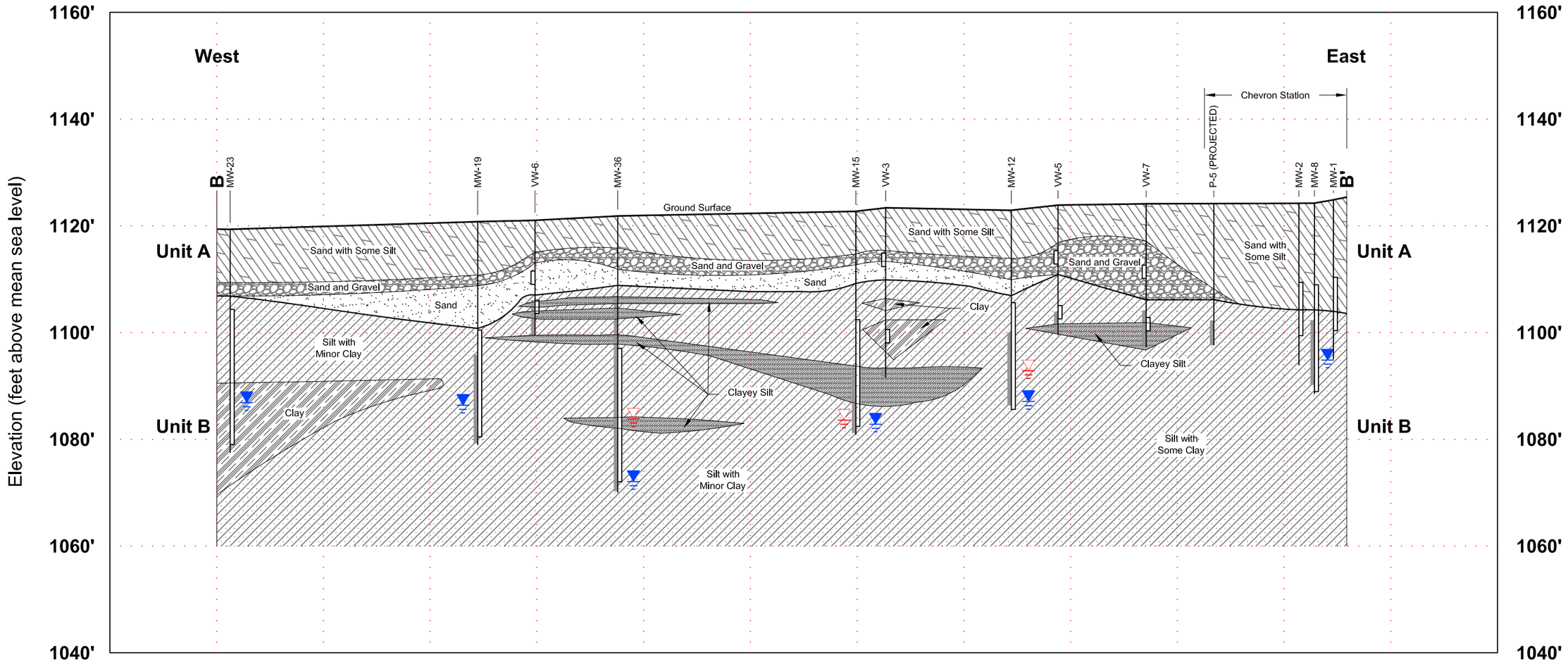
FIGURE 3-2
Geologic Cross Section
A - A'

FILE NAME: RI-figs\Profile.dwg
DATE: 11/13/2006



SCALE: 0 80' 160'

4 X VERTICAL EXAGGERATION

LEGEND

- TOP OF NAPL ELEVATION 07/15/03
- TOP OF WATER ELEVATION 07/15/03
- BORING / WELL SCREEN
- ZONE OF CONTAMINATION (BASED ON ANALYSES, PID READINGS, AND ODOR)

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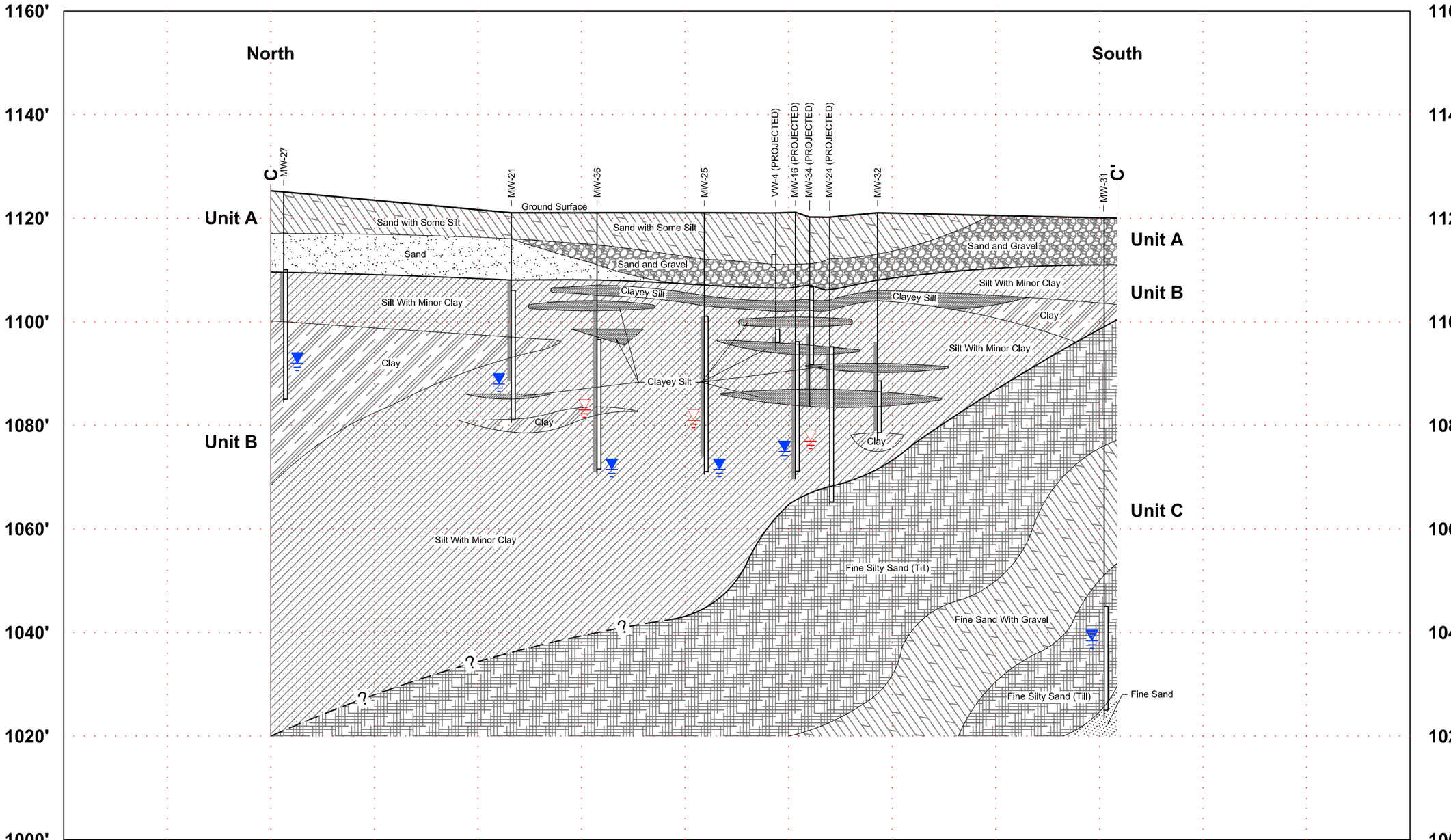
FIGURE 3-3
Geologic Cross Section B - B'

FILE NAME: RI-figs\Profile.dwg

DATE: 11/13/2006



SCALE: 0 80' 160'

4 X VERTICAL EXAGGERATION

LEGEND

- TOP OF NAPL ELEVATION 07/15/03
- TOP OF WATER ELEVATION 07/15/03
- BORING / WELL SCREEN
- ZONE OF CONTAMINATION (BASED ON ANALYSES, PID READINGS, AND ODOR)

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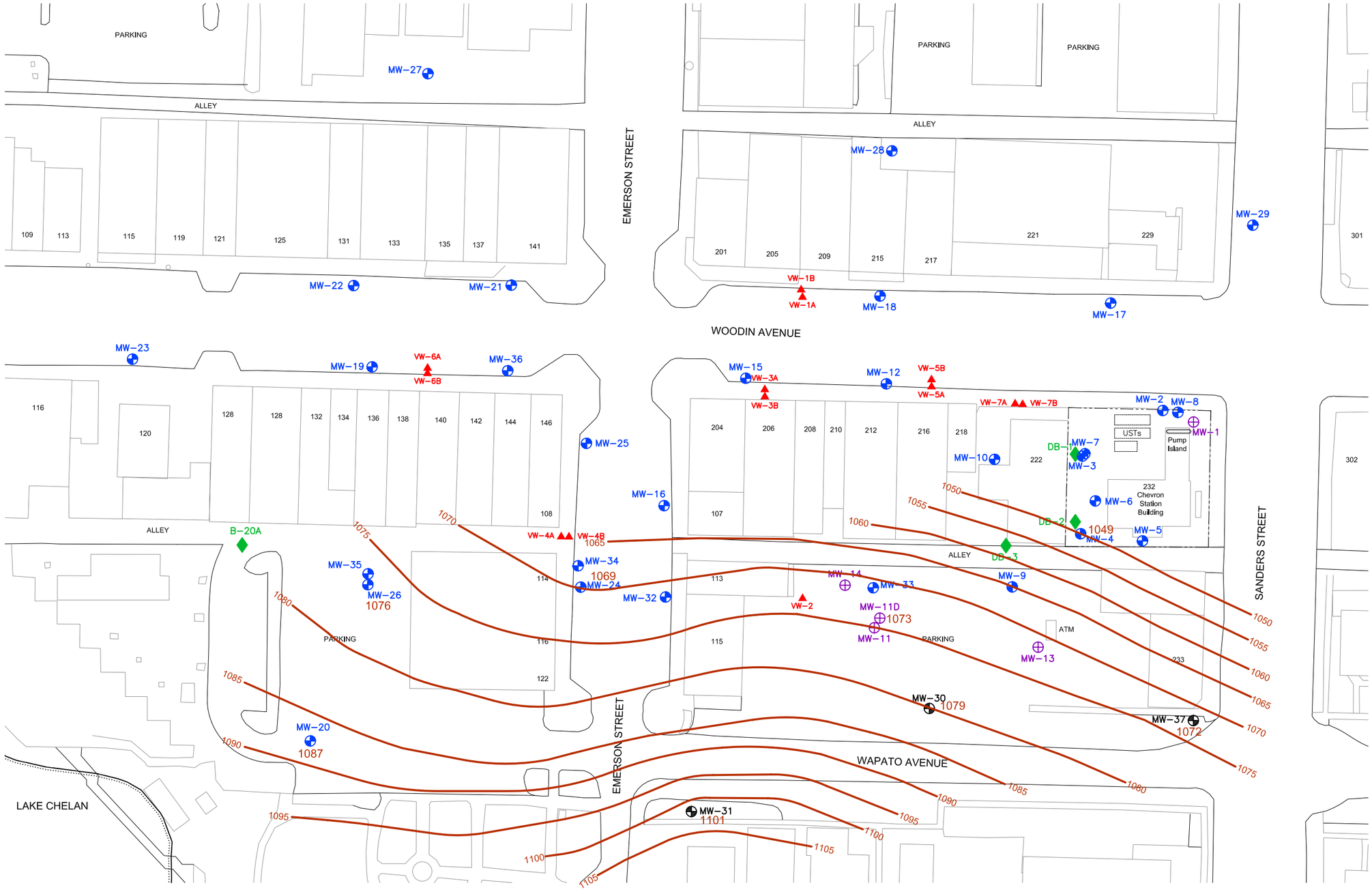
FIGURE 3-4
Geologic Cross Section C - C'

FILE NAME: RI-figs\Profile.dwg

DATE: 11/13/2006



LEGEND

MW-2	PERCHED GROUNDWATER MONITORING WELL
MW-30	DEEP GROUNDWATER MONITORING WELL
MW-1	ABANDONED DRY MONITORING WELL
VW-1A	SOIL VAPOR MONITORING WELL
DB-1	SOIL BORING
1076	ELEVATION OF TOP OF UNIT C GLACIAL TILL (FEET ABOVE MEAN SEA LEVEL)
1090	CONTOUR, 5' INTERVAL
	(SURVEY ELEVATIONS FROM JUNE 2005)

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FIGURE 3-5
Contour Elevation Map of Top of Unit C Till

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DATE: 12/07/2006

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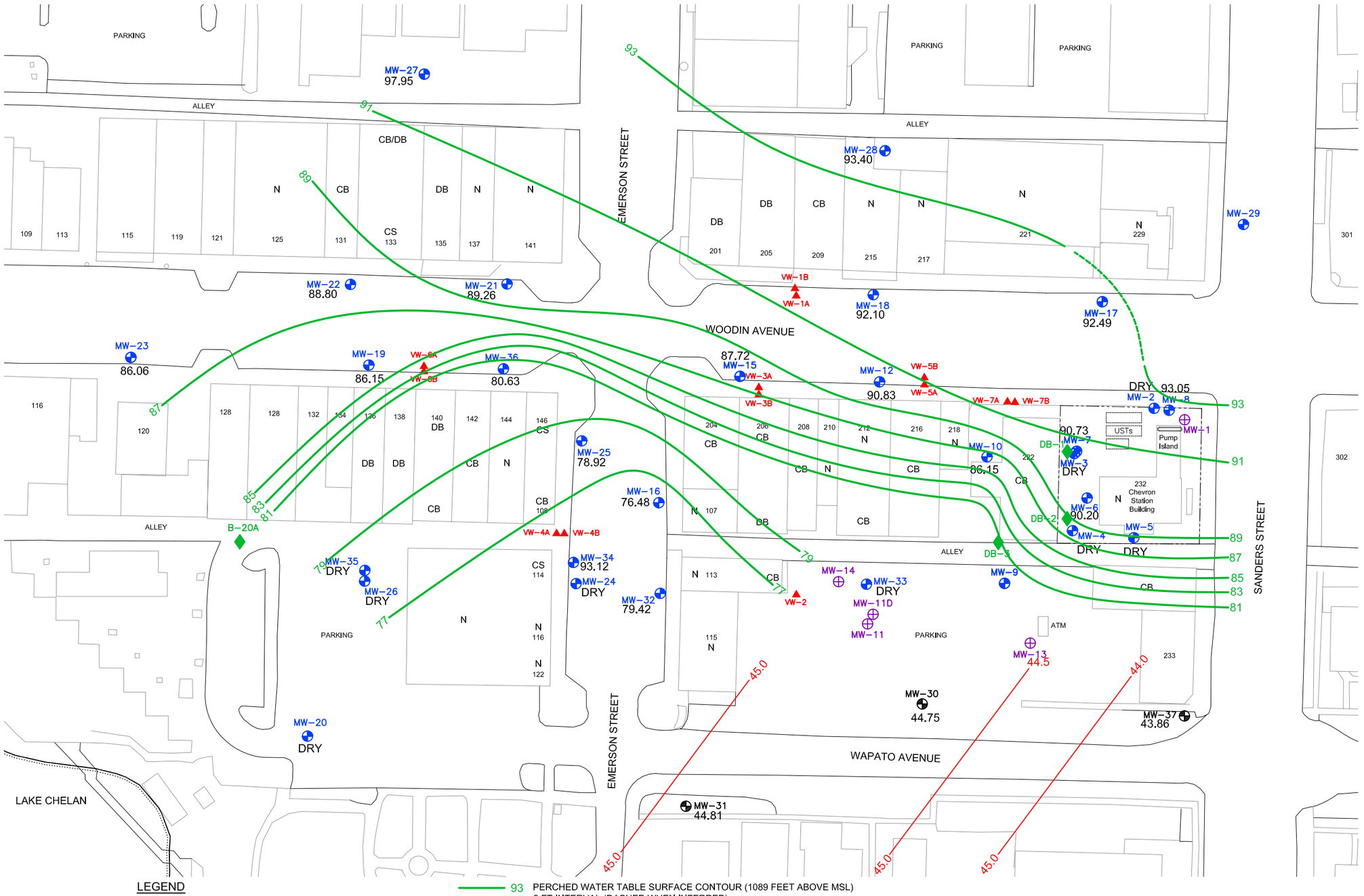

NOTES

1. WATER LEVELS MEASURED ON JULY 13-14, 2005
2. ADD 1000 FEET TO ALL ELEVATIONS FOR MEAN SEA LEVEL (MSL).

   WELLS RESURVEYED ON JUNE 2, 2005

LEGEND

- MW-2 — PERCHED GROUNDWATER MONITORING WELL
- MW-30 — DEEP GROUNDWATER MONITORING WELL
- MW-1 — ABANDONED DRY MONITORING WELL
- 93 — PERCHED WATER TABLE SURFACE CONTOUR (1089 FEET ABOVE MSL) 2 FT INTERVAL (DASHED WHEN INFERRED)
- 44.0 — DEEP WATER TABLE CONTOUR (1043 FEET ABOVE MSL) 1/2 FT INTERVAL
- 78.92 — PERCHED GROUNDWATER ELEVATION IN FEET
- 44.81 — DEEP GROUNDWATER ELEVATION IN FEET
- 79.47* — GROUNDWATER ELEVATION NOT USED IN CONTOUR MAP

0 80' 160'

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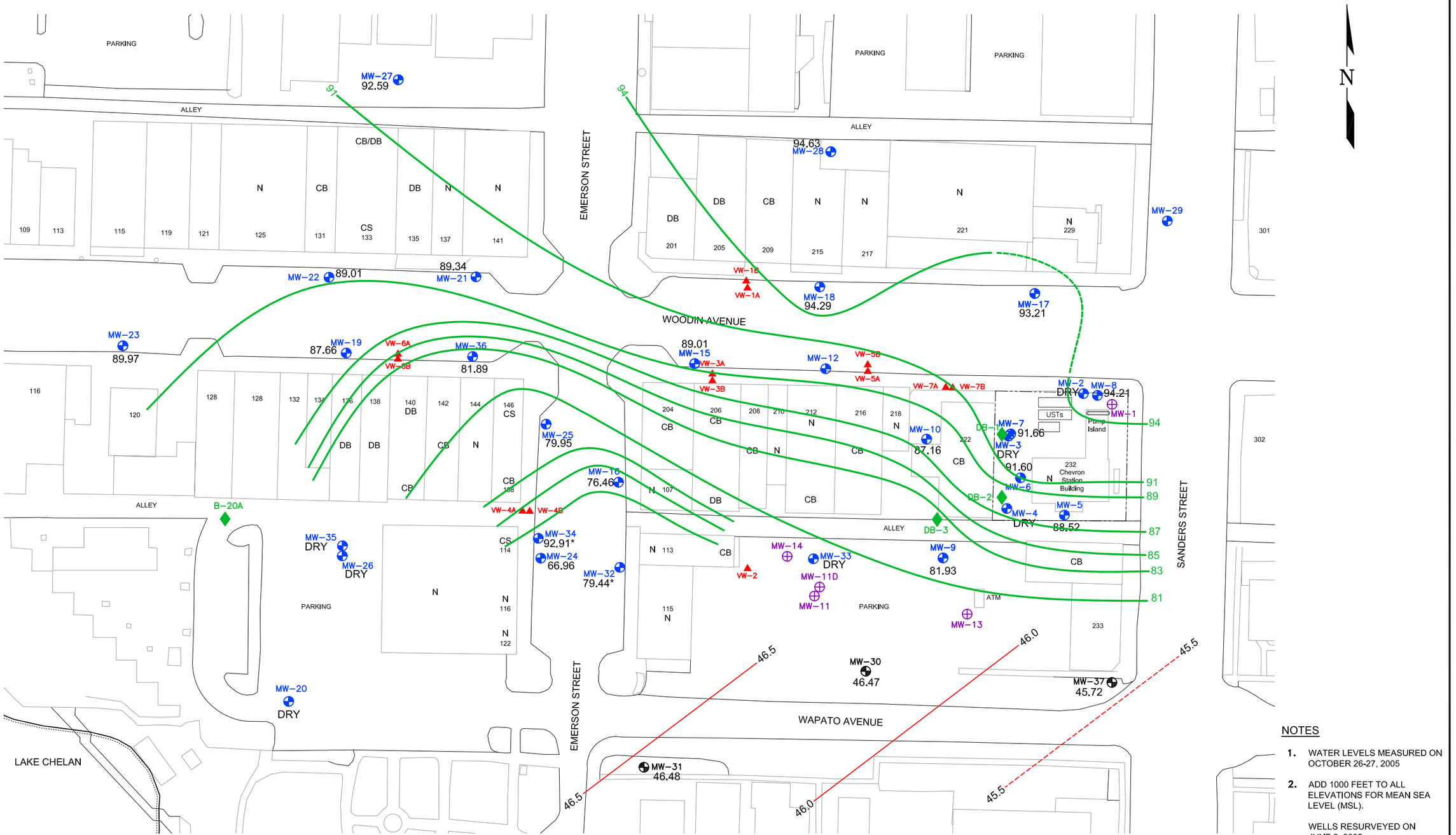
FIGURE 3-6
Perched and Deep Water Table Contour Map
July 13-14, 2005

FILE NAME: 96590_GW-3Q05.dwg

DATE: 12/07/2006

Z:\2004\ChevronTexaco\Hunter Portfolio\9-6590 Chelan\96590_GW-3Q05.dwg, Figure 3-6, 12/7/2006 1:48:31 PM, langem, Tabbld



NOTES

1. WATER LEVELS MEASURED ON OCTOBER 26-27, 2005
2. ADD 1000 FEET TO ALL ELEVATIONS FOR MEAN SEA LEVEL (MSL).

   WELLS RESURVEYED ON JUNE 2, 2005

0 80' 160'

LEGEND

- MW-2 PERCHED GROUNDWATER MONITORING WELL
- MW-30 DEEP GROUNDWATER MONITORING WELL
- MW-1 ABANDONED DRY MONITORING WELL
- 81 PERCHED WATER TABLE SURFACE CONTOUR (1089 FEET ABOVE MSL) 2 FT INTERVAL
- 46.5 DEEP WATER TABLE CONTOUR (1043 FEET ABOVE MSL) 1/2 FT INTERVAL
- 77.46 PERCHED GROUNDWATER ELEVATION IN FEET
- 46.48 DEEP GROUNDWATER ELEVATION IN FEET
- 79.44* GROUNDWATER CONTOUR NOT USED IN CONTOUR MAP

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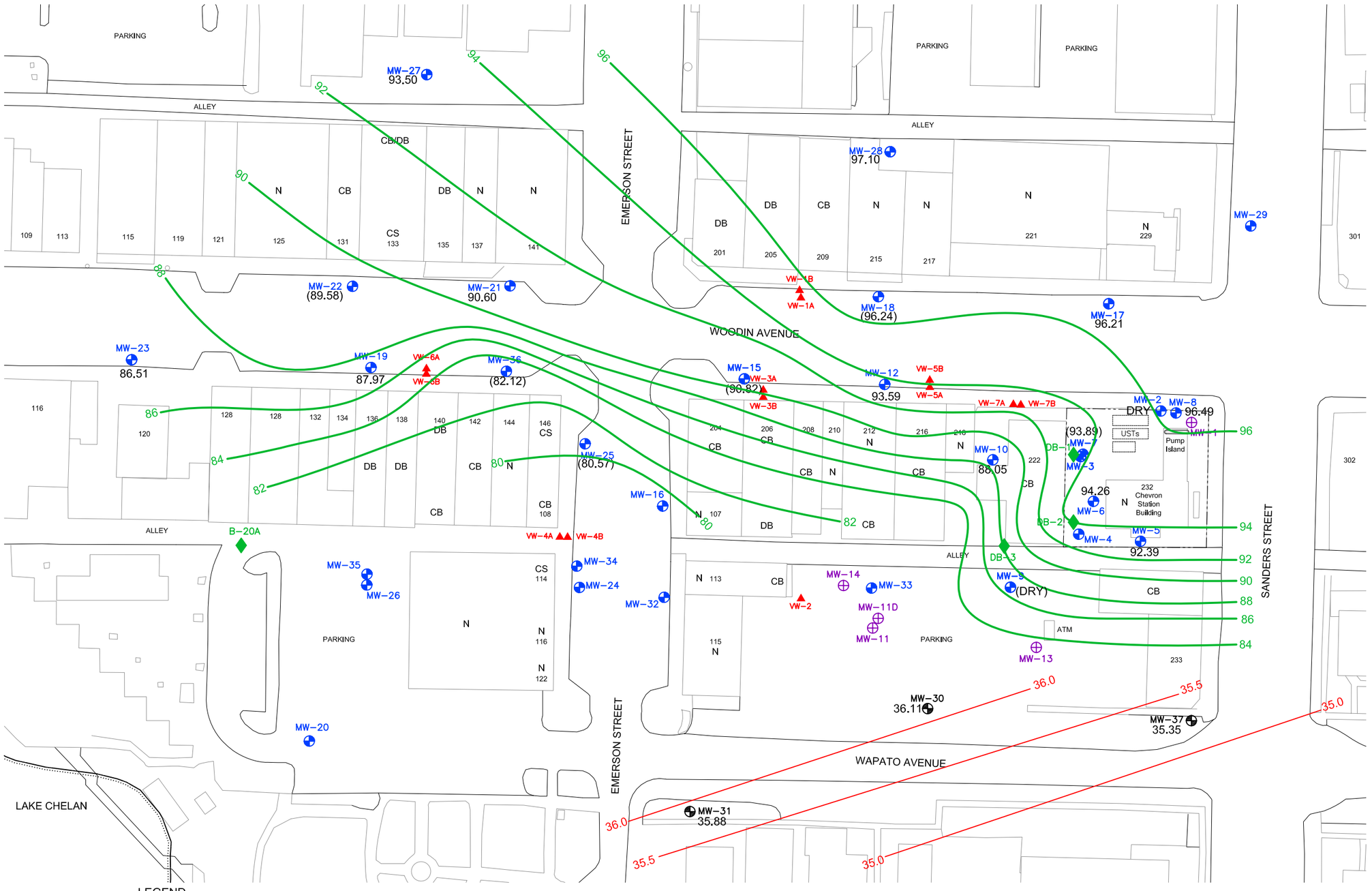
CHELAN, WASHINGTON

FIGURE 3-7
Perched and Deep Water Table Contour Map
October 26-27, 2005

FILE NAME: 96590_GW-4Q05.dwg

DATE: 12/07/2006



NOTES

1. WATER LEVELS MEASURED ON MARCH 13-14, 2006
2. ADD 1000 FEET TO ALL ELEVATIONS FOR MEAN SEA LEVEL (MSL).

   WELLS RESURVEYED ON JUNE 2, 2005

LEGEND

- MW-2 — PERCHED GROUNDWATER MONITORING WELL
- MW-30 — DEEP GROUNDWATER MONITORING WELL
- MW-1 — ABANDONED DRY MONITORING WELL
- PERCHED WATER TABLE SURFACE CONTOUR (1089 FEET ABOVE MSL) 2 FT INTERVAL
- DEEP WATER TABLE CONTOUR (1043 FEET ABOVE MSL) 1/2 FT INTERVAL
- 35.88 — PERCHED GROUNDWATER ELEVATION IN FEET
- 36.0 — DEEP GROUNDWATER ELEVATION IN FEET
- (93.89) — GROUNDWATER ELEVATION CALCULATED DUE TO THE PRESENCE OF LNAPL OR ABSORBENT SOCKS ARE PRESENT

0 80' 160'

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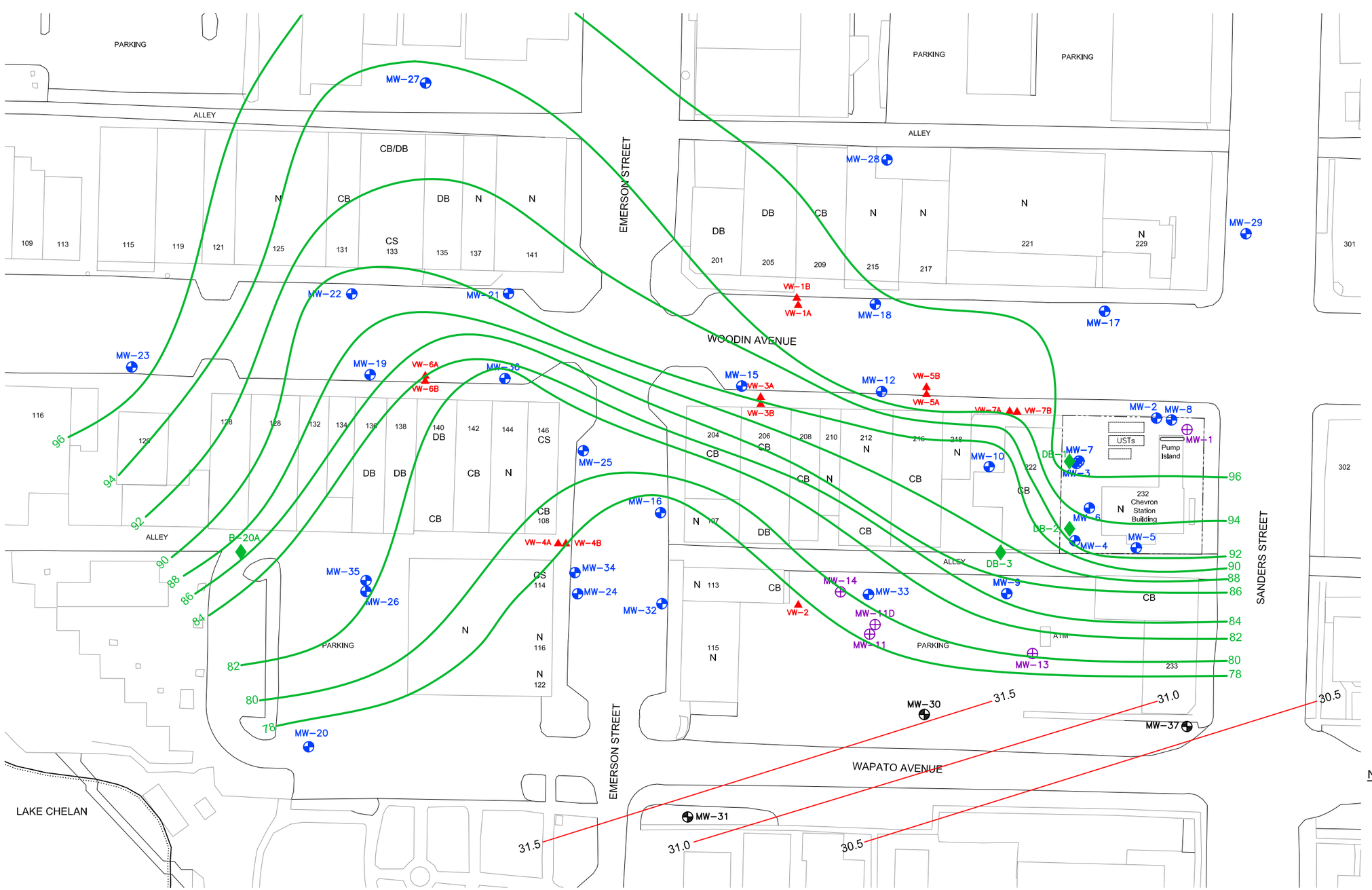
FIGURE 3-8
Perched and Deep Water-Table Contour Map
March 13 - 14, 2006

FILE NAME: 96590_GW-2Q06.dwg
DATE: 12/07/2006

Z:\2004\Chevron\Texaco\Hunter Portfolio\9-6590 Chelan\96590_GW-2Q06.dwg, FIGURE 3-8, 12/7/2006 2:05:38 PM, langem, Tabloid



LEGEND

- MW-2 PERCHED GROUNDWATER MONITORING WELL
- MW-30 DEEP GROUNDWATER MONITORING WELL
- MW-1 ABANDONED DRY MONITORING WELL
- PERCHED WATER TABLE SURFACE CONTOUR (1089 FEET ABOVE MSL) 2 FT INTERVAL
- DEEP WATER TABLE CONTOUR (1043 FEET ABOVE MSL) 1/2 FT INTERVAL
- 80 PERCHED GROUNDWATER ELEVATION IN FEET
- 31.5 DEEP GROUNDWATER ELEVATION IN FEET
- GROUNDWATER CONTOUR NOT USED IN CONTOUR MAP
- GROUNDWATER ELEVATION CALCULATED DUE TO THE PRESENCE OF LNAPL OR ABSORBENT SOCK ARE PRESENT

NOTES

1. WATER LEVELS MEASURED ON MAY 22, 2006
2. ADD 1000 FEET TO ALL ELEVATIONS FOR MEAN SEA LEVEL (MSL).

   WELLS RESURVEYED ON JUNE 2, 2005

0 80' 160'

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FIGURE 3-9
Perched and Deep Water-Table Contour Map May 22, 2006

FILE NAME: 96590_GW-2Q06.dwg

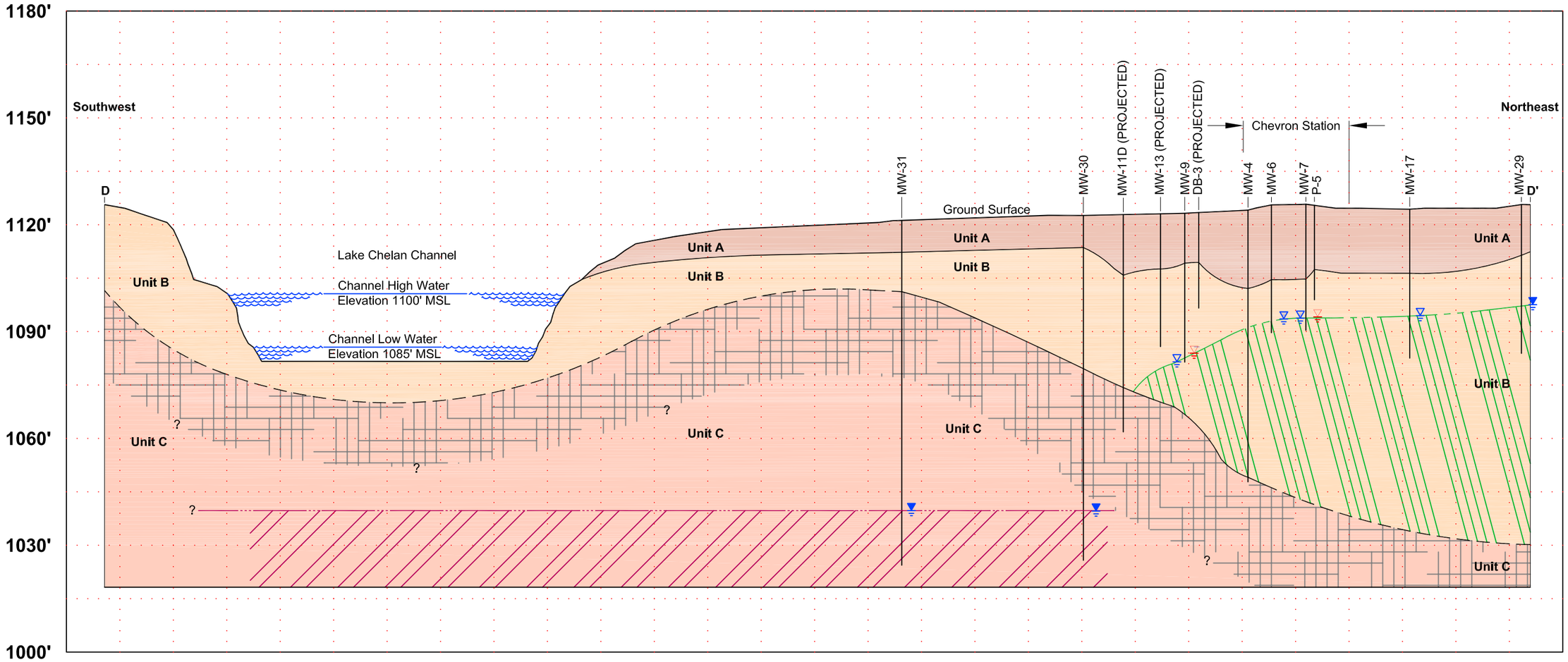
DATE: 12/07/2006

Z:\2004\Chevron Texaco\Hunter Portfolio\9-6590 Chelan\96590_GW-2Q06.dwg, FIGURE 3-9, 12/7/2006 2:10:35 PM, langem, Tabloid

SCALE: 0 200' 400'

LEGEND

- TOP OF NAPL ELEVATION 07/15/03
- TOP OF WATER ELEVATION 07/15/03
- LITHOLOGIC CONTACTS
- APPROXIMATELY LOCATED LITHOLOGIC CONTACTS
- CONFINING LAYER OF UNIT C (UPPER TILL)
- SHALLOW PERCHED AQUIFER
- DEEP WATER-TABLE AQUIFER



SCALE: 0 60' 120'

4 X VERTICAL EXAGGERATION

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FIGURE 3-10
HYDROGOLOGIC CROSS SECTION D-D'

FILE NAME: RI-figs\Profile.dwg

DATE: 11/20/2006

Z:\2004\Chevron Texaco\Hunter Portfolio\9-6590 Chelan\RI-figs\Profile.dwg, Figure 3-10, 11/20/2006 12:08:00 PM, langem, Tabloid

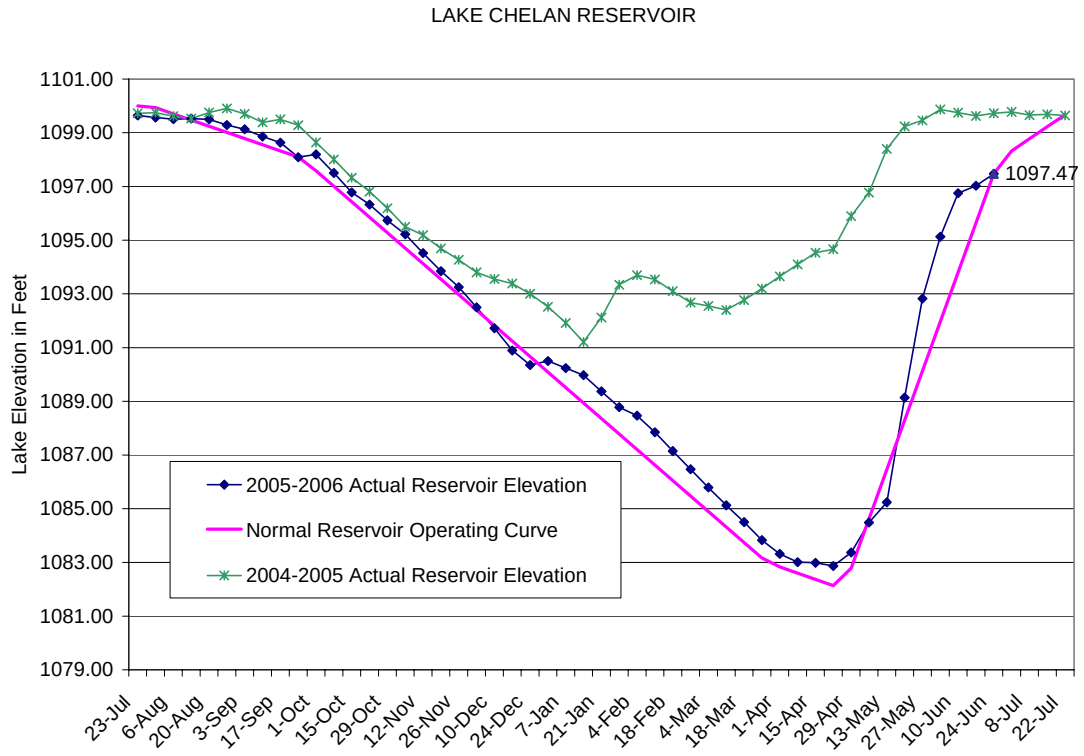
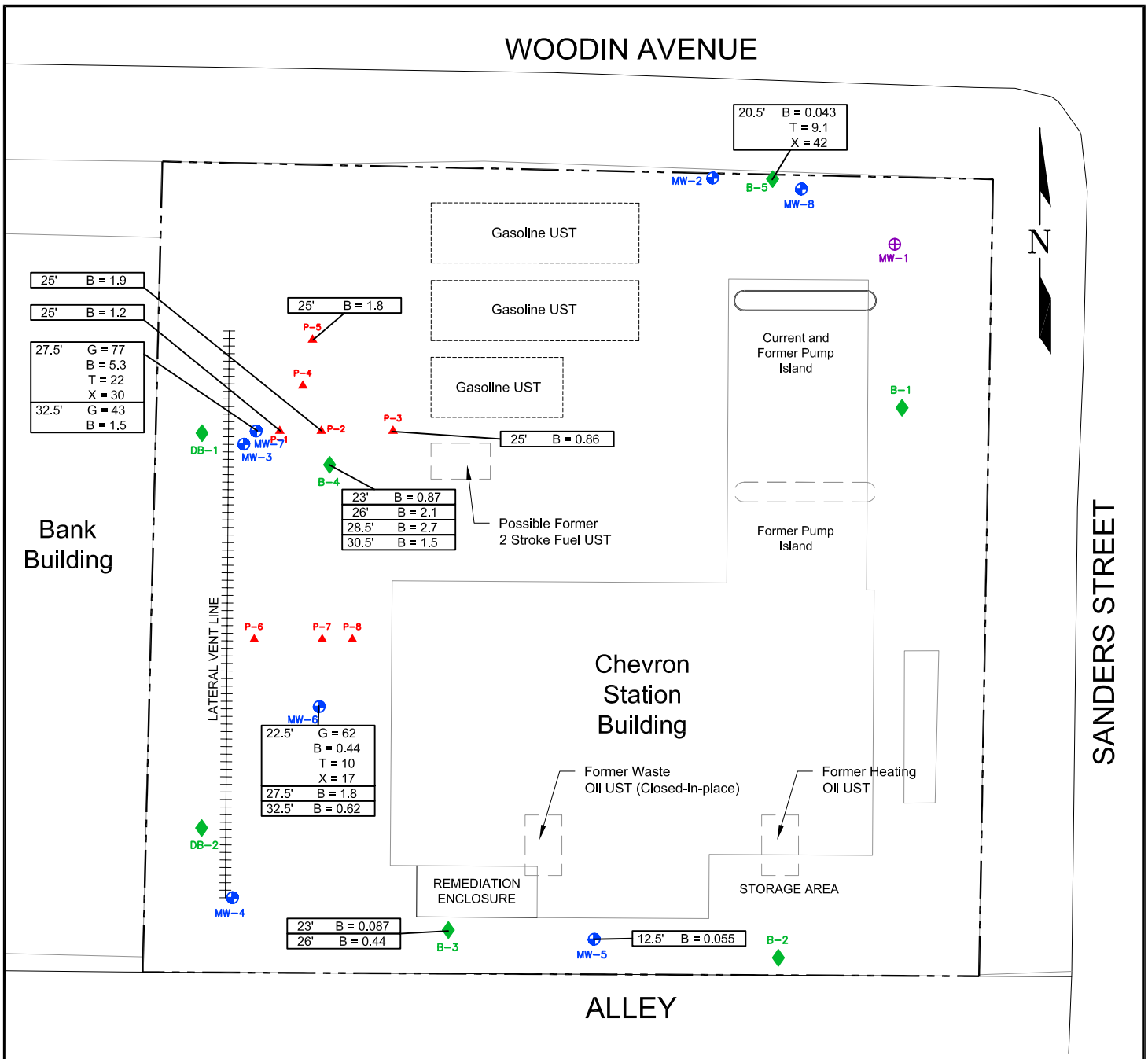


Figure 3-11
Annual Hydrograph for Lake Chelan Reservoir
Chevron Service Station No. 9-6590
232 E. Woodin Ave.
Chelan, Washington



LEGEND

- MW-2 — PERCHED GROUNDWATER MONITORING WELL
- MW-1 — ABANDONED DRY MONITORING WELL
- P-1 — VAPOR PROBE
- B-1 — SOIL BORING
- APPROXIMATE CHEVRON STATION PROPERTY BOUNDARY

NOTES

SOIL SAMPLE RESULTS THAT EXCEED MTCA 2001 METHOD A CLEANUP LEVELS

ALL VALUES IN UNITS OF mg/Kg (ppm)

G = TPH-GASOLINE-RANGE
B = BENZENE
T = TOLUENE
X = XYLENE (Total)

0 20' 40'

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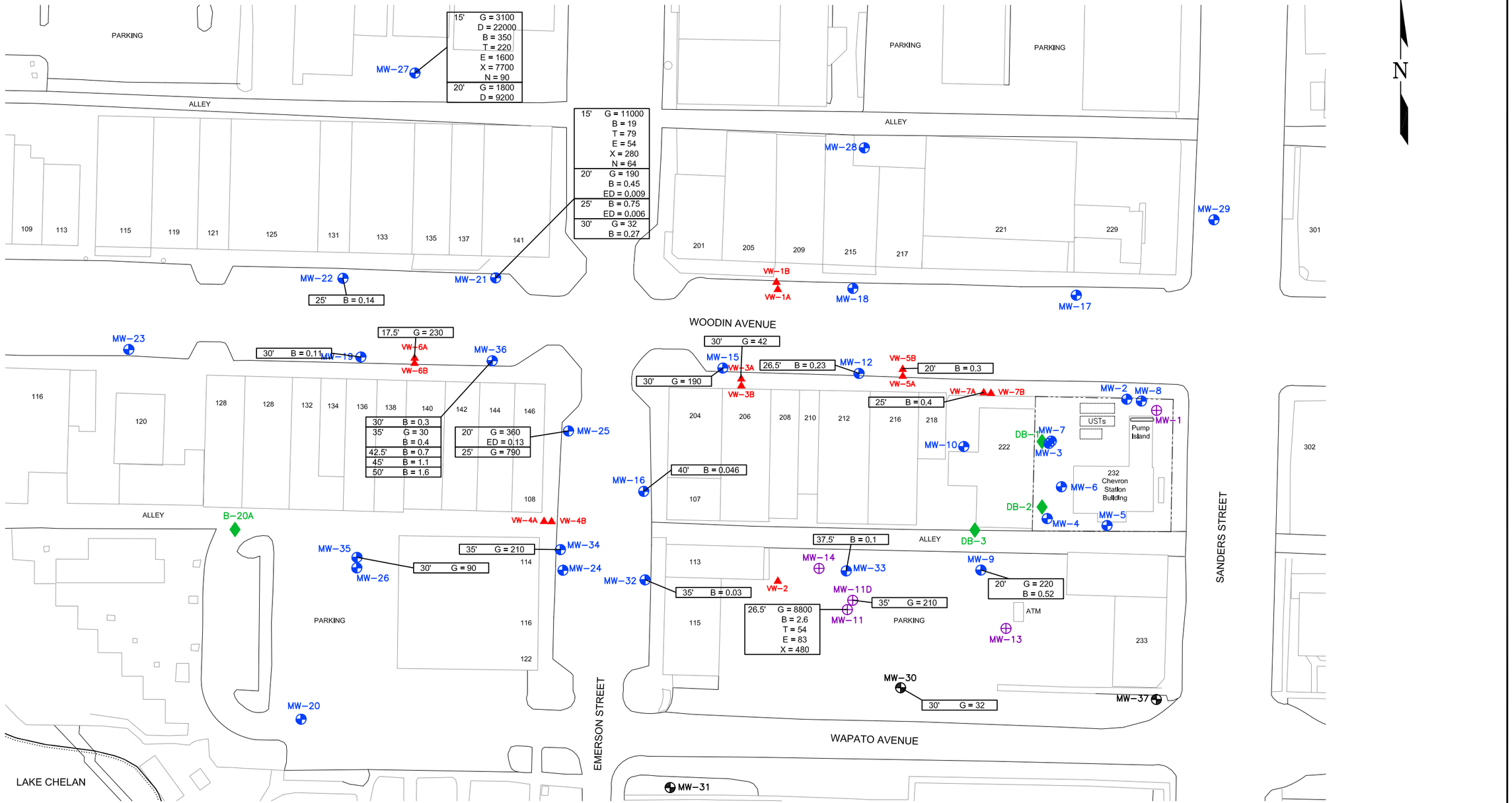
CHELAN, WASHINGTON

FIGURE 4-1
Soil Sample Results at Chevron Service Station

FILE NAME: RI-figs\96590-RI-FigureSet.dwg
DATE: 11/20/2006

Z:\2004\ChevronTexaco\Hunter Portfolio\9-6590 Chelan\RI-figs\96590-RI-FigureSet.dwg, Figure 4-1, 11/20/2006 1:20:52 PM, langem, Letter



LEGEND

- MW-2 — PERCHED GROUNDWATER MONITORING WELL
- MW-30 — DEEP GROUNDWATER MONITORING WELL
- MW-1 — ABANDONED DRY MONITORING WELL
- VW-1A — SOIL VAPOR MONITORING WELL
- DB-1 — SOIL BORING
- APPROXIMATE CHEVRON STATION PROPERTY BOUNDARY

NOTES

SOIL SAMPLE RESULTS THAT EXCEED MTCA 2001 METHOD A CLEANUP LEVELS

ALL VALUES IN UNITS OF mg/Kg (ppm)

G = TPH-GASOLINE-RANGE
D = TPH-DIESEL-RANGE
B = BENZENE
T = TOLUENE
E = ETHYLBENZENE
X = XYLENE (Total)
N = NAPHTHALENE
ED = ETHYLENE DIBROMIDE

0 80' 160'

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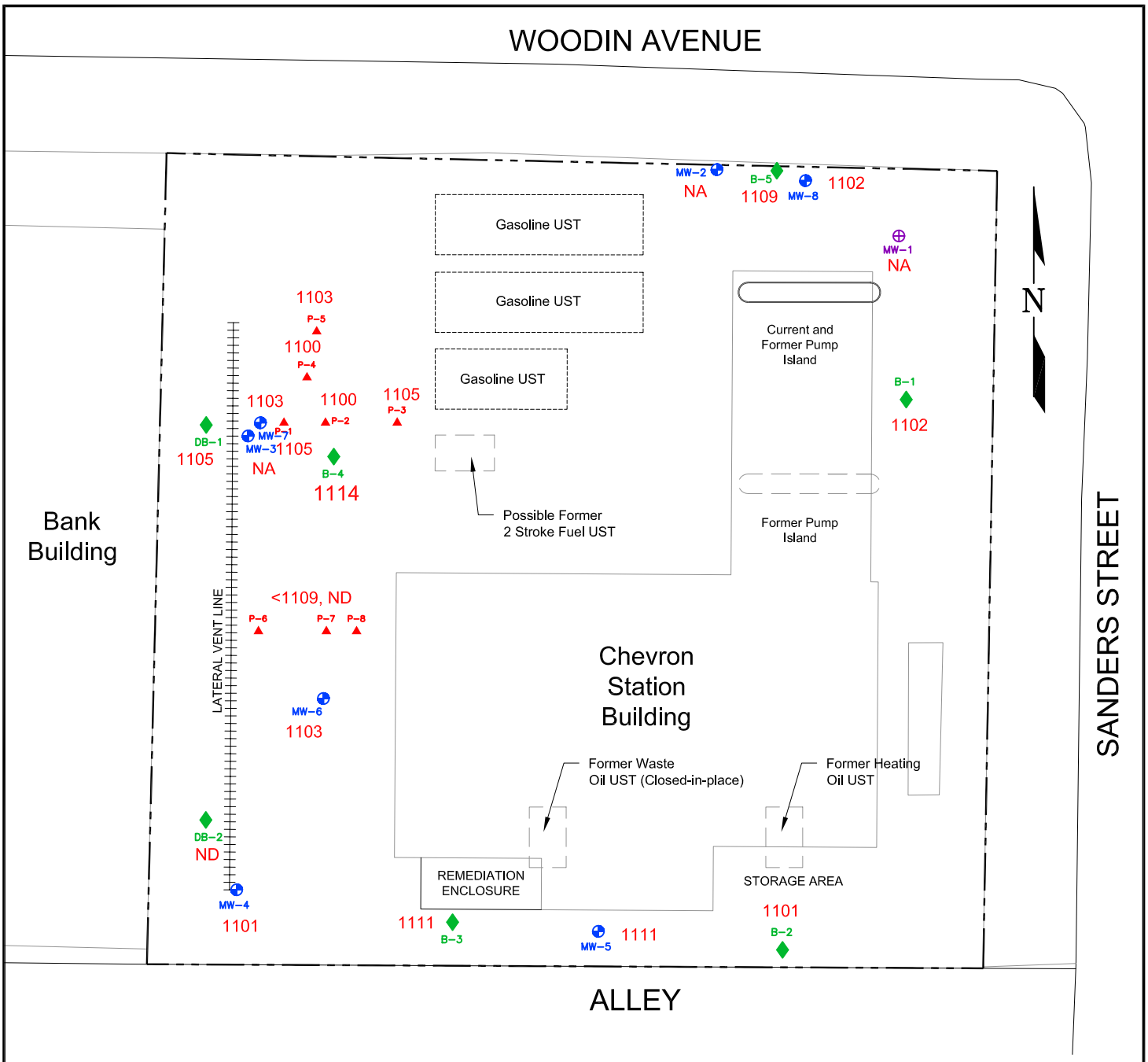
Chelan, Washington

FIGURE 4-2
Soil Sample Results at Chelan Site

FILE NAME: RI-figs\96590-RI-FigureSet.dwg
DATE: 12/05/2006

Z:\2004\Chevron Texaco\Hunter Portfolio\9-6590 Chelan\RI-figs\96590-RI-FigureSet.dwg, Figure 4-2, 12/5/2006 9:11:22 AM, langem, Tabloid



LEGEND

MW-2	PERCHED GROUNDWATER MONITORING WELL
MW-1	ABANDONED DRY MONITORING WELL
P-1	VAPOR PROBE
B-1	SOIL BORING
	APPROXIMATE CHEVRON STATION PROPERTY BOUNDARY
1103	ELEVATION (FEET ABOVE MEAN SEA LEVEL) OF UPPERMOST INDICATION OF PETROLEUM CONTAMINATION IN SOIL BORING

NOTES

NA = Soil samples not analyzed, no petroleum hydrocarbon odors or PID readings reported.

ND = No detection of petroleum hydrocarbons in boring.

0 20' 40'

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CHELAN, WASHINGTON

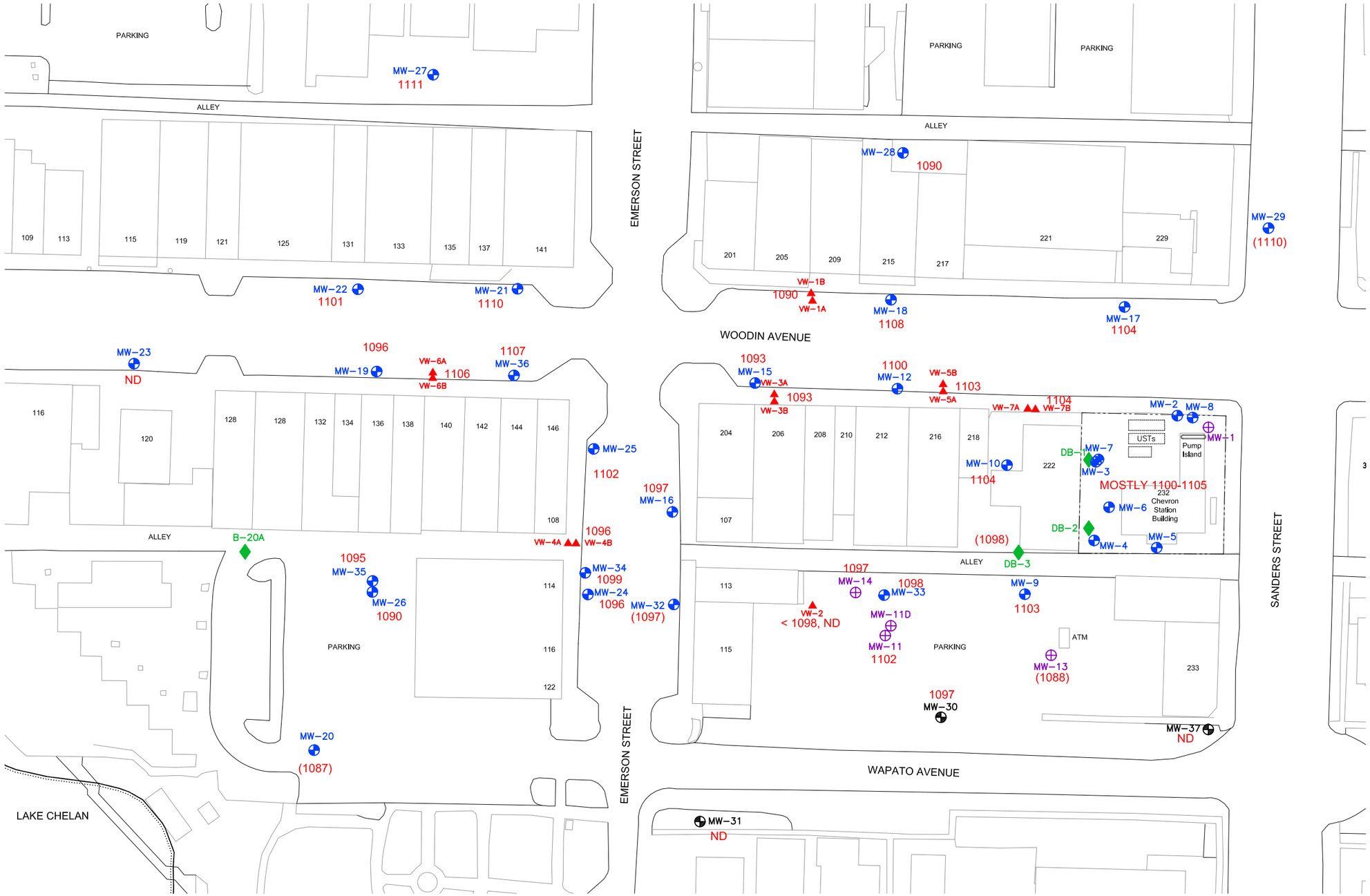
FIGURE 4-3

Uppermost Elevation of Soil Contamination at Chevron Service Station

FILE NAME: RI-figs\96590-RI-FigureSet.dwg

DATE: 12/05/2006

Z:\2004\ChevronTexaco\Hunter Portfolio\9-6590 Chelan\RI-figs\96590-RI-FigureSet.dwg, Figure 4-3, 12/5/2006 9:10:13 AM, langem, Letter



LEGEND

- MW–2 — PERCHED GROUNDWATER MONITORING WELL
- MW–1 — ABANDONED DRY MONITORING WELL
- MW–30 — DEEP GROUNDWATER MONITORING WELL
- P–1 — VAPOR PROBE
- B–1 — SOIL BORING
- APPROXIMATE CHEVRON STATION PROPERTY BOUNDARY

NOTES

ND = No detection of petroleum hydrocarbons in boring.

1097 — ELEVATION (FEET ABOVE MEAN SEA LEVEL) OF UPPERMOST INDICATION OF PETROLEUM CONTAMINATION IN SOIL BORING

(1088) — CONTAMINATION IS UNCERTAIN AND SOIL MAY BE UNCONTAMINATED

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Chelan, Washington

FIGURE 4-4

Uppermost Elevation of Soil Contamination at Chelan Site

FILE NAME: RI-figs\96590-RI-FigureSet.dwg

DATE: 12/05/2006

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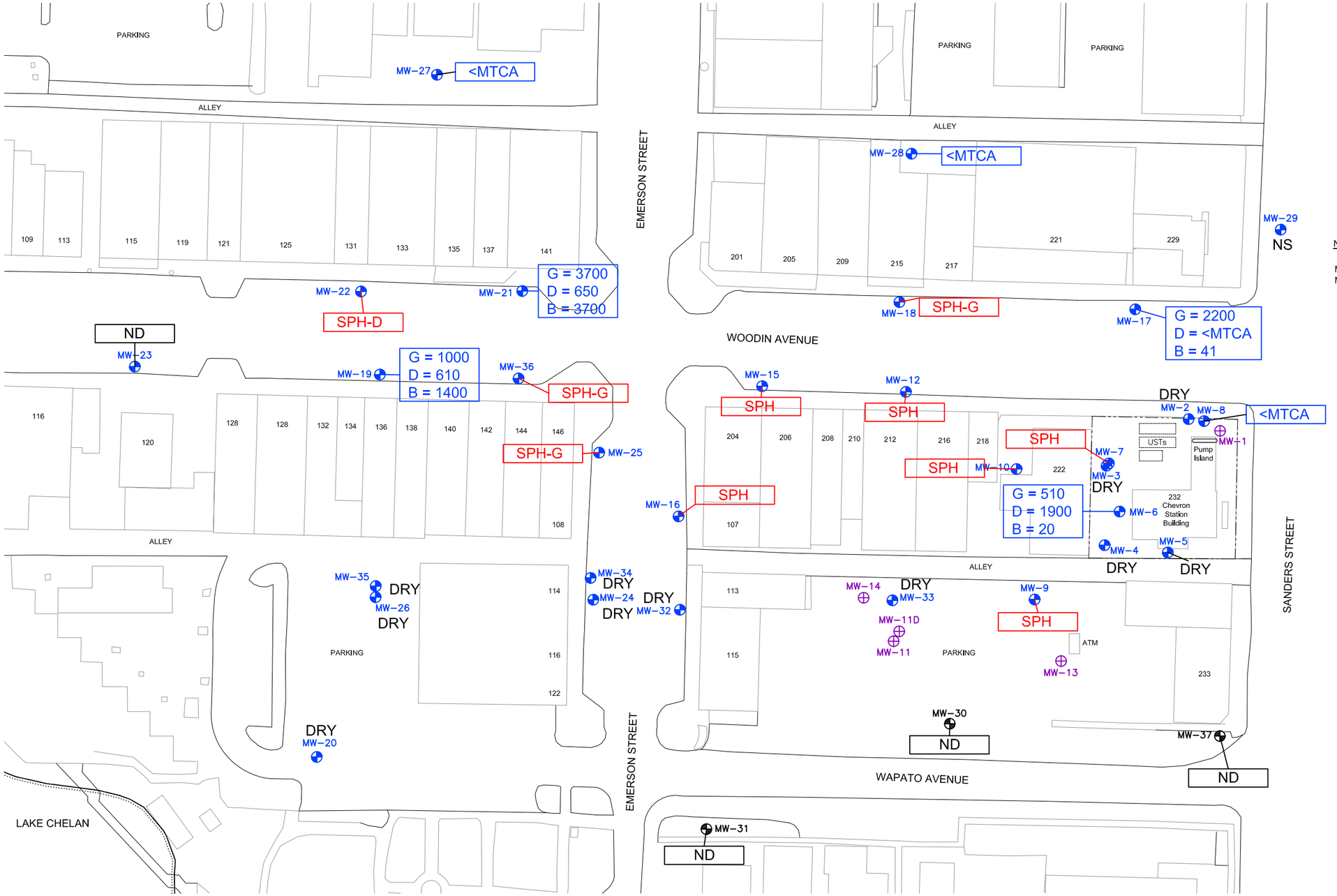

NOTE

MAXIMUM GROUNDWATER SAMPLE RESULTS THAT EXCEED MTCA METHOD A CLEANUP LEVELS FROM JULY 2005 TO MAY 2006

G = TPH-GASOLINE-RANGE
D = TPH-DIESEL-RANGE
B = BENZENE
X = XYLENE (Total)

ND = NO DETECTIONS DURING THE REMEDIAL INVESTIGATION PERIOD FOR GAS, DIESEL, BENZENE, TOLUENE, ETHYLBENZENE OR XYLENE

NS = NOT SAMPLED

<MTCA = DETECTIONS BELOW MTCA METHOD A CLEANUP LEVELS

SPH = SEPARATE-PHASE HYDROCARBON (NAPL)

SPH-G = SPH IDENTIFIED DURING REMEDIAL INVESTIGATION PERIOD AS GASOLINE

SPH-D = SPH IDENTIFIED DURING REMEDIAL INVESTIGATION PERIOD AS LARGELY DIESEL

LEGEND

MW-2 PERCHED GROUNDWATER MONITORING WELL

MW-30 DEEP GROUNDWATER MONITORING WELL

MW-1 ABANDONED DRY MONITORING WELL

APPROXIMATE CHEVRON STATION PROPERTY BOUNDARY

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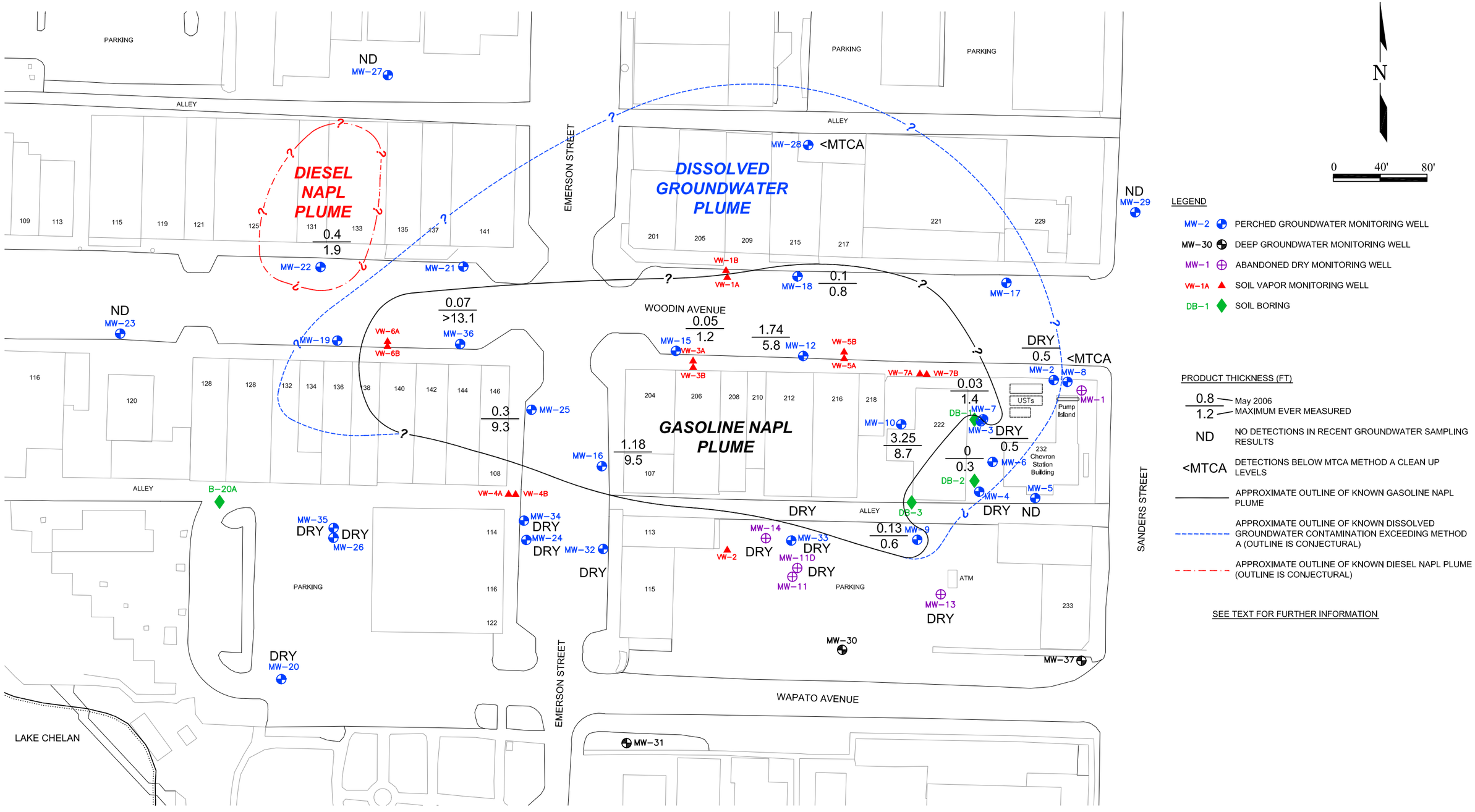
Chelan, Washington

FIGURE 4-5

Groundwater Sample Results
July 2005 to May 2006

FILE NAME: RI-figs\96590-RI-FigureSet.dwg

DATE: 12/11/2006



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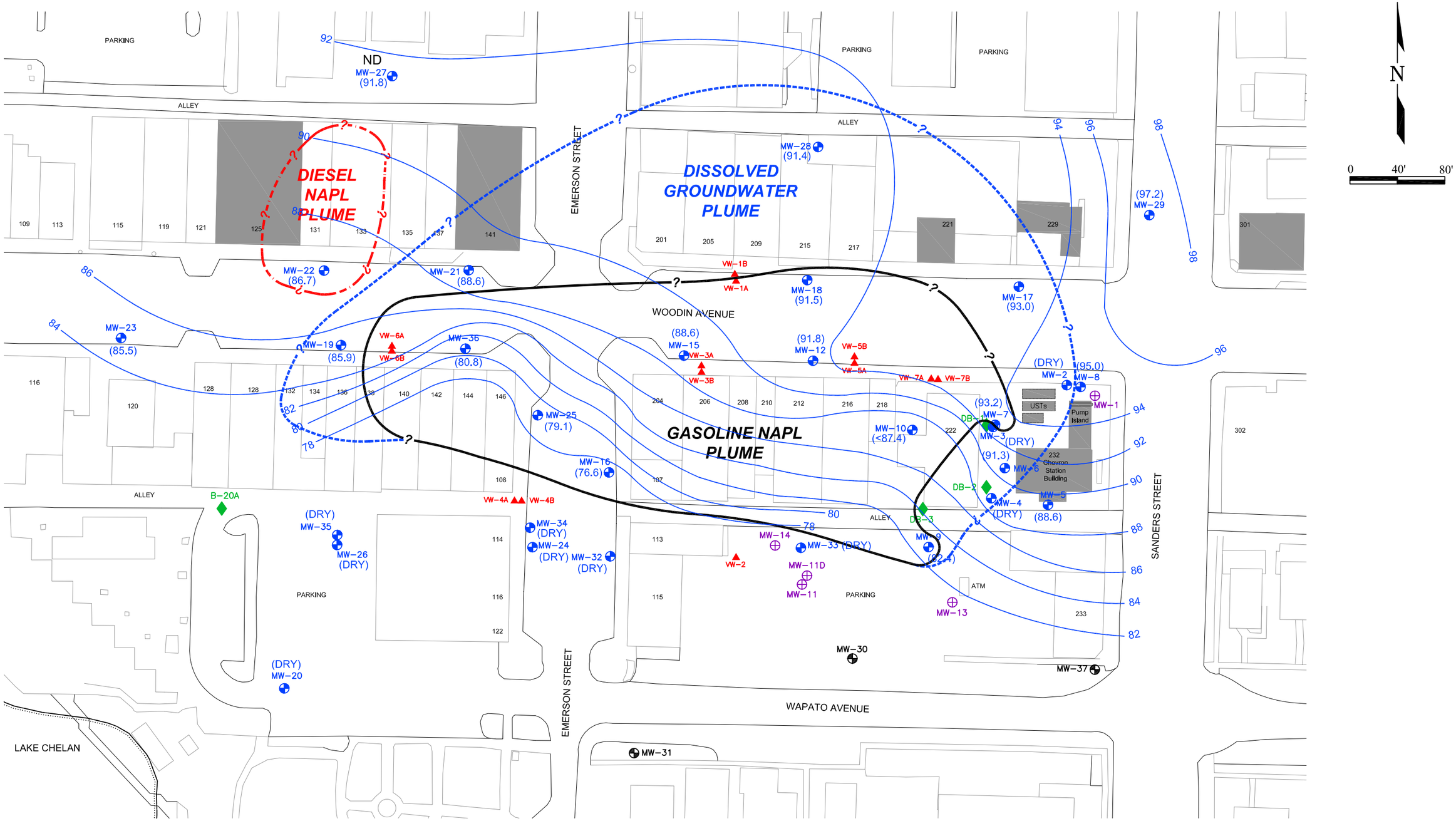
CHELAN, WASHINGTON

FIGURE 4-6
Groundwater and NAPL Plume Locations - May 2006

FILE NAME: 96590-RI-FigureSet.dwg
DATE: 12/05/2006



N

0 40' 80'

LEGEND

POTENTIAL SOURCES OF HISTORIC PETROLEUM RELEASES

82 PERCHED WATER TABLE CONTOURS, JULY 2004

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FIGURE 4-7
Potential Source Locations and NAPL Plumes

FILE NAME: 96590-RI-FigureSet.dwg

DATE: 12/07/2006

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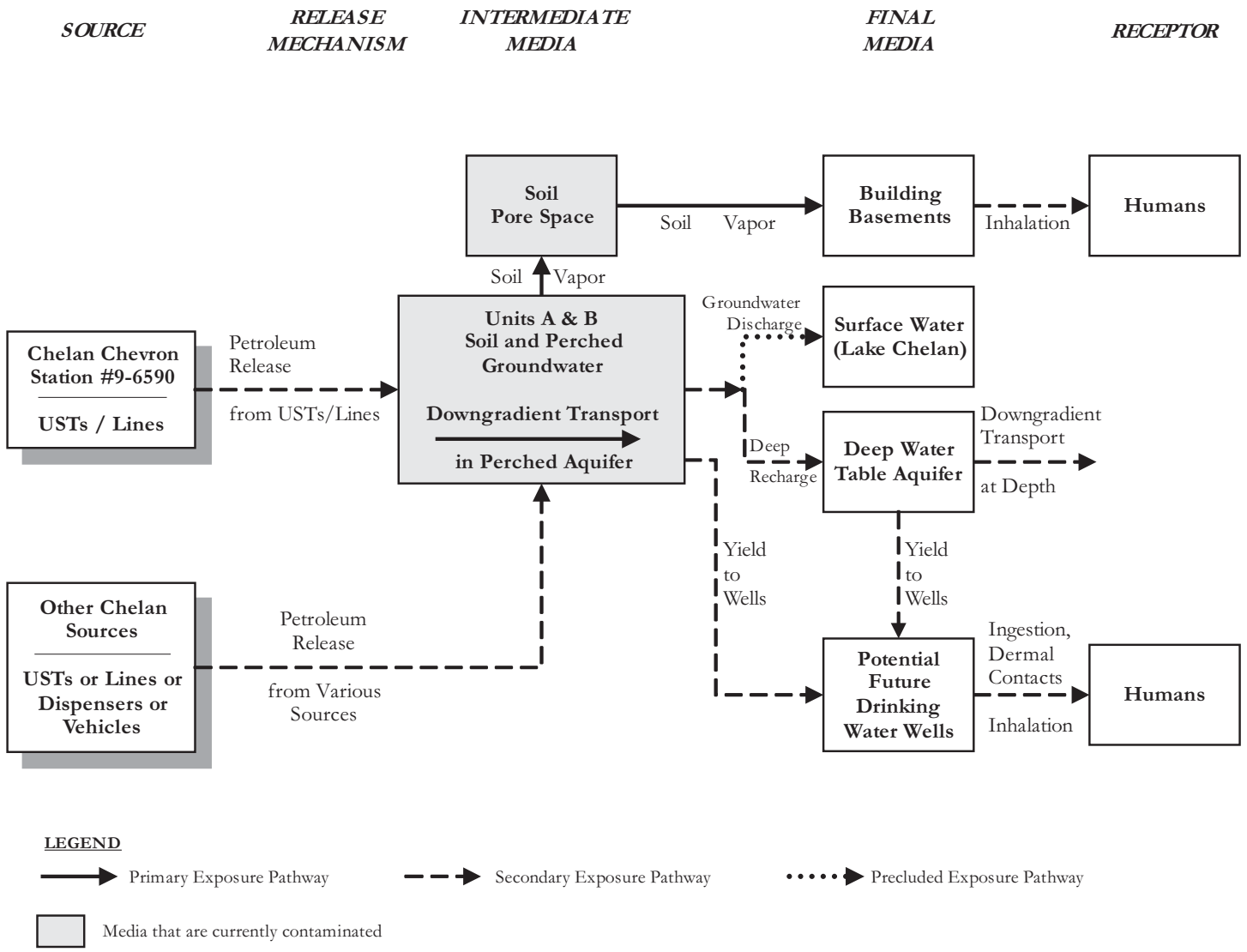
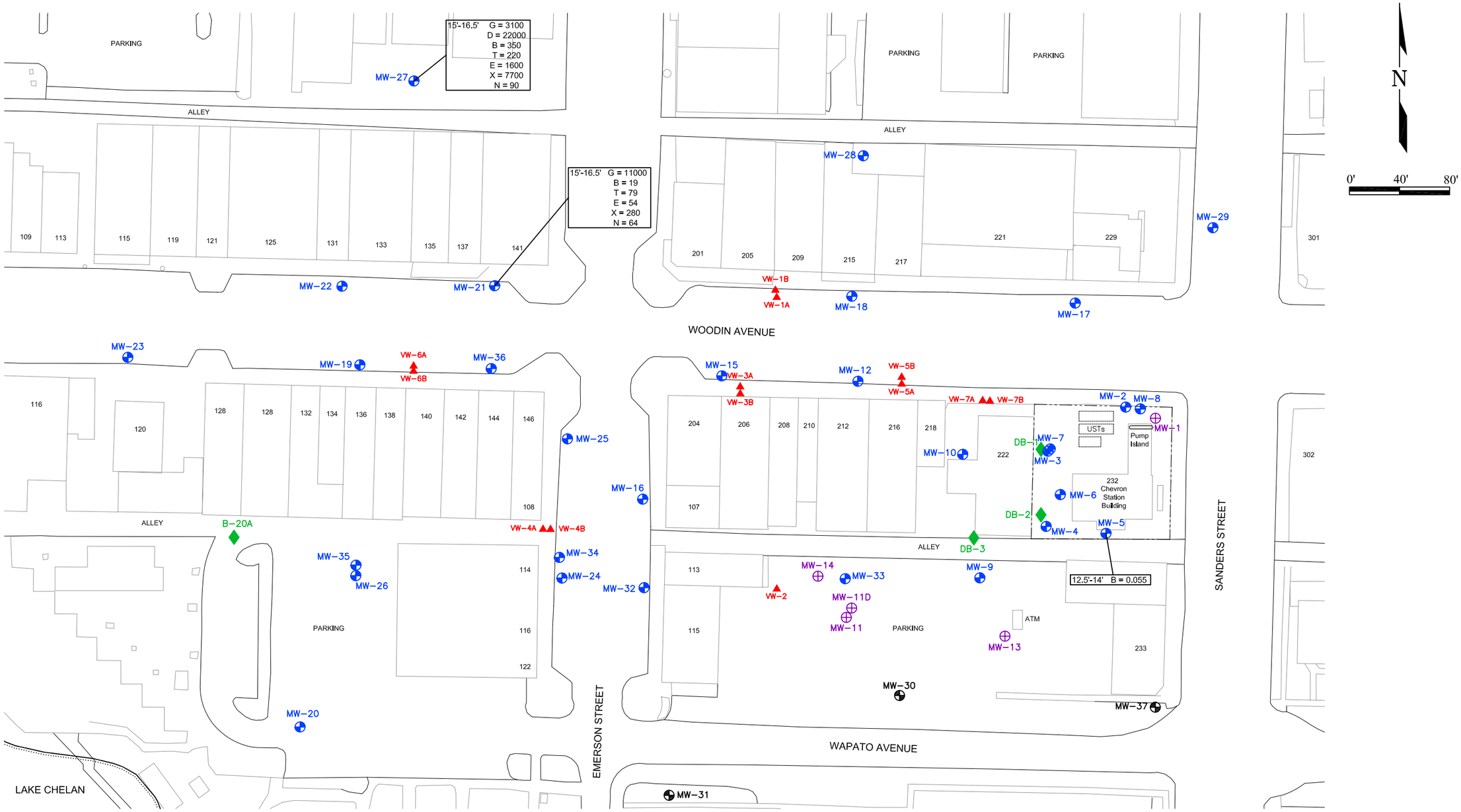


Figure 4-8
Conceptual Site Model
Chelan Chevron Station 9-6590
Chelan, WA



LEGEND

- MW-2 — PERCHED GROUNDWATER MONITORING WELL
- MW-30 — DEEP GROUNDWATER MONITORING WELL
- MW-1 — ABANDONED DRY MONITORING WELL
- VW-1A — SOIL VAPOR MONITORING WELL
- DB-1 — SOIL BORING
- APPROXIMATE CHEVRON STATION PROPERTY BOUNDARY

NOTES

SOIL SAMPLE RESULTS THAT EXCEED MTCA 2001 METHOD A CLEANUP LEVELS

ALL VALUES IN UNITS OF mg/Kg (ppm)

G = TPH-GASOLINE-RANGE
D = TPH-DIESEL-RANGE
B = BENZENE
T = TOLUENE
E = ETHYLBENZENE
X = XYLENE (Total)
N = NAPHTHALENE
ED = ETHYLENE DIBROMIDE

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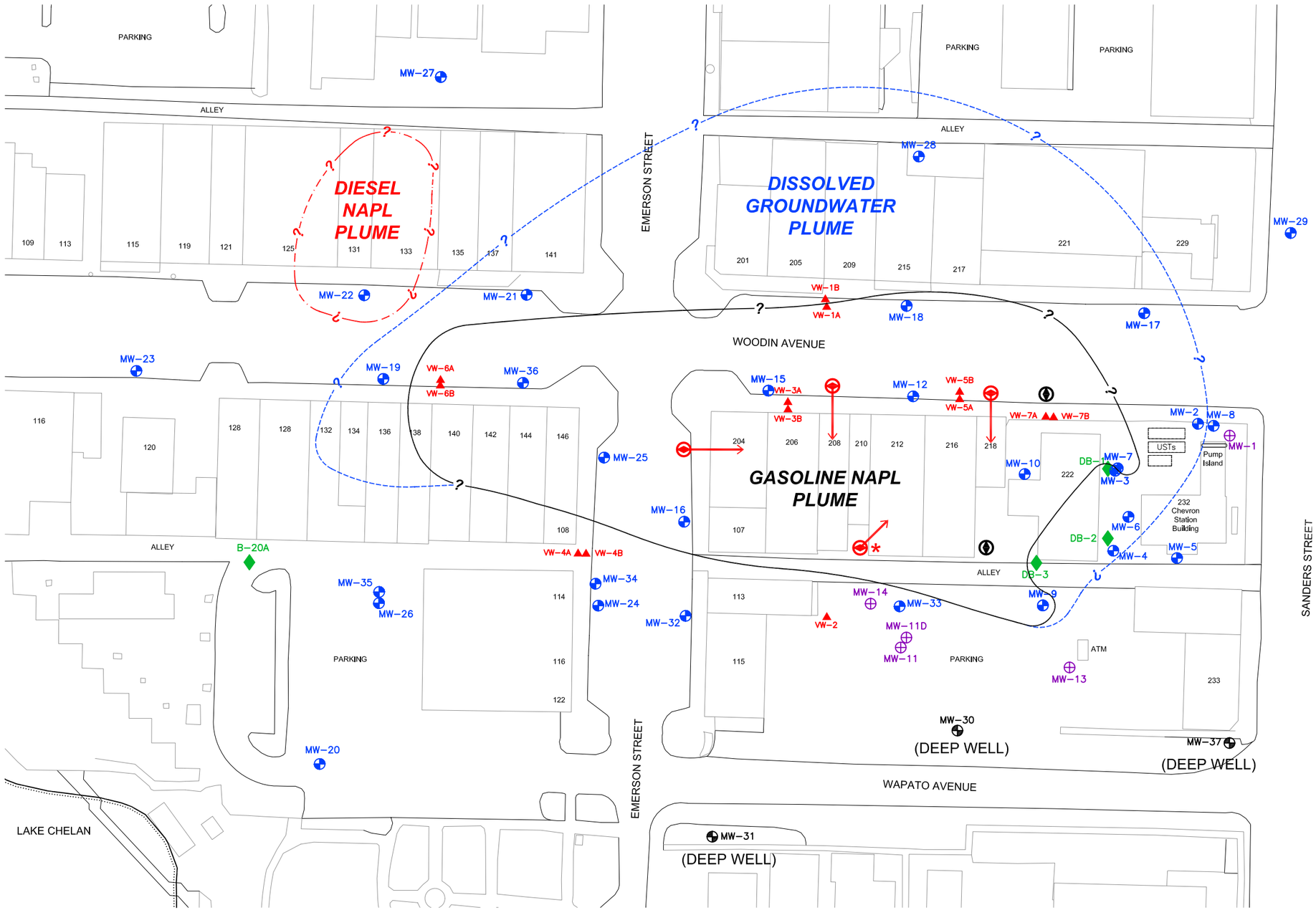
FIGURE 5-1
Soil Sample Results Exceeding MTCA Method A Within the Point of Compliance

FILE NAME: 96590-RI-FigureSet.dwg
DATE: 12/11/2006



N

0 40' 80'

LEGEND

- VERTICAL PRODUCT RECOVERY WELL (4 INCH DIAMETER PVC)
- ANGLED PRODUCT RECOVERY WELL (UP TO 45° FROM VERTICAL, 2 INCH DIA. PVC)
- * MAY ANGLE BETWEEN 0°-45° FROM VERTICAL DEPENDING ON ACCESS AND OVERHEAD OBSTACLES
- MW-2 PERCHED GROUNDWATER MONITORING WELL
- MW-30 DEEP GROUNDWATER MONITORING WELL
- MW-1 ABANDONED DRY MONITORING WELL
- VW-1A SOIL VAPOR MONITORING WELL
- DB-1 SOIL BORING
- APPROXIMATE OUTLINE OF KNOWN GASOLINE NAPL PLUME
- APPROXIMATE OUTLINE OF KNOWN DISSOLVED GROUNDWATER CONTAMINATION EXCEEDING METHOD A (OUTLINE IS CONJECTURAL)
- APPROXIMATE OUTLINE OF KNOWN DIESEL NAPL PLUME (OUTLINE IS CONJECTURAL)

SEE TEXT FOR FURTHER INFORMATION

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Chelan, Washington

FIGURE 6-1
Option 1 -Proposed Angled and Vertical Product Recovery Wells

FILE NAME: 96590_GW.dwg

DATE: 12/05/2006

Z:\2004\ChevronTexaco\Hunter Portfolio\9-6590 Chelan\96590_GW.dwg, Fig6-1Angled Wells, 12/5/2006 11:19:04 AM, langem, Tabloid

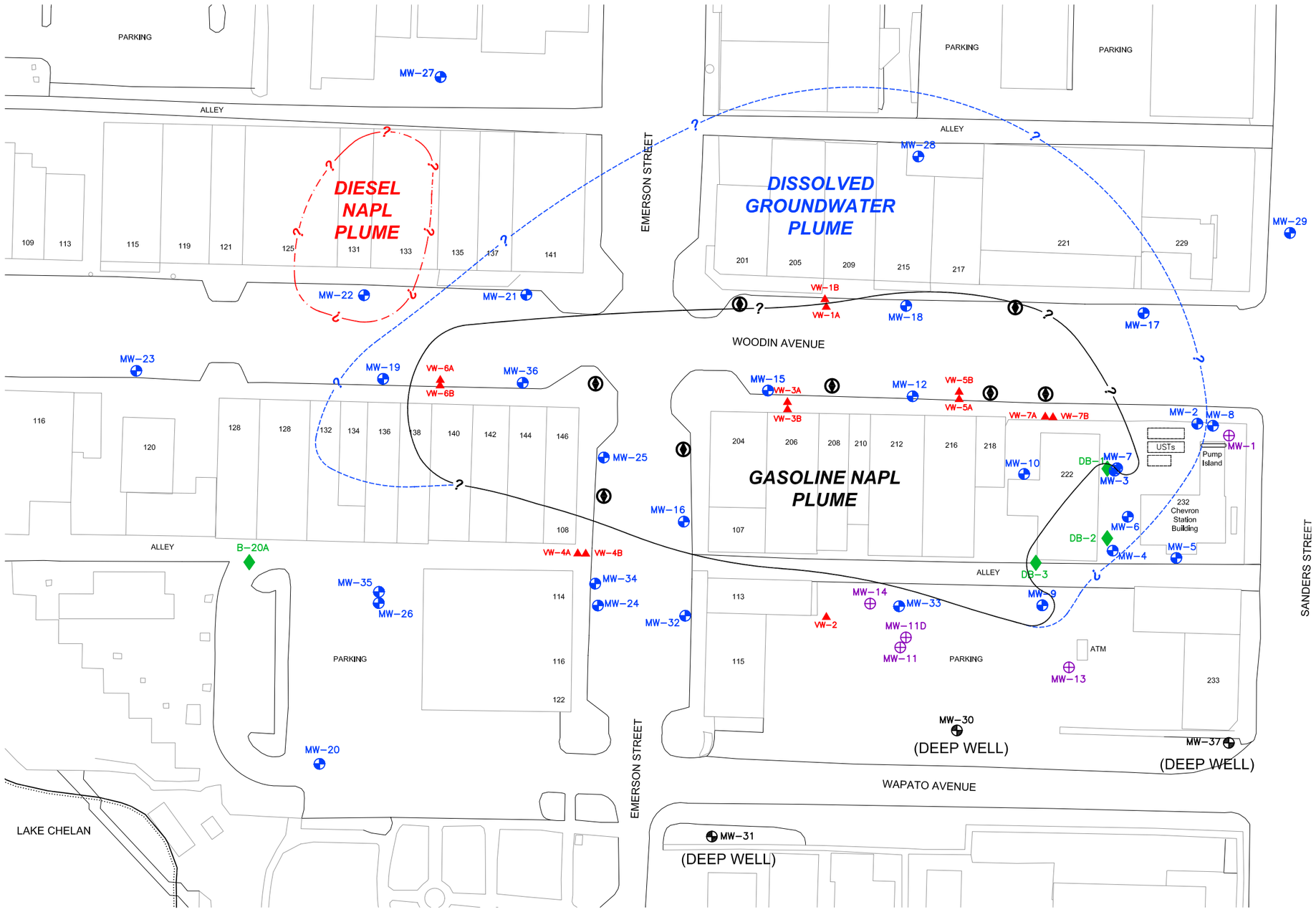

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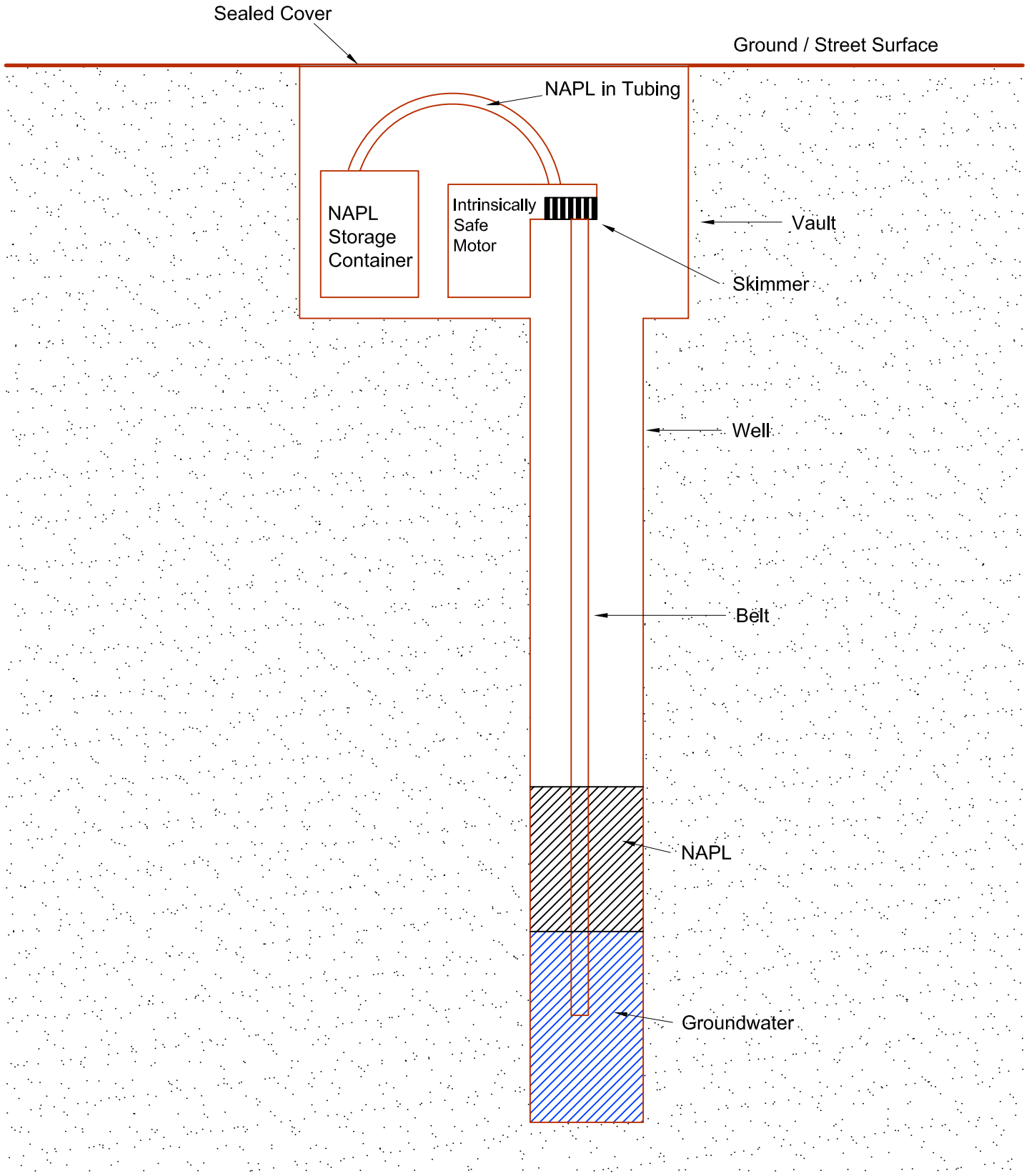
FIGURE 6-2
Option 2 -Proposed Vertical Product Recovery Wells

FILE NAME: 96590_GW.dwg

DATE: 12/05/2006

Z:\2004\ChevronTexaco\Hunter Portfolio\9-6590 Chelan\96590_GW.dwg, Fig6-2Vertical Wells, 12/5/2006 11:33:37 AM, tingem, Tabloid



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Chelan, Washington

Figure 7-1

Schematic of NAPL
Removal by Belt Skimmer

FILE NAME:	DATE:
RI-figs\Profile.dwg	12/05/2006

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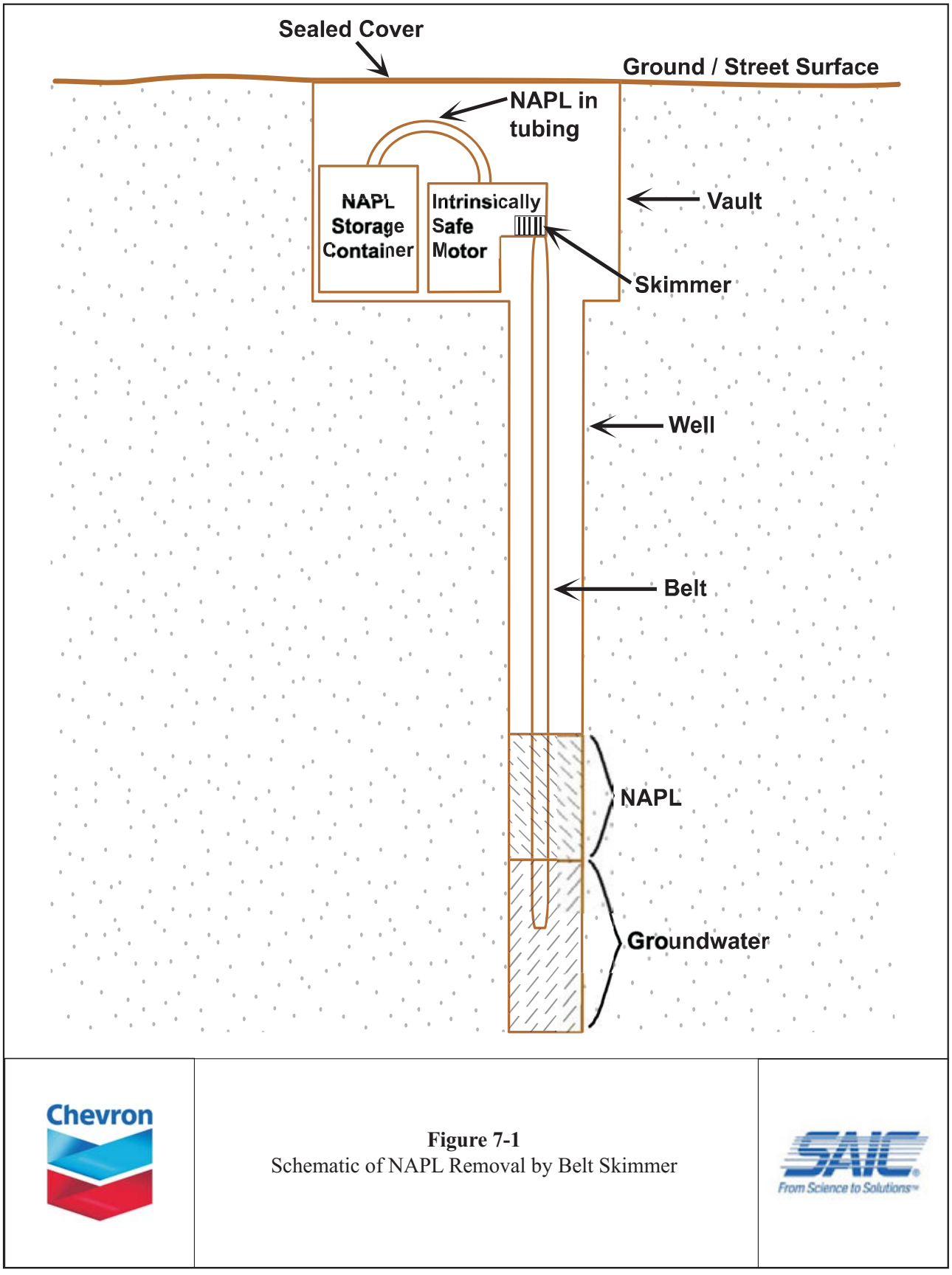


Figure 7-1
Schematic of NAPL Removal by Belt Skimmer

Figure 7-2
Recovery of NAPL and Groundwater Following Bailing
MW-12 (October 23-24, 2003)

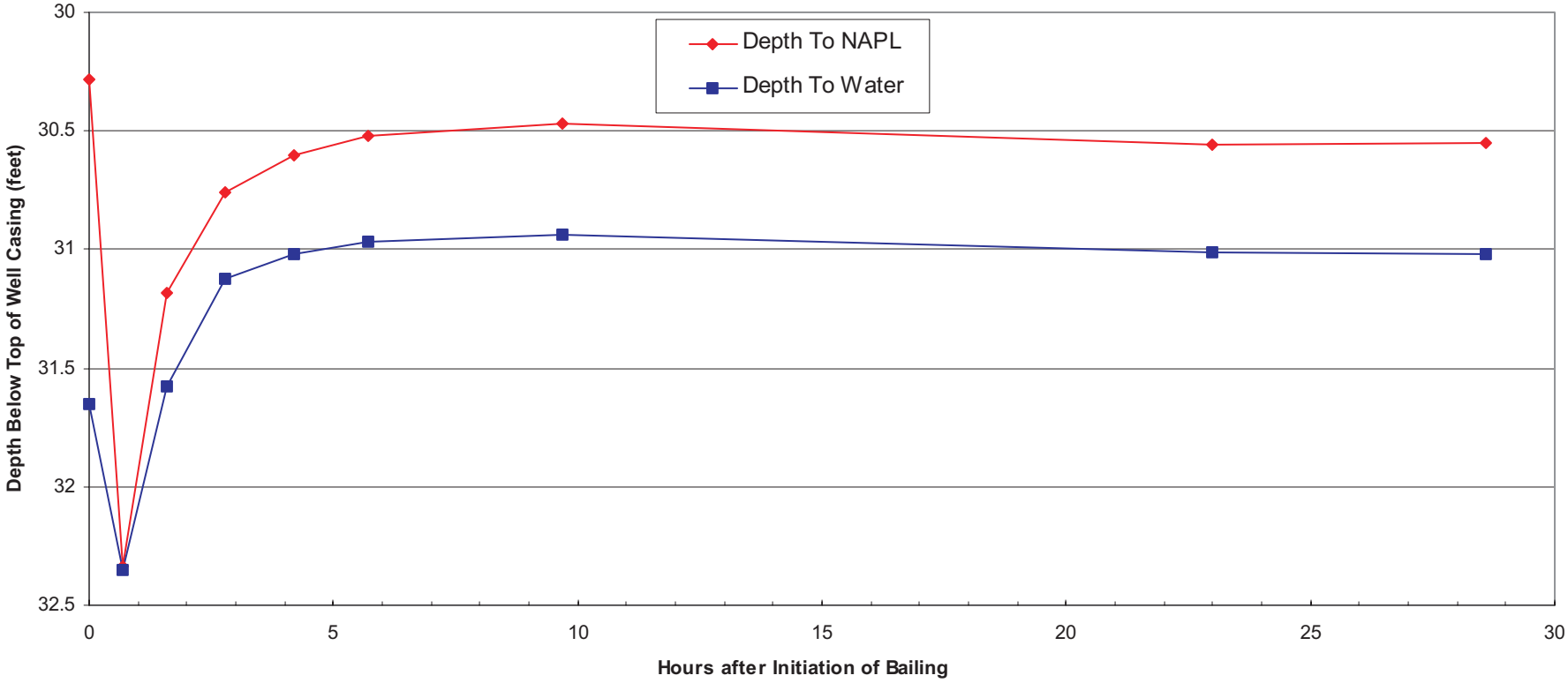
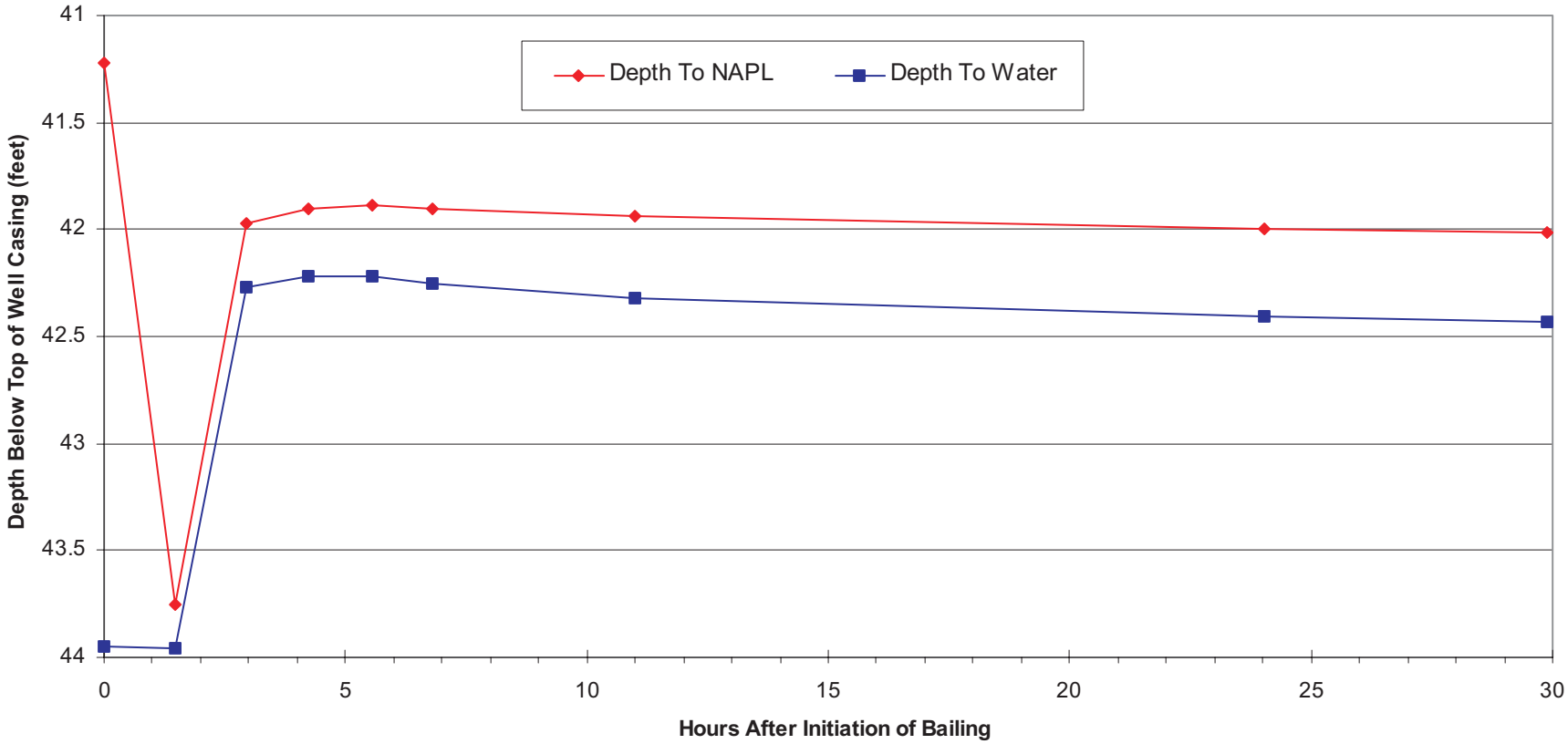


Figure 7-3
Recovery of NAPL and Groundwater Following Bailing
MW-25 (October 23-24, 2003)



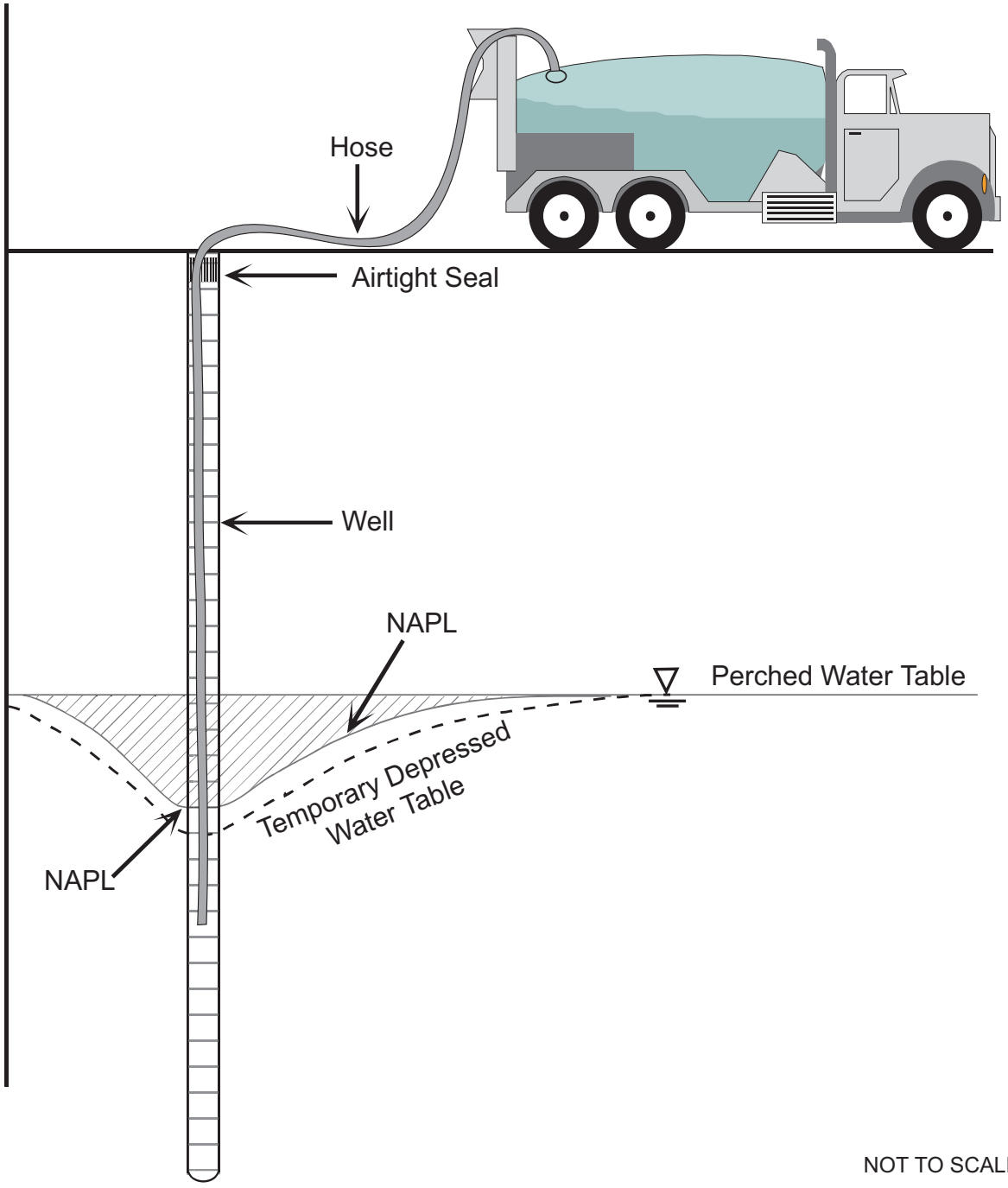


Figure 7-4
Schematic Removal of NAPL and
Groundwater by Vacuum Truck

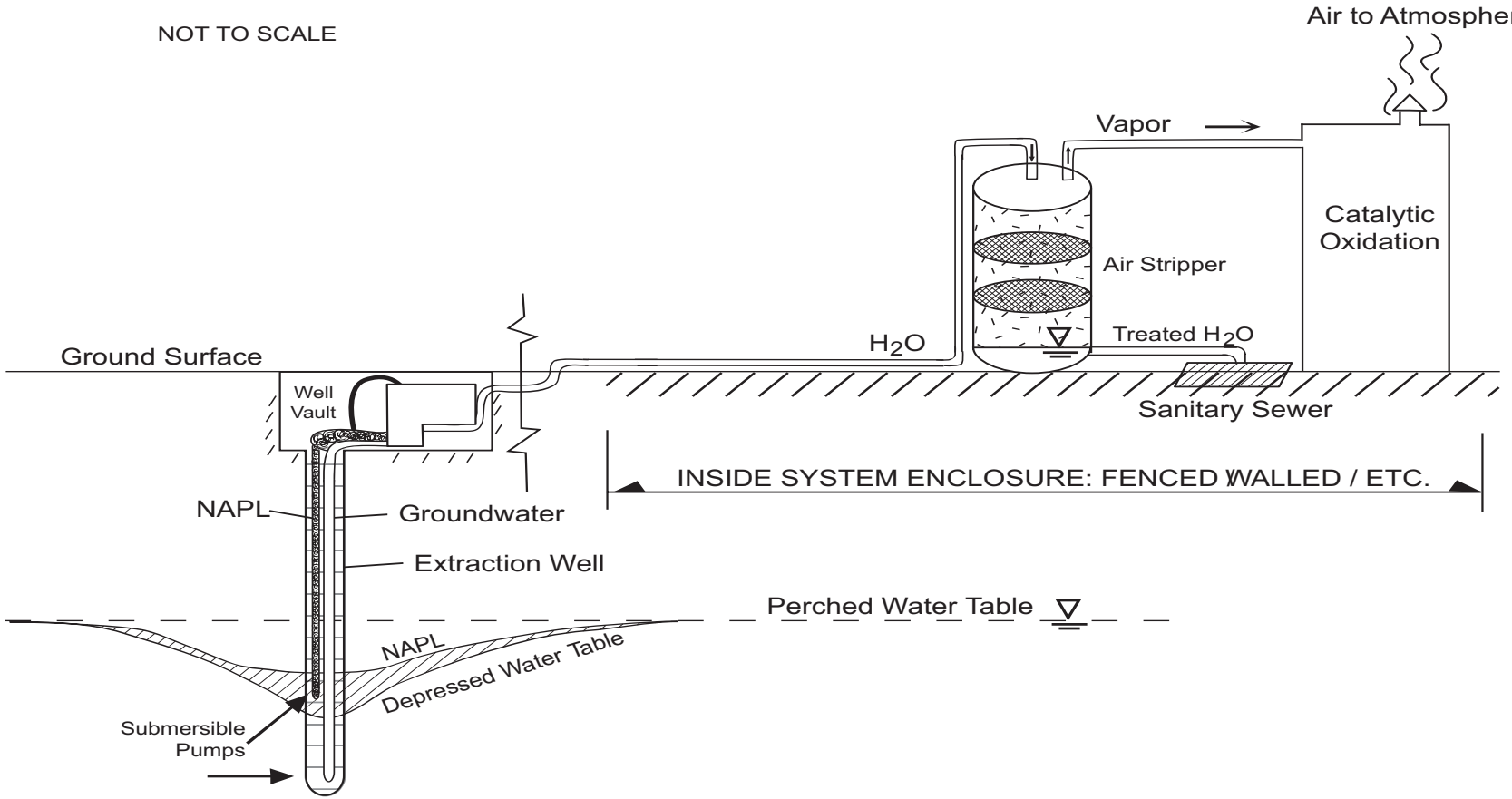
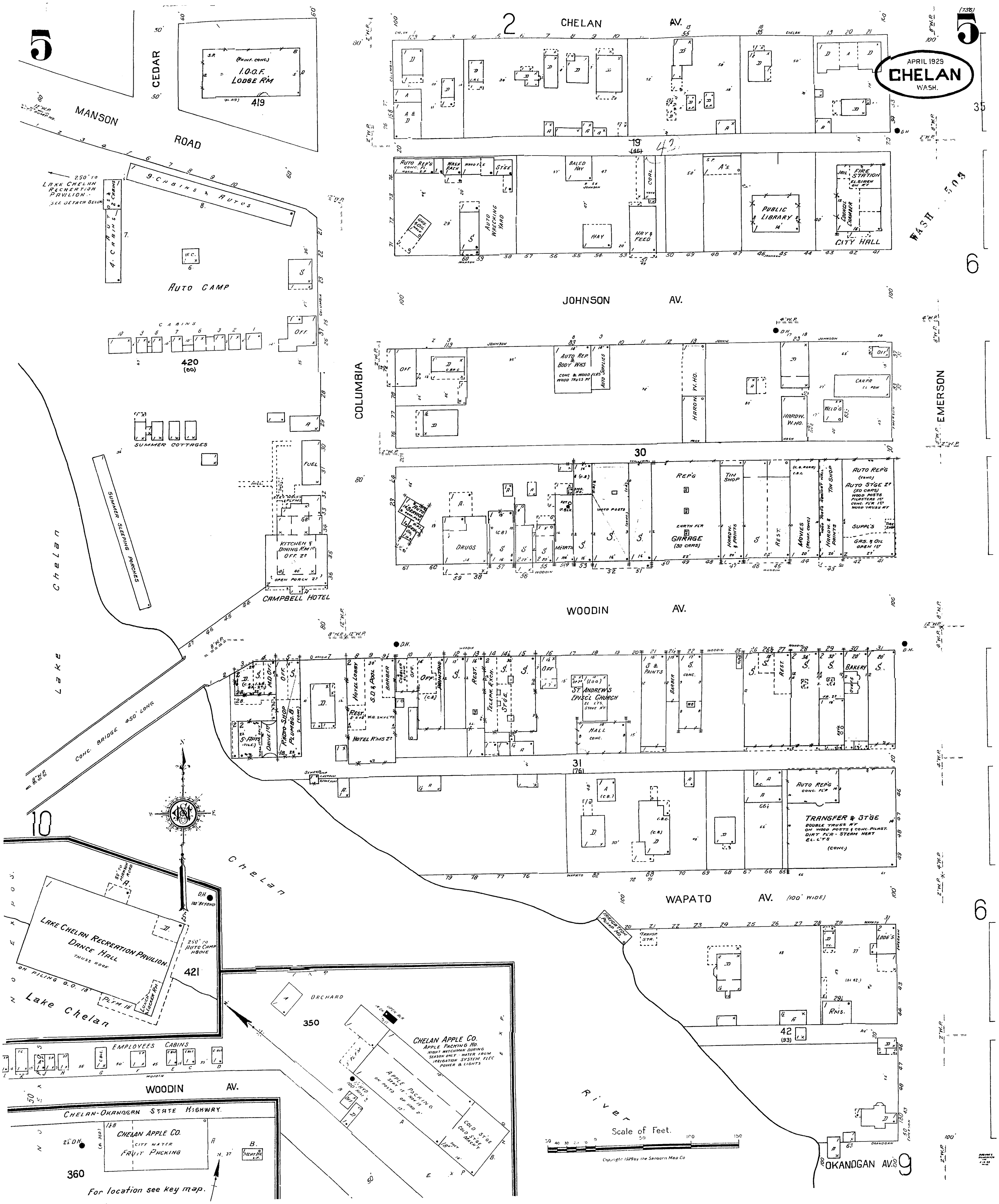
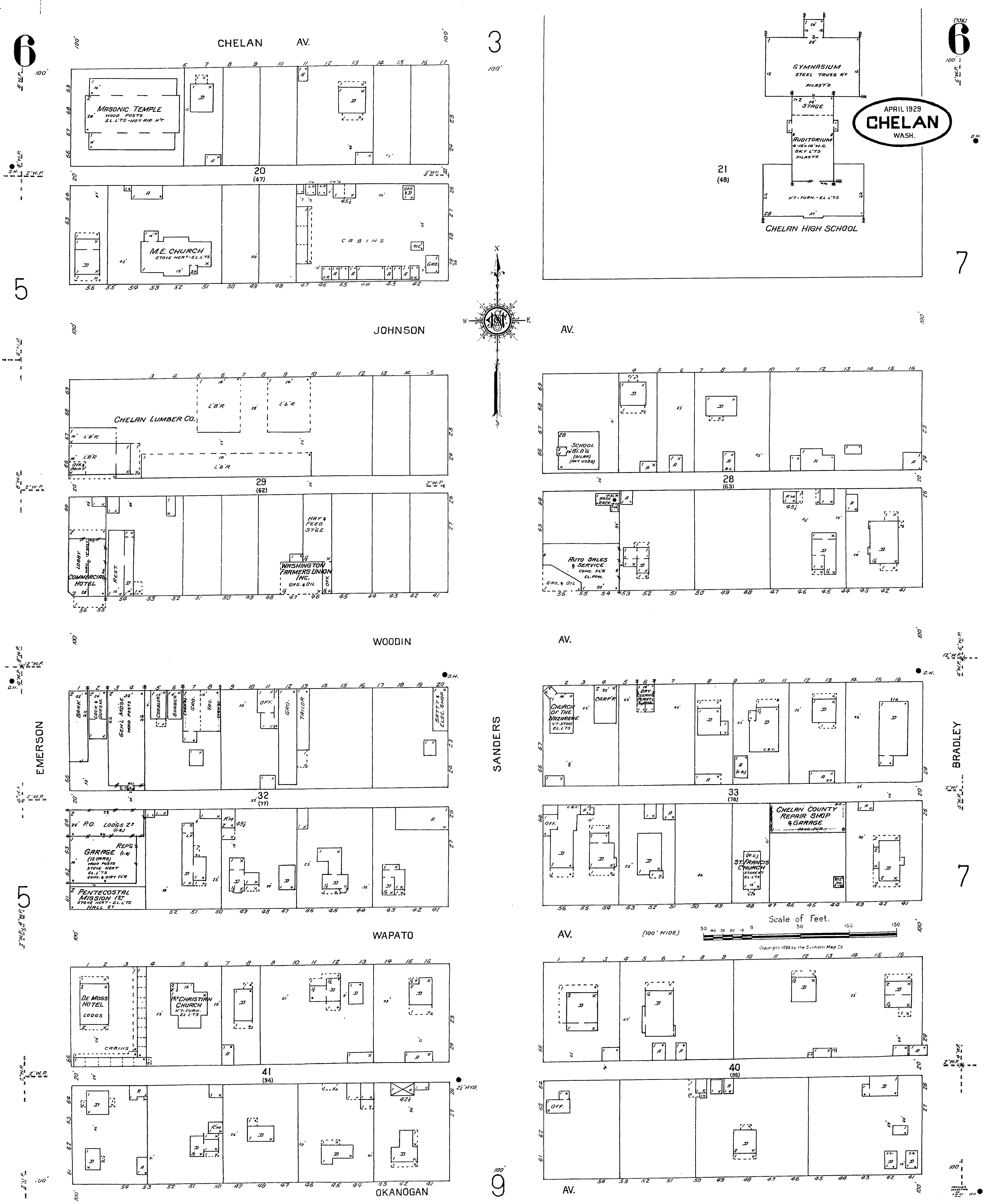


Figure 7-5
Schematic Dual Phase Extraction of NAPL and Groundwater

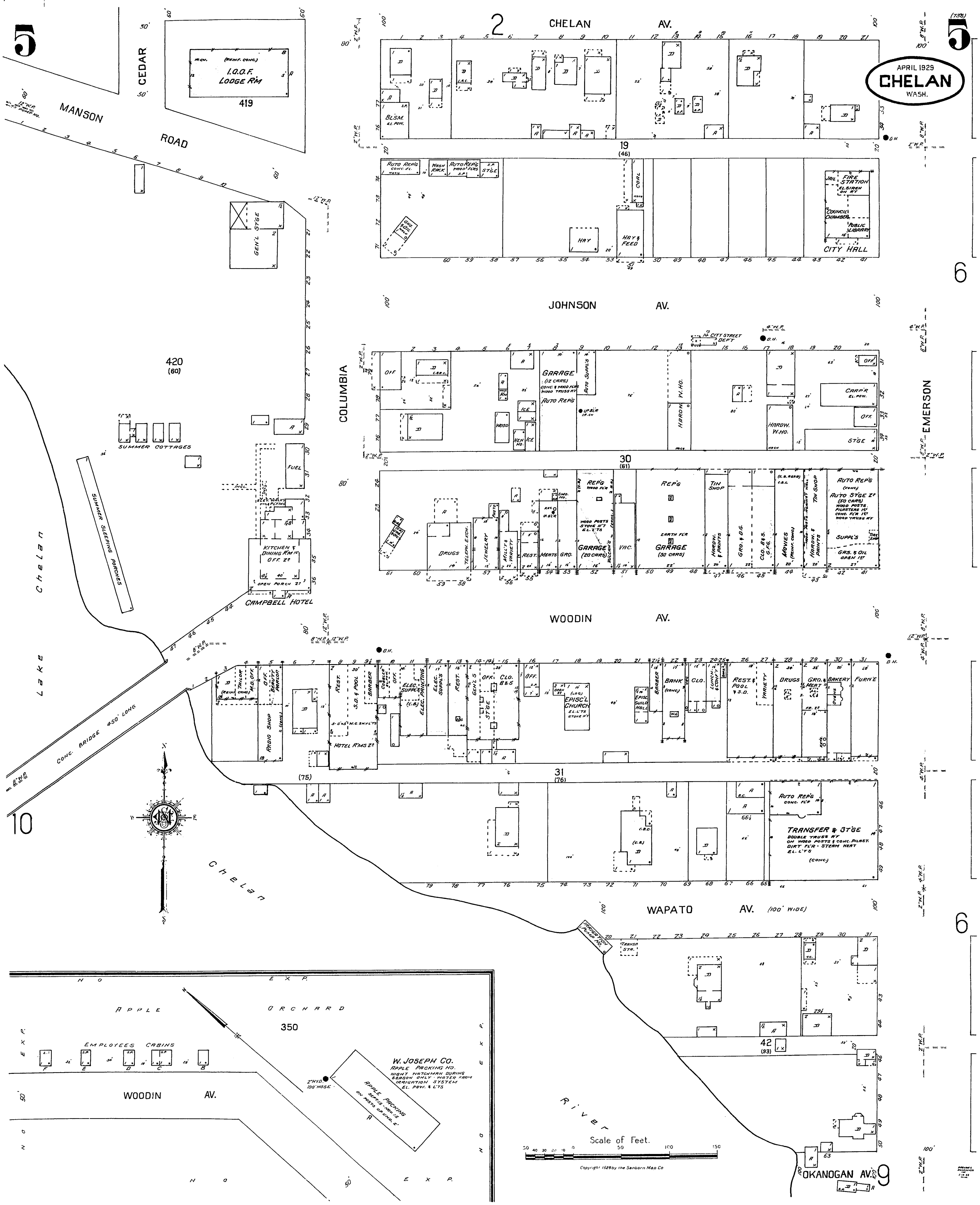
APPENDIX A: HISTORIC SITE MAPS AND PHOTOGRAPHS

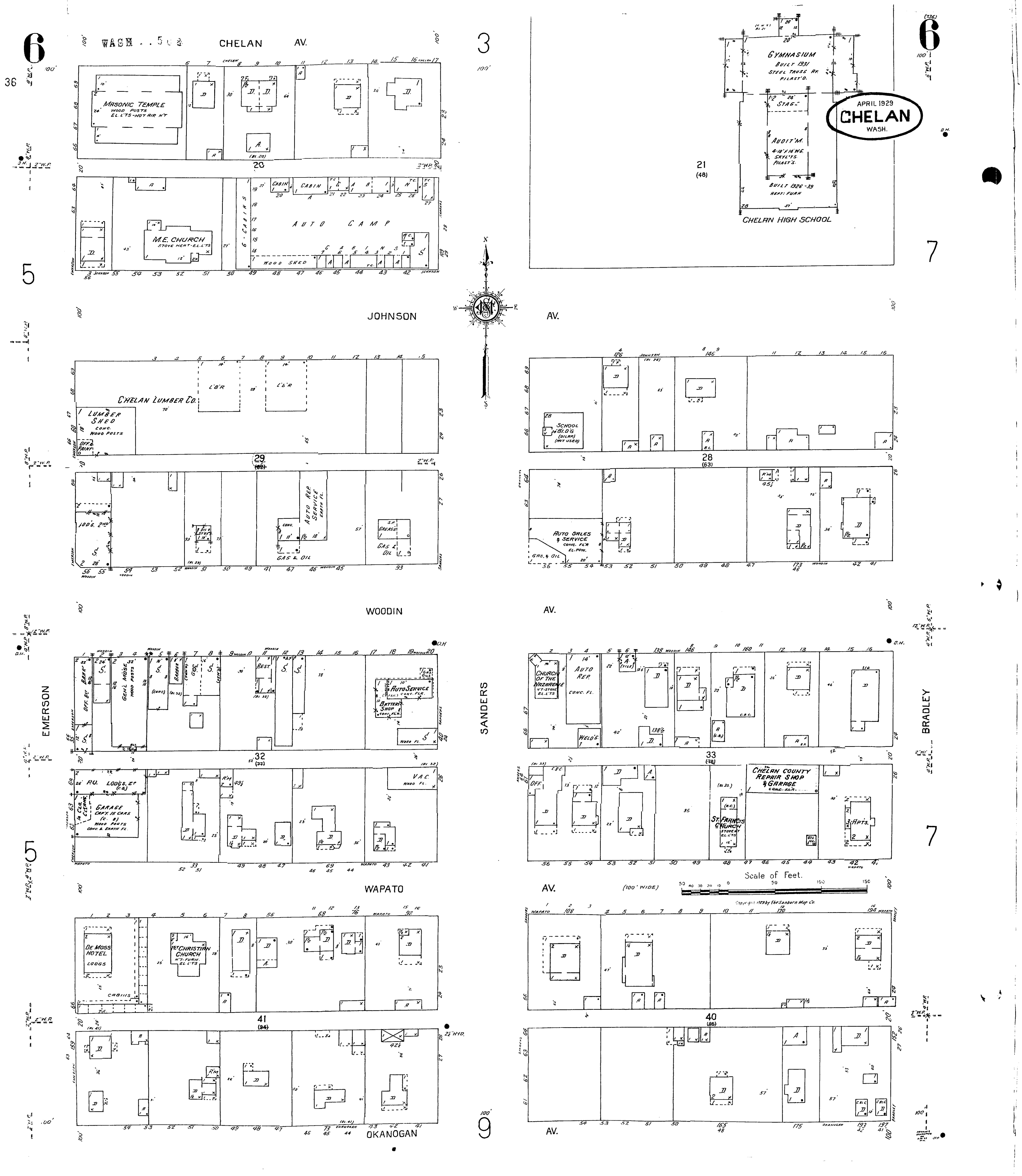
Sanborn Maps for April 1929 and March 1945


5
APRIL 1929
CHELAN
WASH.
CHELAN AV.
JOHNSON AV.
WOODIN AV.
WAPATO AV. (100' WIDE)
OKANOGAN AV.
COLUMBIA
EMERSON
CEDAR
MANSON ROAD
I.O.O.F. LODGE RM
419
420
421
350
360
AUTO CAMP
CABINS
SUMMER COTTAGES
SUMMER SLEEPING PORCHES
KITCHEN & DINING RM
CAMPBELL HOTEL
FUEL
OFF.
AUTO WRECKING YARD
BALED HAY
HAY
HAY & FEED
COAL
PUBLIC LIBRARY
FIRE STATION
CITY HALL
AUTO REP. BODY WKS
AUTO SUPPLIES
HARDW. W. HO.
CARPR
DRUGS
MEATS
GARAGE (30 CARS)
TIN SHOP
MOVIES
AUTO REP'G
AUTO STGE (50 CARS)
HOTEL LOBBY
HOTEL RMS
S.D. & POOL
BARBER
REST.
TELEPH. EXCH.
ST. ANDREW'S EPIS'CL CHURCH
HALL
BAKERY
RADIO SHOP
PLUMB'G
S. & PAINTS
TRANSFER & ST'GE
CONC. BRIDGE 450' LONG
Lake Chelan
Chelan River
LAKE CHELAN RECREATION PAVILION. DANCE HALL
EMPLOYEES CABINS
CHELAN APPLE CO. APPLE PACKING HO.
APPLE PACKING
COLD STGE
ORCHARD
CHELAN-OKANOGAN STATE HIGHWAY
CHELAN APPLE CO. FRUIT PACKING
IRRIGATION PUMP HO.
RMS.
LODGE'S
Scale of Feet.
Copyright 1929 by the Sanborn Map Co.
For location see key map.
2
6
9
10
30
31
42
19



6
APRIL 1929
CHELAN
WASH.
CHELAN AV.
JOHNSON AV.
WOODIN AV.
WAPATO AV.
OKANOGAN AV.
EMERSON
SANDERS
BRADLEY
20
(47)
21
(48)
29
(62)
28
(63)
32
(77)
33
(78)
41
(94)
40
(95)
MASONIC TEMPLE
M.E. CHURCH
CABINS
GYMNASIUM
STAGE
AUDITORIUM
CHELAN HIGH SCHOOL
CHELAN LUMBER CO.
SCHOOL BLDG.
COMMERCIAL HOTEL
HAY & FEED STGE
WASHINGTON FARMERS UNION INC.
AUTO SALES & SERVICE
BANK
TAILOR
CHURCH OF THE NAZARENE
P.O.
GARAGE
PENTECOSTAL MISSION
ST. FRANCIS CHURCH
CHELAN COUNTY REPAIR SHOP & GARAGE
DE MOSS HOTEL
1ST CHRISTIAN CHURCH
(100' WIDE)
Scale of Feet.


5
APRIL 1929
CHELAN
WASH.
CHELAN AV.
JOHNSON AV.
WOODIN AV.
WAPATO AV. (100' WIDE)
OKANOGAN AV.
COLUMBIA
EMERSON
CEDAR
MANSON ROAD
I.O.O.F. LODGE R'M
419
420 (60)
SUMMER COTTAGES
SUMMER SLEEPING PORCHES
CAMPBELL HOTEL
KITCHEN & DINING R'M OFF. 2^D
GEN'L STGE
FUEL
CONC. BRIDGE 450' LONG
Lake Chelan
Chelan River
CITY HALL
FIRE STATION
COUNCIL CHAMBER
PUBLIC LIBRARY
JAIL
HAY & FEED
HAY
COAL
AUTO REP'G
WASH RACK
BLSM.
GARAGE (12 CARS)
AUTO REP'S
AUTO SUPPL'S
HARDW. W.HO.
CARP'R
CITY STREET DEPT
DRUGS
TELEPH. EXCH.
JEWELRY
MILL'Y & VARIETY
REST.
MEATS
GRO.
GARAGE (20 CARS)
GARAGE (30 CARS)
TIN SHOP
HARDW. & IMPL'S
GRO. & D.G.
CLO. B&S G.F.G.
MOVIES
HARDW. & PAINTS
AUTO STGE 2^D (50 CARS)
SUPPL'S
GAS & OIL
RADIO SHOP
BEAUTY PARLOR
TAILOR
BANK
REST.
S.D. & POOL
BARBER
ELEC. SUPPLS
ELEC. SUPPL'S
HOTEL R'MS 2^D
GEN'L S
CLO. B&S
EPISC'L CHURCH
EPISC'L GUILD HALL
CLO.
LUNCH & CONF'Y
REST. POOL & S.D.
VARIETY
GRO. & MEAT
BAKERY
FURN'E
TRANSFER & STGE
W. JOSEPH CO.
APPLE PACKING HO.
APPLE PACKING
APPLE ORCHARD
350
EMPLOYEES CABINS
WOODIN AV.
Scale of Feet.
Copyright 1929 by the Sanborn Map Co.
2
6
9
10
19 (46)
30 (61)
31 (76)
42 (93)



36
6
WASH. 503
CHELAN AV.
3
MASONIC TEMPLE
M.E. CHURCH
AUTO CAMP
CABIN
WOOD SHED
5
JOHNSON AV.
CHELAN LUMBER CO.
LUMBER SHED
AUTO REP. SERVICE
GAS & OIL
WOODIN AV.
EMERSON
SANDERS
BRADLEY
GEN'L MDSE.
BARBER
REST.
AUTO SERVICE
BATTERY SHOP
GARAGE
V.A.C.
WAPATO AV.
DE MOSS HOTEL
1ST CHRISTIAN CHURCH
CABINS
OKANOGAN AV.
9
GYMNASIUM
BUILT 1931
STAGE
AUDIT'M.
BUILT 1926-39
CHELAN HIGH SCHOOL
APRIL 1929
CHELAN
WASH.
7
SCHOOL BLDG
AUTO SALES & SERVICE
CHURCH OF THE NAZARENE
AUTO REP.
WELD'G
CHELAN COUNTY REPAIR SHOP & GARAGE
ST. FRANCIS CHURCH
3 APTS.
Scale of Feet.
Copyright 1929 by the Sanborn Map Co.

APPENDIX A: HISTORIC SITE MAPS AND PHOTOGRAPHS

Site Historic Photos

(1) View looking west on Woodin Avenue in the 1930s. Chelan Motor Company and Ford dealership is in center, with fuel pump along sidewalk (current address: 141 E. Woodin). The Higgins Garage/Motor Inn, with fuel pump, is the white building left of the Ruby Theatre sign (current address: 125 E. Woodin). Source: Lake Chelan Historical Society.

(2) Painted mural on wall of Pacific Northwest Bank on west side of Chevron property, taken from an early 1940s photo looking west on Woodin Avenue. Chelan Motor Company/Ford dealership is on right, with Standard Oil fuel pump on sidewalk (current address: 141 E. Woodin). At different times, the fuel pumps were located inside under the building overhang. Well MW-21 is now located near the former sidewalk fuel pump. Source: Photograph of mural painted by Rob Blackaby and Janet Yeager, 1996.

(3) Painted mural on wall of Pacific Northwest Bank on west side of Chevron property, taken from an early 1940s photo looking west on Woodin Avenue. Fuel pump for Chelan Motor Company/Ford dealership is on right (current address: 141 E. Woodin). Higgins Garage/Motor Inn is dark building on left (current address: 125 E. Woodin). Well MW-22 is now located near the Smith Hardware. Source: Photograph of mural painted by Rob Blackaby and Janet Yeager, 1996.

(4) View looking east on Woodin Avenue in 1959 showing four locations of service stations. On left is Chevrolet dealership with two fuel pumps, possibly Union Oil 76 (current address: 221 E. Woodin). In left-center is Richfield service station with two fuel pumps (current address: 229 E. Woodin). In right-center is Dodge-Plymouth dealership with two fuel pumps, possibly Shell Oil (current address: 301 E. Woodin). On right is Standard Oil/Chevron service station (current address: 232 E. Woodin). Well MW-17 is now located to right of Richfield station, on street in front of pedestrian. Well MW-18 is located on street near car in lower left of photo. Source: Lake Chelan Historical Society.

(5) View looking east on Woodin Avenue in 1964 showing three locations of service stations. On far left is Union Oil 76 station at the Chevrolet dealership (current address: 221 E. Woodin). To the right of this is Richfield service station (current address: 229 E. Woodin). In center is Standard Oil/Chevron service station (current address: 232 E. Woodin). Well MW-12 is now located on right in front of Greens Drugs. Source: possibly Lake Chelan Historical Society.

(6) View looking northwest from Sanders Street in 1957 of Standard Oil/Chevron service station, with two pump islands (current address: 232 E. Woodin). Behind pump islands is Chevrolet dealership with two fuel pumps, possibly Union Oil 76 (current address: 221 E. Woodin). Well MW-5 is now located to left of Chevron station near light post. Source: possibly Lake Chelan Historical Society.

(7) View looking west on Woodin Avenue in 1964 of Standard Oil/Chevron service station on left (current address: 232 E. Woodin). On right is Richfield service station (current address: 229 E. Woodin). To left of this is Union Oil 76 station at the Chevrolet dealership (current address: 221 E. Woodin). Source: possibly Lake Chelan Historical Society.

APPENDIX B: SITE BORING LOGS

Pre-RI Site Boring Logs

RZA

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Geotechnical & Hydrogeological Consultants

WELL NUMBER B-1 PAGE 1 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: DU DRILLING METHOD: HSA/SPT REFERENCE ELEVATION: CASING: GROUND:						
ASPHALT						
- Concrete rubble, cobbles and small boulders				2 4	S-1	
Loose, damp, brown-red, fine to coarse SAND with bricks and rubble No odor/No sheen				6	S-2	
Loose, moist, brown and rust, fine to medium SAND with trace silt No odor/No sheen				8	S-3	
Medium dense, moist, brown, fine to coarse sand with trace gravel and silt No odor/No sheen				10 12	S-4 S-5	
Dense, moist, brown, fine to coarse SAND with trace gravel and silt				14 16	S-6* ND	
Very dense, moist, brown, silty, fine SAND No odor/No sheen				18	S-7	
GRAVEL				20		
Medium dense, saturated, brown, fine to coarse SAND with trace gravel and silt		(22 feet Nov 13 1987)		22		

Sample Identification:
*GC Analysis for Purgeable Aromatic Compounds

RZA

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Geotechnical & Hydrogeological Consultants

WELL NUMBER B-1 (cont.) PAGE 2 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: DRILLING METHOD: REFERENCE ELEVATION: CASING: GROUND:						
Stiff, saturated, brown with rust, laminated, fine, sandy SILT/silty fine SAND*					S-8*	
*Slight odor/No sheen				25		
				27		

Sample Identification:
*GC Analysis for Purgeable Aromatic Compounds

RZA

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Geotechnical & Hydrogeological Consultants

WELL NUMBER B-2 PAGE 1 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: DU DRILLING METHOD: HSA/SPT REFERENCE ELEVATION: CASING: GROUND:						
Loose, moist, brown, fine to medium SAND with trace silt, trace gravel (Fill) No odor/No sheen				2	S-1	
				4		
Medium dense, moist, brown, silty SAND with trace gravel No odor/No sheen				6	S-2	
				8	S-3	
Dense, moist, brown, gravelly, fine to coarse SAND with trace silt No odor/No sheen				10	S-4	
				12		
Medium dense, moist, brown, silty, fine SAND with interlayers of sandy silt No odor/No sheen				14	S-5* ND	
				16	S-6	
Very dense, wet, brown, silty, fine to medium SAND No odor/No sheen				18	S-7* ND	
Medium dense, wet to saturated, brown, fine to coarse SAND with trace gravel, trace silt No odor/No sheen			(22 feet Nov 13 1987)	20	S-8* ND	
				22		

Sample Identification:
*GC Analysis for Purgeable Aromatic Compounds

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Geotechnical & Hydrogeological Consultants

WELL NUMBER B-2 (cont.) PAGE 2 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: DRILLING METHOD: REFERENCE ELEVATION: CASING: GROUND:						
Saturated, brown with rust, laminated, silty, fine SAND with layers of sandy silt Very slight odor/No sheen					S-9*	
Total depth 24 feet Completed 13 November 1987				25		

Sample Identification:
*GC Analysis for Purgeable Aromatic Compounds

RZA

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Geotechnical & Hydrogeological Consultants

WELL NUMBER B-3 PAGE 1 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: DU DRILLING METHOD: HSN/SPT REFERENCE ELEVATION: CASING: GROUND:						
Loose, moist, brown, silty, fine to medium SAND (Fill) No odor/No sheen				2	S-1	
				4		
				6		
Medium dense, damp to moist, brown, fine to coarse SAND with some gravel, trace silt No odor/No sheen				8	S-2	
Very dense, moist, brown, fine to coarse SAND with some gravel, trace silt No odor/No sheen				10	S-3	
				12		
Medium dense, moist, brown SAND with some gravel, trace silt Slight odor/No sheen				14	S-4	
				16	S-5* ND	
				18	S-6* ND	
Medium dense, wet to saturated, silty SAND No odor/No sheen				20	S-7	
				22		

Sample Identification:
*GC Analysis for Purgeable Aromatic Compounds

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WELL NUMBER B-3 (cont.) PAGE 2 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: DRILLING METHOD: REFERENCE ELEVATION: CASING: GROUND:						
					S-8*	
			(24½ feet Nov 13 1987)	25		
Loose, saturated, silty, fine SAND/fine sandy SILT Slight odor/No sheen					S-9*	
Total depth 26½ feet Completed 13 November 1987				27		

Sample Identification:
*GC Analysis for Purgeable Aromatic Compounds

RZA

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Geotechnical & Hydrogeological Consultants

WELL NUMBER B-4 PAGE 1 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: DU DRILLING METHOD: HSA/SPT REFERENCE ELEVATION: CASING: GROUND:						
Loose, moist, brown, fine to coarse SAND, trace silt, trace gravel No odor/No sheen				2	S-1	
				4		
				6	S-2	
				8	S-3	
Dense, damp to moist, brown with some rust, fine to coarse SAND, trace silt, trace gravel No odor/No sheen				10	S-4	
				12		
Medium dense, moist, brown, silty SAND No odor/No sheen				14	S-5* GC	
				16	S-6* GC	
Dense, moist, brown, silty, fine to medium SAND, trace gravel No odor/No sheen				18	S-7	
				20	S-8* GC	
Loose to medium dense, moist to wet, fine to medium SAND, trace silt Odor/No sheen				22		

Sample Identification:
*GC Analysis for Purgeable Aromatic Compounds

RZA

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Geotechnical & Hydrogeological Consultants

WELL NUMBER B-4 (cont.) PAGE 2 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470

SOIL OR ROCK DESCRIPTION DRILLED BY: DRILLING METHOD: REFERENCE ELEVATION: CASING: GROUND:	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
					S-9*	
Loose, wet, brown, laminated, silty fine SAND, trace gravel, trace clay Slight odor/No sheen				25	S-10*	
Loose to medium dense, saturated, brown, laminated, silty, fine SAND with interlayered sandy SILT No odor/No sheen			(27½ feet Nov 14 1987)	27	S-11*	
Total depth 31½ feet Completed 14 November 1987					S-12*	

Sample Identification:
*GC Analysis for Purgeable Aromatic Compounds

RZA

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Geotechnical & Hydrogeological Consultants

WELL NUMBER B-5 PAGE 1 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: DU DRILLING METHOD: HSA/SPT REFERENCE ELEVATION: CASING: GROUND:						
Very loose to loose, moist, brown SAND with trace silt No odor/No Sheen				2	S-1	
				4		
				6	S-2	
Loose to medium dense, moist, light brown, fine to medium SAND, trace silt No odor/No sheen				8	S-3	
Medium dense, moist, brown, with some rust, fine to coarse SAND, trace gravel, trace silt No odor/No sheen				10	S-4	
				12		
Dense, moist, brown, SAND, trace gravel, trace silt No odor/No sheen				14	S-5*	
Medium dense, moist, brown, laminated, silty SAND Slight odor/No sheen				16	S-6	
				18	S-7*	
Medium dense, wet to saturated, brown, fine to medium SAND with some silt, trace gravel Strong odor/No sheen			(22½ feet Nov 14 1987) ▽	20	S-8*	
				22		

Sample Identification:
*GC Analysis for Purgeable Aromatic Compounds

RZA

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Geotechnical & Hydrogeological Consultants

WELL NUMBER B-5 (cont.) PAGE 2 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: DRILLING METHOD: REFERENCE ELEVATION: CASING: GROUND:						
Medium dense, saturated, brown with rust and gray, laminated, silty, fine SAND Odor/No sheen					S-9*	
Total depth 24 feet Completed 14 November 1987						

Sample Identification:
*GC Analysis for Purgeable Aromatic Compounds

RZA

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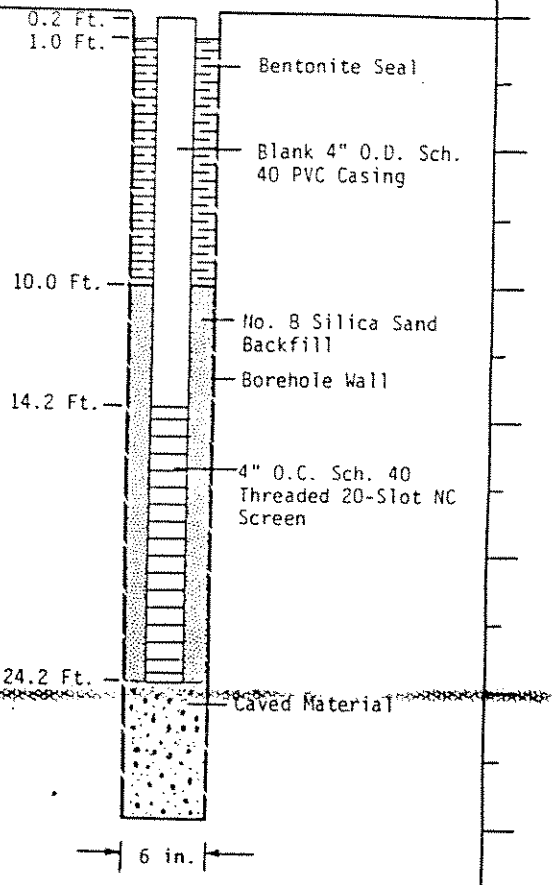
Geotechnical & Hydrogeological Consultants

WELL NUMBER MW-1 PAGE 1 OF 1
PROJECT NAME Chelan Chevron W.O. W-5470-1

DRILLED BY: Onwego Drilling
DRILLING METHOD: Air Rotary
REFERENCE ELEVATION: 98.1
CASING: 97.9
GROUND: 98.1

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES
Asphalt					
Concrete rubble, cobbles and small boulders					
Loose, damp, brown-red, fine to coarse SAND		UNSATURATED		5	
Medium dense, moist, brown, fine to coarse SAND with trace gravel and silt				10	
Dense, moist, brown, fine to coarse silty SAND with trace gravel				15	
			▽	20	
		UNCONFINED AQUIFER		25	
				30	

AS-BUILT



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WELL NUMBER MW-2 PAGE 1 OF 1
PROJECT NAME Chelan Chevron W.O. W-5470-1

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: Onwego Drilling DRILLING METHOD: Air Rotary REFERENCE ELEVATION: 98.0 CASING: 97.7 GROUND: 98.0						
Very loose to loose, moist, brown SAND with trace silt		UNSATURATED	▽	5 10 15 20		0.3 Ft. 1.0 Ft. Bentonite Seal Blank 4" O.D. Sch. 40 PVC Casing 11.0 Ft. No. 8 Silica Sand Backfill 14.5 Ft. Borehole Wall 4" O.D. Sch. 40 Threaded 20-Slot NC Screen
Loose to dense, moist, brown, fine to medium SAND, trace silt		UNCONFINED AQUIFER		25 30		24.5 Ft. 6 in.

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Geotechnical & Hydrogeological Consultants

WELL NUMBER MW-3 PAGE 1 OF 1
PROJECT NAME Chelan Chevron W.O. W-5470-1

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HYDROGEOLOGIC UNIT	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: Onwego Drilling DRILLING METHOD: Air Rotary REFERENCE ELEVATION: 98.2 CASING: 97.9 GROUND: 98.2						
Loose, moist, brown, fine to coarse SAND, trace silt, trace gravel		UNSATURATED		0 5		0.3 Ft. 1.0 Ft. Bentonite Sea. Blank 4" O.D. Sch. 40 PVC Casing
Dense, damp, brown, fine to coarse SAND, trace silt, trace gravel				10		9.0 Ft. No. 8 Silica Sand Backfill
Dense, moist, brown, silty SAND				15		Borehole Wall
				20		16.0 Ft. 4" O.D. Sch. 40 Threaded 20-Slot NC Screen
Loose, wet, brown, clayey silty fine SAND		UNCONFINED AQUIFER		25		26.0 Ft.
				30		6 in.

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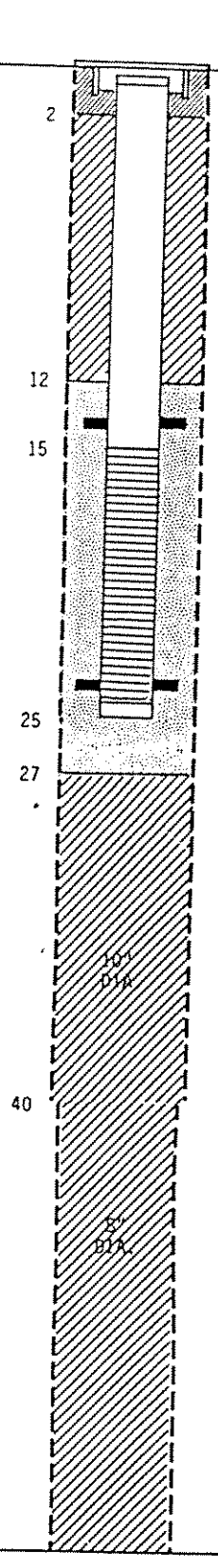
Geotechnical & Hydrogeological Consultants

WELL NUMBER MW-4 PAGE 1 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470-3

SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HNU READINGS	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES
DRILLED BY: ONWEGO DRILLING METHOD: Cable-Tool REFERENCE ELEVATION: CASING: 1122.05 GROUND: 1122.51					
2 inches Asphalt Concrete 4 inches Crushed Rock					
Moist, brown silty, FINE SAND		0			1
		0		5	2
		0			3
Damp, light brown, medium to coarse SAND with some gravel or sandy GRAVEL		0		10	4
		0			5
		0		15	6
		0			7
		0		20	8
Becoming SILTY		280			9
Wet, grey-brown, fine sandy SILT		100		25	10
		110			11
		146		30	12
		88			13
Wet, grey, clayey SILT or silty CLAY		0		35	14
				40	
				45	
				50	
				55	

AS-BUILT



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Geotechnical & Hydrogeological Consultants

WELL NUMBER MW-4 PAGE 2 OF 2
PROJECT NAME Chelan Chevron W.O. W-5470-3

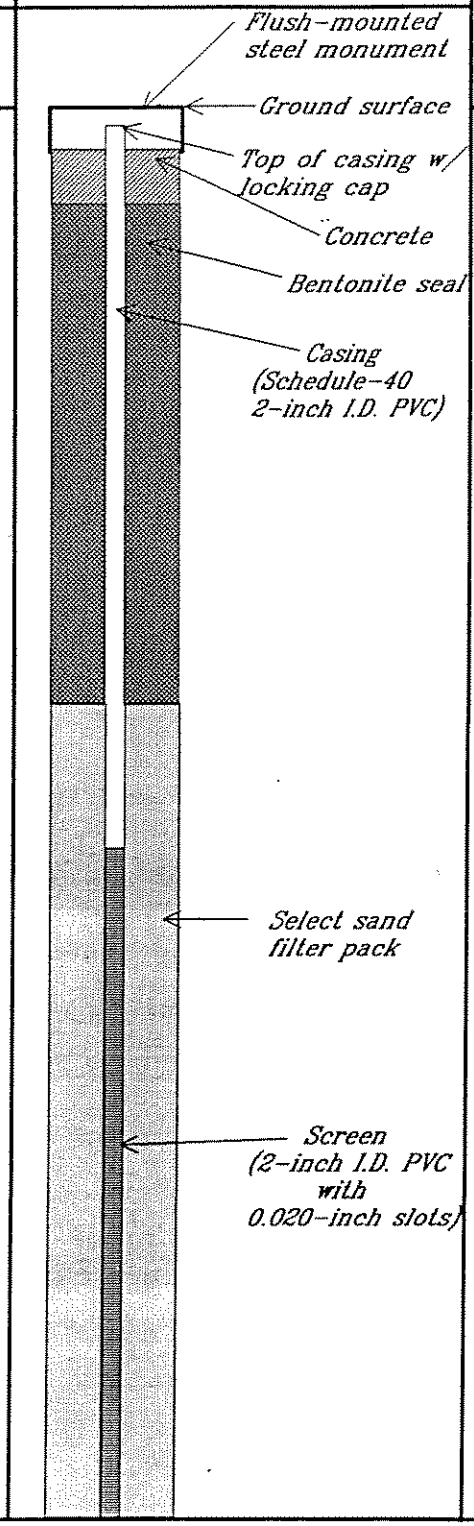
SOIL OR ROCK DESCRIPTION	GRAPHIC LOG	HNU READINGS	WATER LEVEL	DEPTH (IN FEET)	SOIL SAMPLES	AS-BUILT
DRILLED BY: ONWEGO DRILLING METHOD: Cable-Tool REFERENCE ELEVATION: CASING: 1122.05 GROUND: 1122.51						
Wet, grey, silty, CLAY				60 65 70		Bentonite
Weathered GRANITE				75		
Refusal at 76 Feet				80		

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *MW-5*

Elevation reference:
Ground surface elevation: 94.18 Casing elevation: 93.88

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING (ppm)	GROUND WATER
0	*Medium dense, damp, brown, fine to medium SAND with trace coarse sand (FILL).*		S-1	11	0.0	
5	*Very dense, damp, light brown, medium to coarse SAND with some gravel.*		S-2	69	0.0	
10	*Dense, wet, brown, silty fine SAND with some clay.*		S-3	33	0.0	
15	*Very dense, damp, whitish gray coarse SAND with some gravel.*		S-4	62	0.0	
20	*Stiff wet to saturated, brown/gray to dark gray, laminated clayey SILT to SILT (lacustrine) strong petroleum hydrocarbon-like odor.*		S-5	10	12.1	
25			S-6	9	1.6	
30						

AS-BUILT DESIGN



TESTING

BTEX HCID WTPH

BTEX HCID WTPH

BTEX HCID WTPH

LEGEND

2-inch O.D. split-spoon sample

ATD Observed groundwater level (ATD = at time of drilling)

RZA

RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants
W. 539 Sharp, Suite D
Spokane, Washington 99201

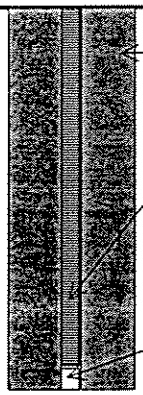
Drilling started: *6 January 1992* Drilling completed: *7 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *MW-5*

Elevation reference:
Ground surface elevation: 94.18 Casing elevation: 93.88

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING (ppm)	GROUND WATER
30	*Stiff saturated, dark gray, clayey SILT to silty CLAY (Lacustrine). Slight petroleum hydrocarbon-like odor.*	I	S-7	9	0.0	▼ 1/7/92
35	*Boring terminated at approximately 36 feet.*					
40						
45						
50						
55						
60						

AS-BUILT DESIGN



Select sand filter pack

Screen (2-inch I.D. PVC with 0.020-inch slots)

Threaded end cap

TESTING

LEGEND

I 2-inch O.D. split-spoon sample

▼ ATD Observed groundwater level (ATD = at time of drilling)

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Geotechnical & Environmental Consultants
W. 539 Sharp, Suite D
Spokane, Washington 99201

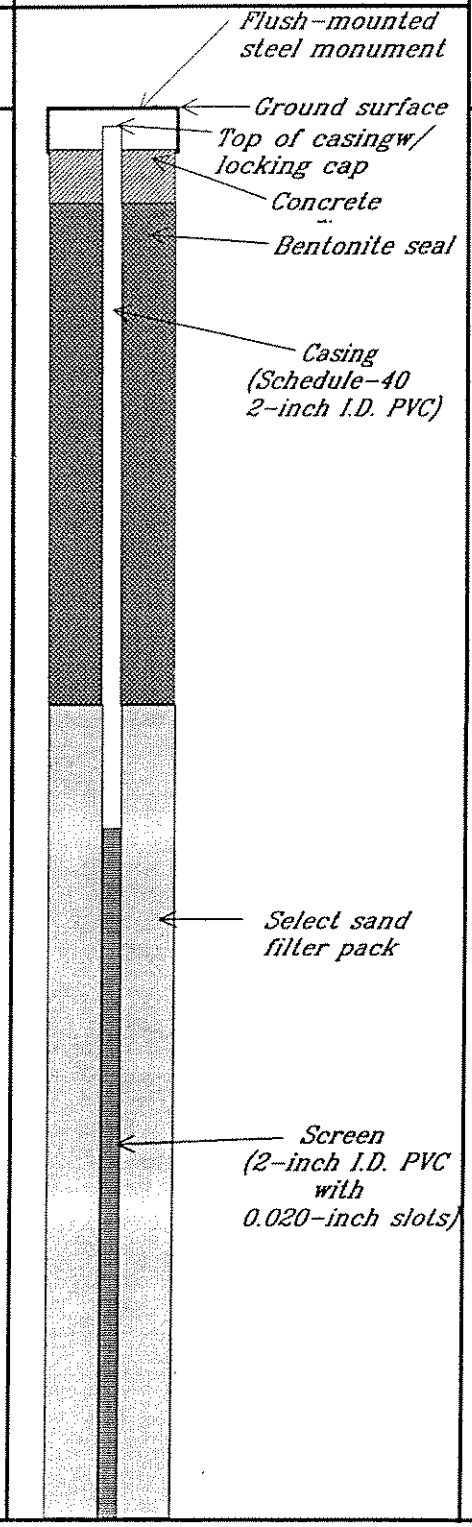
Drilling started: *6 January 1992* Drilling completed: *7 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *MW-6*

Elevation reference:
Ground surface elevation: 95.68 Casing elevation: 95.25

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING (ppm)	GROUND WATER
0	*Medium dense, moist, dark brown silty fine SAND with some coarse sand (FILL).*		S-1	18	0.0	
5			S-2	96/9"	0.0	
10	*Very dense, damp to moist, brown and gray, gravelly, medium to coarse SAND with few silty sand interbeds. Rust present in places.*		S-3	56	0.0	
15			S-4	20	0.8	
20	*Medium dense, moist, brown SAND, silty in places.*		S-5	9	631.0	
25	*Soft to stiff saturated, dark gray to brown laminated SILT to clayey SILT (lacustrine). Strong petroleum hydrocarbon-like odor.*		S-6	4	440.0	
30						

AS-BUILT DESIGN



TESTING

BTEX HCID WTPH

BTEX HCID WTPH

LEGEND

2-inch O.D. split-spoon sample

ATD Observed groundwater level (ATD = at time of drilling)

RZA

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Geotechnical & Environmental Consultants
W. 539 Sharp, Suite D
Spokane, Washington 99201

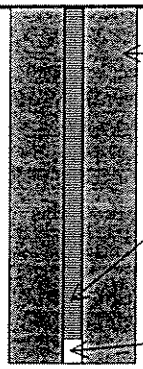
Drilling started: *7 January 1992* Drilling completed: *7 January 1992* Logged by: *ENIS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *MW-6*

Elevation reference:
Ground surface elevation: 95.68 Casing elevation: 95.25

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING (ppm)	GROUND WATER
30	*Stiff saturated, dark gray, to brown clayey SILT to SILT (lacustrine). Slight petroleum hydrocarbon-like odor.*		S-7	6	110.6	▼ 1/8/92
35	*Boring terminated at approximately 35.6 feet.*					
40						
45						
50						
55						
60						

AS-BUILT DESIGN



Select sand filter pack

Screen (2-inch I.D. PVC with 0.020-inch slots)

Threaded end cap

TESTING

BTEX
HCID
WTPH

LEGEND

I 2-inch O.D. split-spoon sample

▼ ATD Observed groundwater level (ATD = at time of drilling)

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Geotechnical & Environmental Consultants
W. 539 Sharp, Suite D
Spokane, Washington 99201

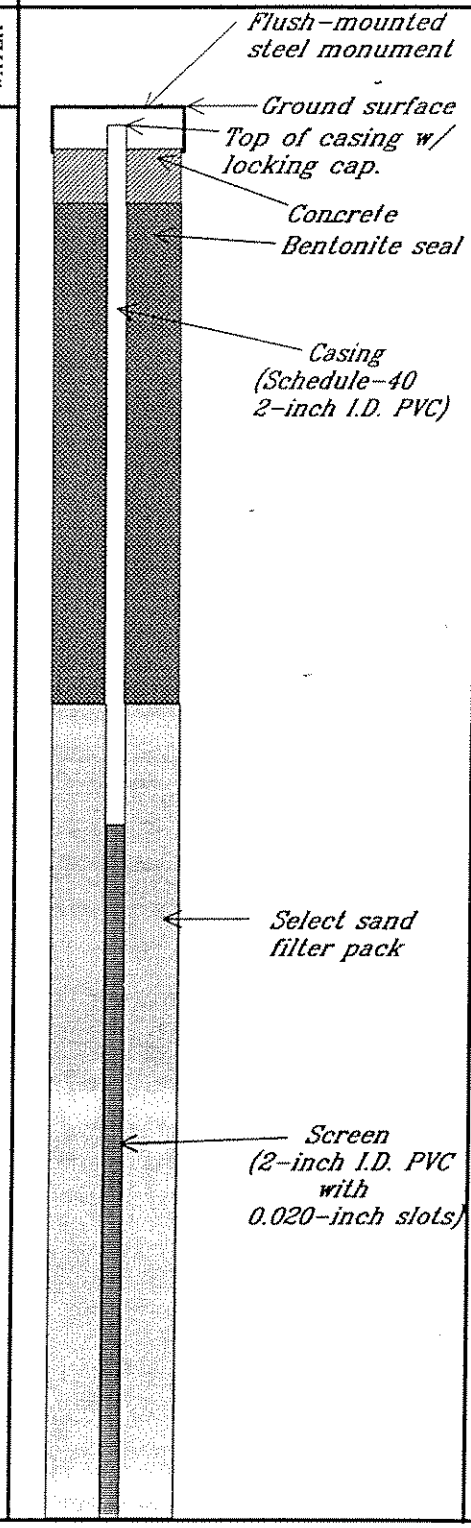
Drilling started: *7 January 1992* Drilling completed: *7 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *MW-7*

Elevation reference:
Ground surface elevation: 95.91 Casing elevation: 95.61

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING (ppm)	GROUND WATER
0	*Loose, damp, dark brown, silty SAND to fine sandy SILT (FILL).*		S-1	9	0.0	
5						
	Medium dense, dry gray to brown, SAND with some gravel.		S-2	27	2.4	
10						
	Dense, moist, brown SAND with some coarse gravel and trace gravel. Rust in places.		S-3	37	0.0	
15						
	Loose, moist, brown silty fine SAND to very silty fine SAND with some silt interbeds.		S-4	9	0.0	
20						
			S-5	3	705.0	
25	*Soft saturated, brown clayey SILT with tan SILT interbeds with sheen (lacustrine). Very strong petroleum hydrocarbon-like odor.*					
			S-6	2	888.0	
30						

AS-BUILT DESIGN



TESTING

BTEX HCID WTPH

BTEX HCID WTPH

LEGEND

2-inch O.D. split-spoon sample

Observed groundwater level (ATD = at time of drilling)

RZA
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Geotechnical & Environmental Consultants
W. 539 Sharp, Suite D
Spokane, Washington 99201

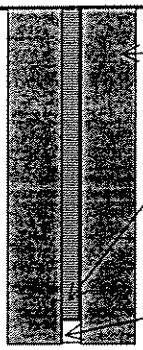
Drilling started: *8 January 1992* Drilling completed: *8 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron* W.O. *W-5470-4* WELL NO. *MW-7*

Elevation reference:
Ground surface elevation: 95.91 Casing elevation: 95.61

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING (ppm)	GROUND WATER
30	*Soft, saturated, brown, clayey SILT to silty CLAY with some tan to brown silt interbeds with sheen (lacustrine). Strong petroleum hydrocarbon-like odor.*		S-7	4	717.0	▼ 1/10/92
35	*Boring terminated at approximately 35.1 feet.*					
40						
45						
50						
55						
60						

AS-BUILT DESIGN



Select sand filter pack

Screen (2-inch I.D. PVC with 0.020-inch slots)

Threaded end cap

TESTING

BTEX
HCID
WTPH

LEGEND

I 2-inch O.D. split-spoon sample

▼ ATD Observed groundwater level (ATD = at time of drilling)

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W. 539 Sharp, Suite D
Spokane, Washington 99201

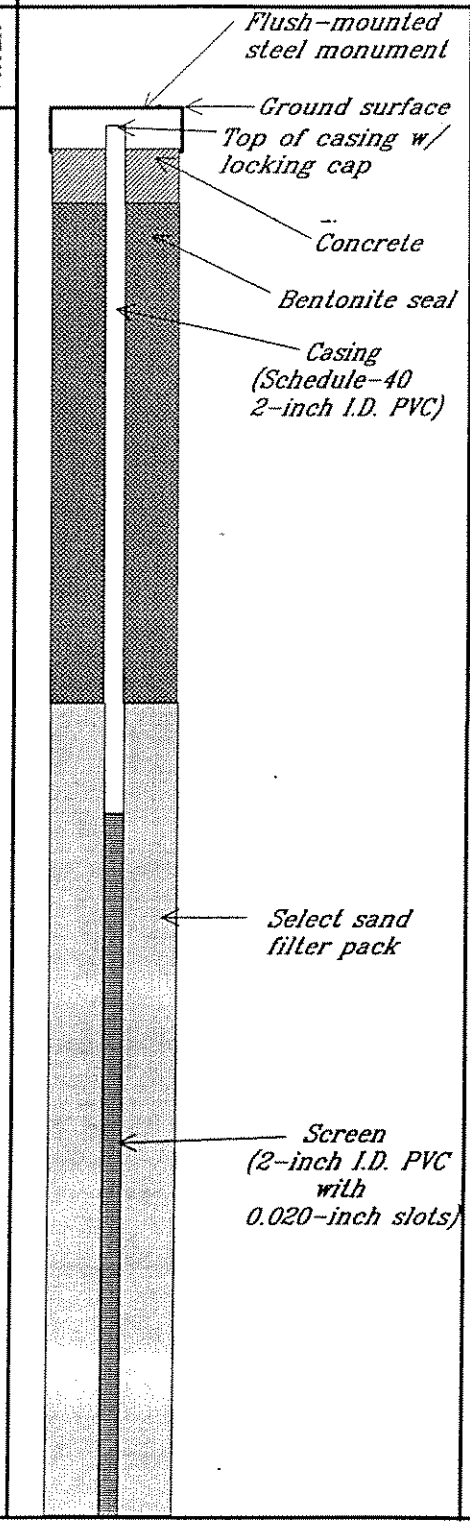
Drilling started: *6 January 1992* Drilling completed: *7 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *MW-8*

Elevation reference:
Ground surface elevation: 100.0 Casing elevation: 94.66

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING (ppm)	GROUND WATER
0	*Medium dense moist, brown, fine to medium SAND (FILL).*		S-1	14	0.2	
5			S-2	26	0.0	
10	*Very dense, damp to moist, white/gray to brown/gray coarse SAND with some fine sand and trace gravel. 2" dark gray silt bed at 18.5'*		S-3	54	0.0	
15			S-4	55	0.0	
20	*Brown and grayish brown clayey SILT to SILT with trace fine sandy. (lacustrine) Strong hydrocarbon-like odor.*		S-5	19	145.6	
25			S-6	18	36.2	ATD
30						

AS-BUILT DESIGN



TESTING

BTEX HCID WTPH

BTEX HCID WTPH

LEGEND

2-inch O.D. split-spoon sample

ATD Observed groundwater level (ATD = at time of drilling)

RZA

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Geotechnical & Environmental Consultants
W. 539 Sharp, Suite D
Spokane, Washington 99201

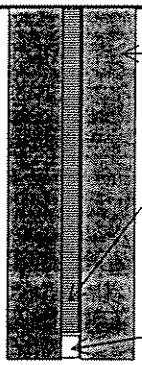
Drilling started: *6 January 1992* Drilling completed: *6 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *MW-8*

Elevation reference:
Ground surface elevation: 100.0 Casing elevation: 94.66

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING (ppm)	GROUND WATER
30	*Very stiff saturated, grayish brown, SILT to clayey SILT (lacustrine) with petroleum hydrocarbon-like odor.*		S-7	19	108.1	
35	*Boring terminated at approximately 35.4 feet.*					
40						
45						
50						
55						
60						

AS-BUILT DESIGN



Select sand filter pack

Screen (2-inch I.D. PVC with 0.020-inch slots)

Threaded end cap

TESTING

BTEX
HCID
WTPH

LEGEND

2-inch O.D. split-spoon sample

ATD Observed groundwater level (ATD = at time of drilling)

RZA

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W. 539 Sharp, Suite D
Spokane, Washington 99201

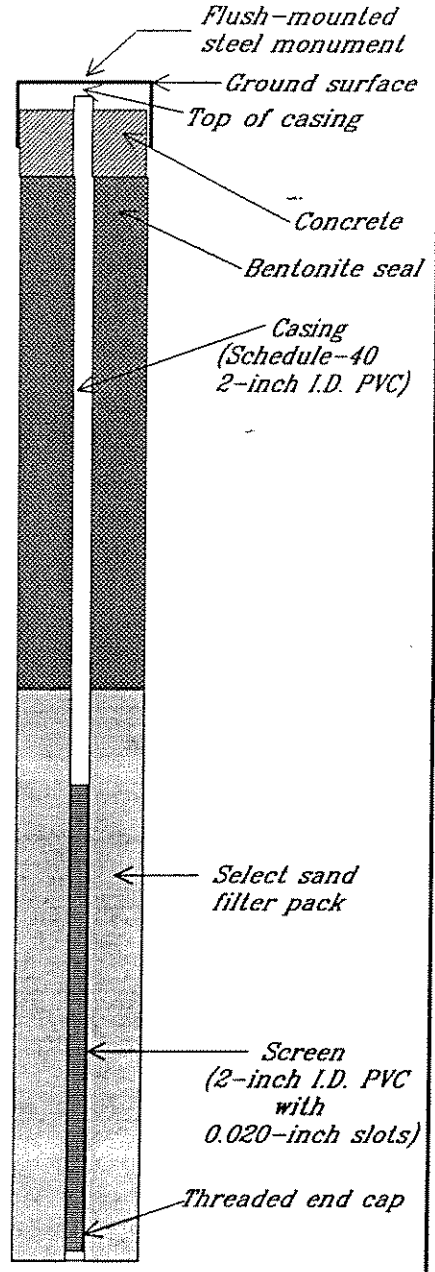
Drilling started: *6 January 1992* Drilling completed: *6 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *P-1*

Elevation reference:
Ground surface elevation: 95.91 Casing elevation: 95.58

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0						
5	*Loose, damp brown, silty fine SAND with trace of coarse sand (FILL).*		S-1	9	0.0	
10	*Dense, damp, light brown to gray, medium to coarse SAND with some coarse gravel.*		S-2	44	0.0	
15	*Medium dense, damp, brown, very silty fine SAND with 2" gray coarse sand interbed at 15.1 feet.*		S-3	22	0.0	
20	*Soft to stiff, saturated, dark gray and fine sandy SILT interbedded with brown and tan clayey SILTS (lacustrine). Strong hydrocarbon-like odor.*		S-4	15	32.6	
25			S-5	4	766.0	
30	*Boring terminated at approximately 26.5 feet.*					

AS-BUILT DESIGN



TESTING

BTEX
HCID
WTPH

LEGEND

2-inch O.D. split-spoon sample

ATD Observed groundwater level (ATD = at time of drilling)

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Geotechnical & Environmental Consultants
539 W. Sharp/Ste. D/ 2nd Floor
Spokane, Washington 99201

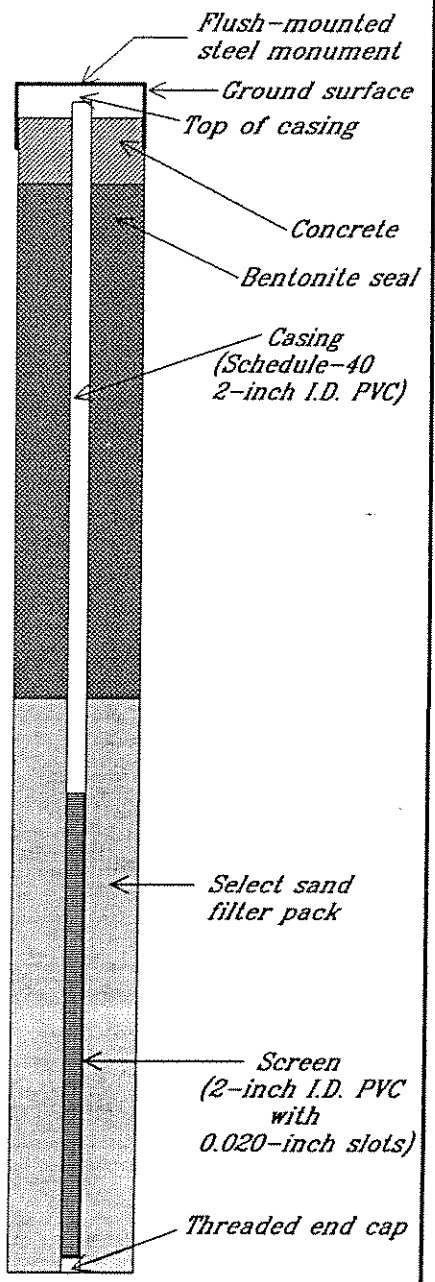
Drilling started: *8 January 1991* Drilling completed: *8 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *P-2*

Elevation reference:
Ground surface elevation: 95.95 Casing elevation: 95.63

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	*Dark brown silty SAND (FILL).*					
5	*Medium dense, damp, brown, medium to coarse SAND with trace fine gravels.*		S-1	33	0.0	
10						
15	*Very dense, moist brown, silty SAND with some coarse gravels.*		S-2	50/5"	0.0	
20						
25	*Medium stiff, saturated, dark gray to brown clayey SILT with thin interbeds of tan SILT. Petroleum hydrocarbon-like odor.*		S-3	7	108.6	
30	*Boring terminated at approximately 26.5 feet.*					

AS-BUILT DESIGN



TESTING

BTEX HCID WTPH

BTEX HCID WTPH

LEGEND

2-inch O.D. split-spoon sample

Observed groundwater level (ATD = at time of drilling)

RZA
RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants
539 W. Sharp/Ste. D/ 2nd Floor
Spokane, Washington 99201

Drilling started: *8 January 1991* Drilling completed: *8 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *P-3*

Elevation reference:
Ground surface elevation: 95.82 Casing elevation: 95.58

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0						
5	*Medium, dense, damp, brown, silty SAND to very silty SAND (FILL).*		S-1	16	0.0	
10	*Dense, damp, gray to brown gravelly, medium to coarse SAND .*		S-2	47	0.0	
15	*Dense, damp, brown silty SAND.*		S-3	34	0.0	
20	*Very stiff to medium stiff, saturated , SILT and clayey SILT with sheen in places. Strong petroleum hydrocarbon-like odor. At approximately 21' black hydrocarbon saturated zone.*		S-4A S-4B	17	102.9 211.8	
25			S-5	6	1279.0	
30	*Boring terminated at approximately 26.5 feet.*					

AS-BUILT DESIGN

TESTING

BTEX HCID WTPH

BTEX HCID WTPH

LEGEND

2-inch O.D. split-spoon sample

Observed groundwater level (ATD = at time of drilling)

RZA

RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants
539 W. Sharp/Ste. D/ 2nd Floor
Spokane, Washington 99201

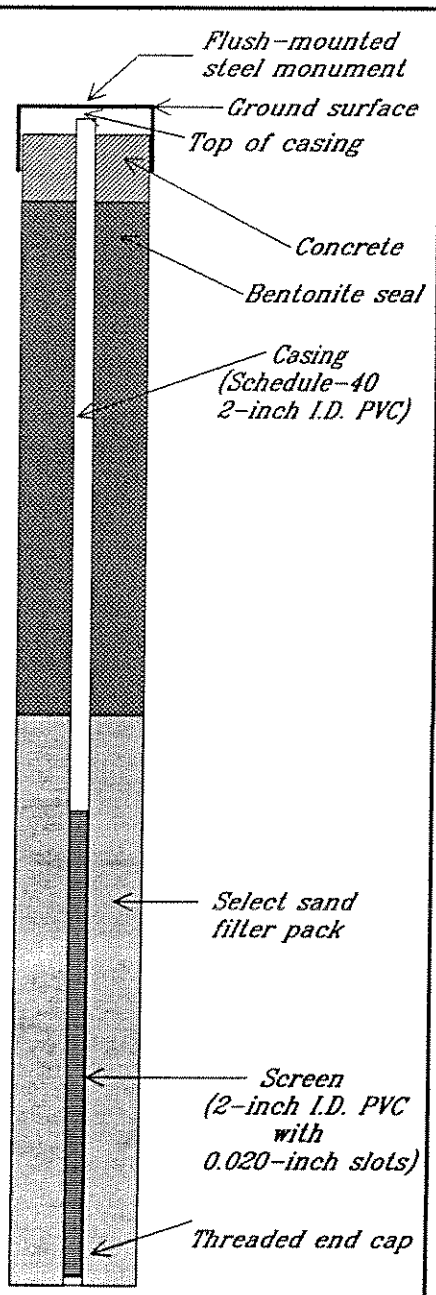
Drilling started: *9 January 1991* Drilling completed: *9 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *P-4*

Elevation reference:
Ground surface elevation: 95.70 Casing elevation: 95.34

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	*Dark brown, silty SAND (FILL).*					
5	*Very dense, damp, brown, coarse SAND with trace gravel.*		S-1	55	0	
10						
15	*Sand and gravel.*					
20			S-2	16	3.4	
20	*Medium dense, moist to wet, brown to dark gray, Silty SAND to very silty SAND; more silt with depth.*					
25	*Medium stiff, saturated, dark brown, clayey SILT with sheen interbedded with thin tan SILT beds. Strong petroleum hydrocarbon-like odor.*		S-3			
30	*Boring terminated at approximately 26.5 feet.*					

AS-BUILT DESIGN



TESTING

BTEX
HCID
WTPH

LEGEND

2-inch O.D. split-spoon sample

ATD Observed groundwater level (ATD = at time of drilling)

RZA
RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants
539 W. Sharp/Ste. D/ 2nd Floor
Spokane, Washington 99201

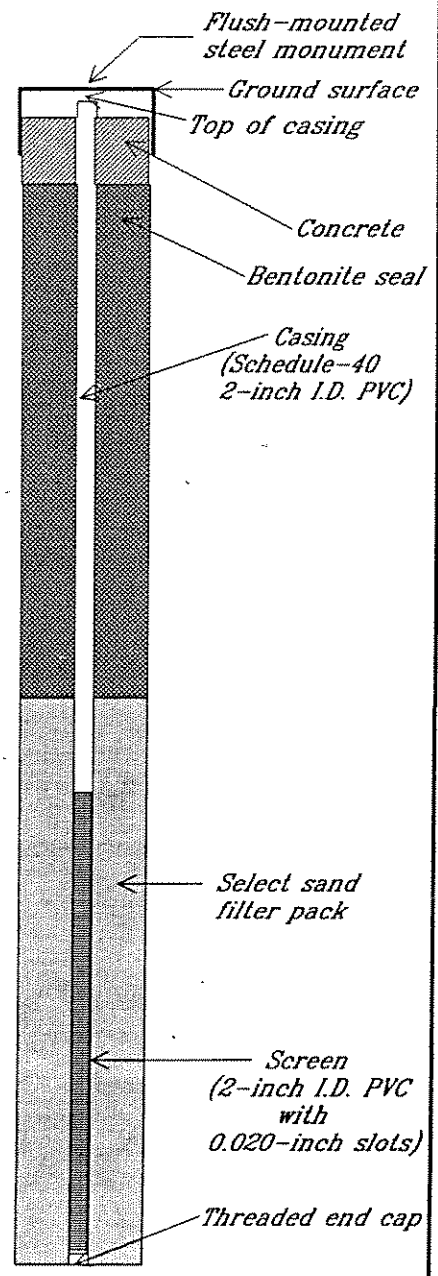
Drilling started: *8 January 1991* Drilling completed: *8 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *P-5*

Elevation reference:
Ground surface elevation: 95.60 Casing elevation: 95.34

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	*Medium dense, damp, dark brown, silty fine SAND to very silty fine SAND (FILL).*					
5			S-1	14	0.0	
10	*Dense, damp, brown, medium to coarse SAND with trace fine sand. Rust in places.*		S-2	36	0.0	
15	*Sand and gravel.*					
20			S-3	19	0.0	
25	*Very stiff to medium stiff, saturated, dark brown and dark gray clayey SILT and SILT interbeds with some tan silt beds. Strong petroleum hydrocarbon-like odor.*		S-4	8	158.0	
30	*Boring terminated at approximately 26.5 feet.*					

AS-BUILT DESIGN



TESTING

BTEX
HCID
WTPH

LEGEND

2-inch O.D. split-spoon sample

ATD Observed groundwater level (ATD = at time of drilling)

RZA
RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants
539 W. Sharp/Ste. D/ 2nd Floor
Spokane, Washington 99201

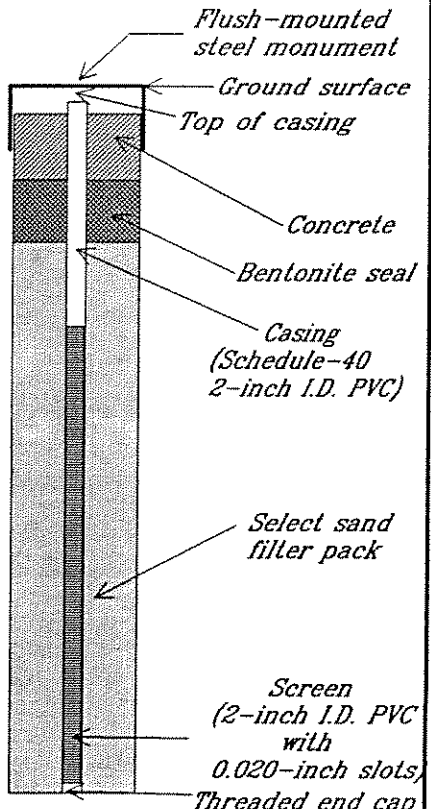
Drilling started: *8 January 1991* Drilling completed: *8 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *P-6*

Elevation reference:
Ground surface elevation: 95.78 Casing elevation: 95.43

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	*Loose, damp dark brown, very silty fine SAND (FILL).*		S-1	5	0.0	
5	*Medium dense, damp, brown medium to coarse SAND with some gravel.*		S-2	17	0.0	
10	*-gravel and cobbles*					
15	*Dense, damp, brown, silty fine SAND.*		S-3	43	0.0	
	Boring terminated at approximately 16.5 feet.					
20						
25						
30						

AS-BUILT DESIGN



TESTING

BTEX
HCID
WTPH

LEGEND

2-inch O.D. split-spoon sample

ATD Observed groundwater level (ATD = at time of drilling)

RZA

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Geotechnical & Environmental Consultants
539 W. Sharp/Ste. D/ 2nd Floor
Spokane, Washington 99201

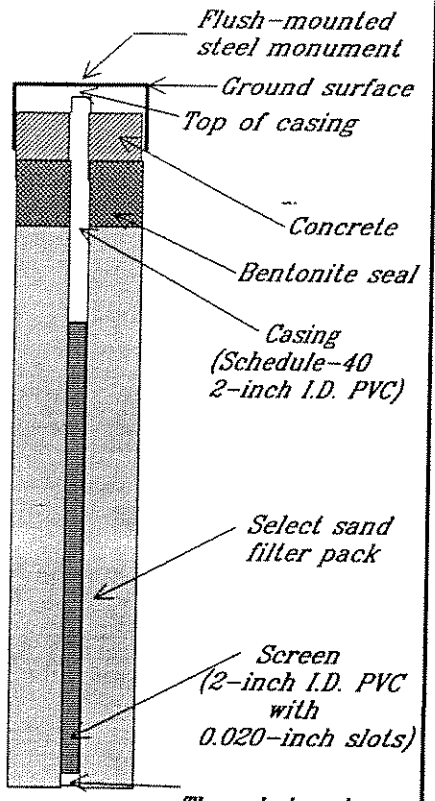
Drilling started: *9 January 1991* Drilling completed: *9 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *P-7*

Elevation reference:
Ground surface elevation: 95.89 Casing elevation: 95.59

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	*Loose, damp dark brown, silty fine SAND to very silty fine SAND (FILL).*		S-1	10	0.0	
5					0.0	
10	*Dense, damp, gray to brown, medium to coarse SAND with trace gravel.*		S-2		0.0	
15	*Very dense, damp, gray, gravelly, coarse SAND with interbedded dark brown silty fine SAND to sandy SILT.*		S-3		0.0	
	Boring terminated at approximately 16.5 feet.					
20						
25						
30						

AS-BUILT DESIGN



TESTING

BTEX
HCID
WTPH

LEGEND

2-inch O.D. split-spoon sample

ATD Observed groundwater level (ATD = at time of drilling)

RZA
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Geotechnical & Environmental Consultants
539 W. Sharp/Ste. D/ 2nd Floor
Spokane, Washington 99201

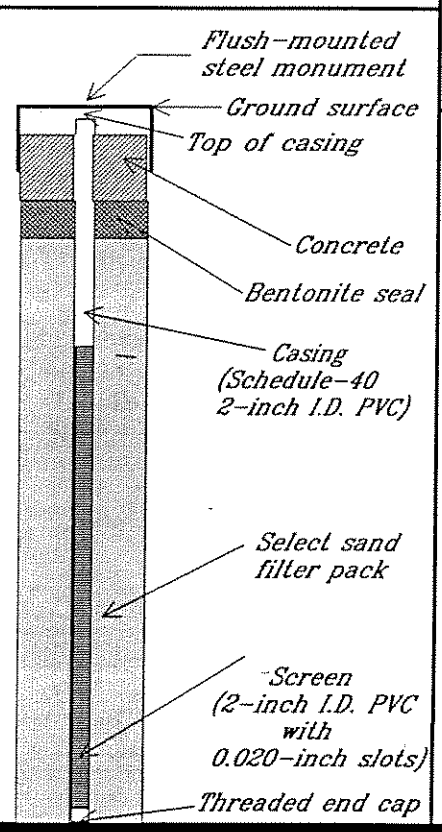
Drilling started: *9 January 1991* Drilling completed: *9 January 1992* Logged by: *ENJS*

PROJECT *Chelan Chevron Station #6590* W.O. *W-5470-4* WELL NO. *P-8*

Elevation reference:
Ground surface elevation: 95.92 Casing elevation: 95.60

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0						
	Loose, damp dark brown, silty fine SAND (FILL).		S-1	7	0.0	
5						
	Medium dense, damp, light brown fine to medium SAND with some gravel		S-2	22	0.0	
10						
	- damp dark brown SILT					
	- damp gray medium to coarse SAND		S-3A		0.0	
	Damp, brown silty SAND to very silty SAND.		S-3B S-3C	32	0.0 0.0	
15	*Boring terminated at approximately 15.2 feet.*					
20						
25						
30						

AS-BUILT DESIGN



TESTING: BTEX, HCID, WTPH

LEGEND

2-inch O.D. split-spoon sample

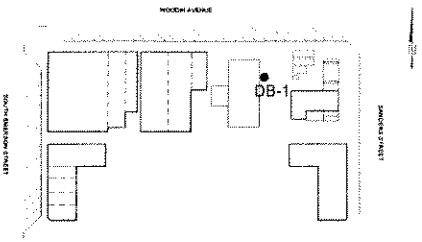
ATD Observed groundwater level (ATD = at time of drilling)

RZA

RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants
539 W. Sharp/Ste. D/ 2nd Floor
Spokane, Washington 99201

Drilling started: *9 January 1991* Drilling completed: *9 January 1992* Logged by: *ENJS*

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: DB-1

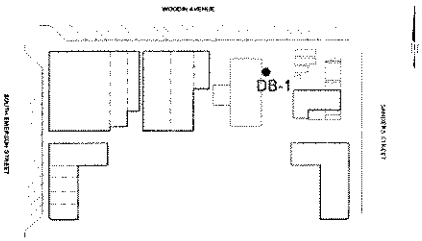
INSTALLATION DATE: 9/19/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 26.5'
CITY: Chelan	WELL CASING:
STATE: WA	WELL SCREEN:
DRILLER: Cascade	SAND PACK:

CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						1					Asphalt surface
						2					SILTY SAND: olive gray; 5% fines; trace very fine sand; fine to medium sand; 10% coarse sand; 10% gravel; loose; no hydrocarbon odor.
						3					
						4					
			DR	0	8 8 9	5			SM		
						6					
						7					
						8					
						9					
Bentonite			DR	0	4 5 7	10			SM		
						11					@11.5'; brown; 30% fines; very fine to fine sand; trace medium to coarse sand; trace gravel; loose; no hydrocarbon odor.
						12					
						13			ML		
						14					
			MST	0	33 36 40	15					
						16					@16'; as above.
						17					
						18					
						19			ML		
	▽		WT	2	6 7 8	20					SILT: olive gray; high plasticity; stiff; hydrocarbon odor.
						21					
						22					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: DB-1

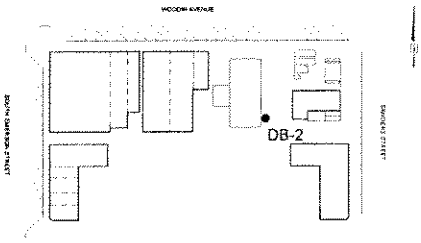
INSTALLATION DATE: 9/19/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 26.5'
CITY: Chelan	WELL CASING:
STATE: WA	WELL SCREEN:
DRILLER: Cascade	SAND PACK:

CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Bentonite			WT	0	4 6 8	23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44			ML		@26.5'; as above.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: DB-2

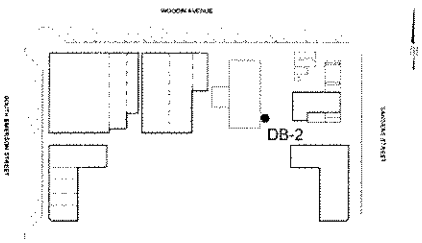
INSTALLATION DATE: 9/19/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 26.5'
CITY: Chelan	WELL CASING:
STATE: WA	WELL SCREEN:
DRILLER: Cascade	SAND PACK:

CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete						1					Asphalt surface
						2					
						3					SILTY SAND: olive brown; 30% fines; very fine to fine sand; 5% coarse sand; trace gravel; medium dense; no hydrocarbon odor.
						4					
			DP	0	2 8 11	5			SM		
						6					
						7					
						8					
						9					
Bentonite			DR	0	37 30 35	10			SP		SAND: brown/gray; trace fines; 20% very fine sand; fine sand; 20% medium to coarse sand; 20% gravel; medium dense; no hydrocarbon odor.
						11					
						12					
						13					
						14					
			DR	0	7 10 11	15			SP		
						16					@16.5'; <10% very fine sand; fine to medium sand; 10% coarse sand; 10% gravel; loose; no hydrocarbon odor.
						17					
						18					
						19					
	▽		WT	0.2	3 4 4	20			ML		SILT: dark grayish brown; moderate plasticity, firm; no hydrocarbon odor.
						21					
						22					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: DB-2

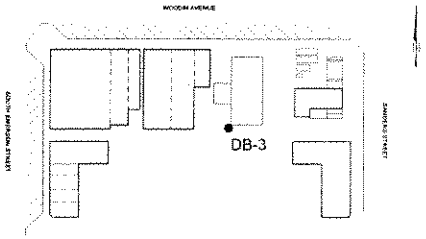
INSTALLATION DATE: 9/19/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 26.5'
CITY: Chelan	WELL CASING:
STATE: WA	WELL SCREEN:
DRILLER: Cascade	SAND PACK:

CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Bentonite			WT	0	4 3 4	25 26			ML		@26.5'; as above.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: DB-3

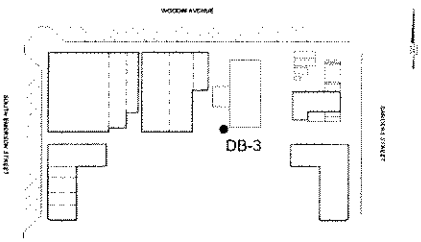
INSTALLATION DATE: 9/19/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 26.5'
CITY: Chelan	WELL CASING:
STATE: WA	WELL SCREEN:
DRILLER: Cascade	SAND PACK:

CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete						1					Asphalt surface
						2					
						3					SILTY SAND: dark grayish brown; 10% fines; very fine to fine sand; 10% medium to coarse sand; 5% gravel; firm; no hydrocarbon odor.
						4					
			DR	4.1	4 5 5	5			SM		
						6					
						7					
						8					
						9					
Bentonite			DR	1	50 -6"	10			GP		SANDY GRAVEL: brownish gray; trace fines; 40-50% fine to coarse sand; very dense; no hydrocarbon odor.
						11					
						12					
						13					
						14					
			DP	0	4 7 12	15			ML		
						16					SILT: olive gray; moderate plasticity; stiff; no hydrocarbon odor.
						17					
						18					
						19					
			DP	0	5 6 6	20			ML		@21.5'; as above.
						21					
						22					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: DB-3

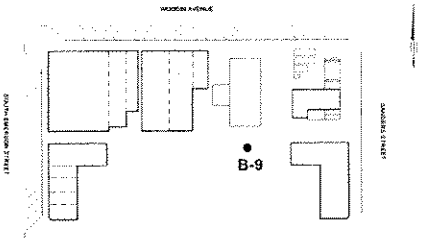
INSTALLATION DATE: 9/19/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 26.5'
CITY: Chelan	WELL CASING:
STATE: WA	WELL SCREEN:
DRILLER: Cascade	SAND PACK:

CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Bentonite			WT	10	4 9 5	23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44			ML		CLAYEY SILT: olive gray; moderate plasticity; stiff; no hydrocarbon odor.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-9

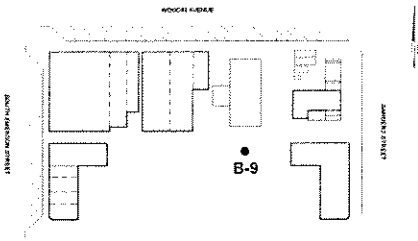
INSTALLATION DATE: 6/1/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN:15-40' (0.010")
DRILLER: Cascade	SAND PACK: 13-41.5' (2X12)

CASING ELEVATION	93.03
SURVEY DATE:	6/4/01
DTW:	36.74

DESCRIPTION/LOGGED BY: SHAWN MADISON

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						1					
						2					
						3					
						4					
Bentonite			DP	0	50/6	5			SM		SILTY SAND: brownish tray; 15% fines; fine to medium sand; 35% gravel; 10% gravels; very dense.
						6					
						7					
						8					
						9					
			DP	0	50/5	10			SM		SILTY SAND: brown; 30% fines; very fine to fine sand; 5% gravel; very dense; no hydrocarbon odor.
						11					
						12					
						13					
						14					
Sand					23 25 27	15					No recovery
						16					
						17					
						18					
						19					
	▽		WT	18	20 32 50	20			ML		SILT: brown; low plasticity; 40% very fine sand; very hard; hydrocarbon odor.
						21					
						22					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-9

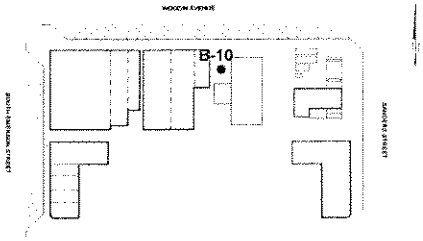
INSTALLATION DATE: 6/1/2001	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 15-40' (0.010")
DRILLER: Cascade	SAND PACK: 13-41.5' (2X12)

CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: SHAWN MADISON

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Sand			WT	2	5 6 6	25–26			ML		SILT: brown; low plasticity; 40% very fine sand; stiff; hydrocarbon odor.
			WT	0	3 3 3	30–31			ML		@31.5'; as above.
		▼	WT	0	3 4 3	35–36			ML		@36.5'; as above.
			WT	0	3 3 3	40–41			ML		@41.5'; as above.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-10

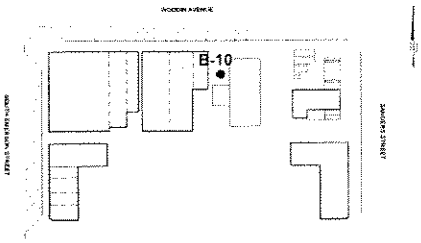
INSTALLATION DATE: 6/1/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN:15-40' (0.010")
DRILLER: Cascade	SAND PACK: 13-41.5' (2X12)

CASING ELEVATION	93.4
SURVEY DATE:	6/4/01
DTW:	32.92

DESCRIPTION/LOGGED BY: SHAWN MADISON

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete						1					
						2					
						3					
						4					
						5			SM		
			DP	0	2				PT		SILTY SAND: dark brown; 20% fines; very fine to fine sand; 10% cobbles; organics; loose; no odor; Interbeded Peat layer at approximately 5.5 feet.
					3	6			SM		
					8						
Bentonite						7					
						8					
						9					
						10					
			DP	0	18				GM		SILTY GRAVEL: grayish brown; 20% fines; 30% fine to medium sand; gravel; 10% cobbles; dense; no odor.
					20	11					
					22						
						12					
						13					
						14					
						15					
			DP	0	50/6				GM		SILTY GRAVEL: grayish brown; 20% fines; 30% fine to medium sand; gravel; 10% cobbles; dense; no odor.
Sand						16					
						17					
						18					
						19					
						20					
			DP	20	3				ML		SILT: brownish gray; low plasticity; 40% very fine sand; firm; hydrocarbon odor.
					3	21					
					3						
						22					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-10

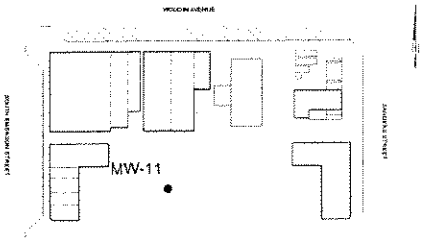
INSTALLATION DATE: 6/1/2001	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 15-40' (0.010")
DRILLER: Cascade	SAND PACK: 13-41.5' (2X12)

CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: SHAWN MADISON

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Sand	▽	▼	WT	18	2 3 3	25–26			ML		SILT: brownish gray; low plasticity; firm; hydrocarbon odor.
			WT	6	3 4 4	30–31			ML		@31.5'; as above.
			WT	0	3 4 4	35–36			ML		@36.5'; as above; no hydrocarbon odor.
			WT	0	3 4 4	40–41			ML		@41.5'; as above; no hydrocarbon odor.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

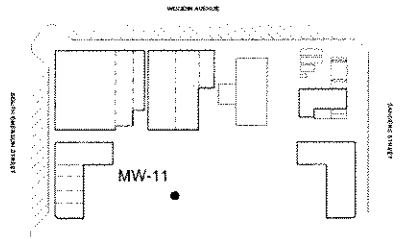
WELL/BORING: B-11/MW-11

INSTALLATION DATE: 9/19/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 37'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN:17-37' (0.010")
DRILLER: Cascade	SAND PACK: 15-37' (2X12)

CASING ELEVATION	93.06
SURVEY DATE:	9/20/01
DTW:	

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: MATT MILLER
Concrete						1					Asphalt surface
Bentonite			DP	2	3 5 8	5			SM		SILTY SAND: olive brown; 30% fines; very fine to fine sand; trace to 5% medium to coarse sand; trace gravel; loose; no hydrocarbon odor.
			DR	1.4	25 18 18	10			SM		SILTY SAND: olive brown; 10% fines; fine sand; 10% coarse sand; 30% gravel; medium dense; no hydrocarbon odor.
Sand			DR	1	21 22 22	15			SP		SAND: yellowish brown; trace fines; very fine to fine sand; 20% medium to coarse sand; 10% gravel; medium dense; no hydrocarbon odor.
	▽		WT	1	4 5 5	20			ML		SILT: olive gray; moderate plasticity, firm; slight hydrocarbon odor.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-11/MW-11

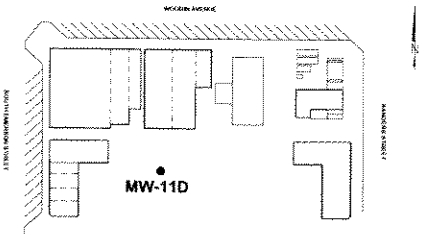
INSTALLATION DATE: 9/19/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 37'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 17-37' (0.010")
DRILLER: Cascade	SAND PACK: 15-37' (2X12)

CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Sand			WT	2000	4 5 5	25–26			ML		SILT: olive gray; low plasticity; up to 50% very fine sand (interbedded); firm; hydrocarbon odor.
			WT	1401	3 3 3	30–31					@31.5'; as above.
			DP	688	5 7 8	35–36					@36.5'; as above.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-11D/MW-11D

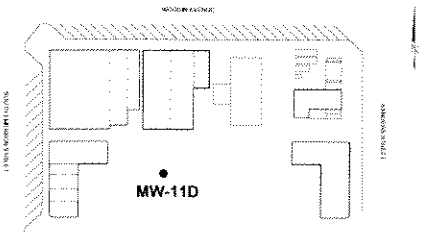
INSTALLATION DATE: 11/14/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 60.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN:33-48' (0.010")
DRILLER: Cascade	SAND PACK: 29-49' (2X12)

CASING ELEVATION	1,122.15
SURVEY DATE:	11/15/01
DTW:	

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete						0					Asphalt Surface
Bentonite						2			SM		SILTY SAND: olive brown; 10-20% fines; very fine to medium sand; 5% coarse sand; 30% gravel; cobbles; logged from cuttings.
						4					Increasing gravel with depth.
						6					
						8					
						10					
						12					
						14					
						16					
						18					
						20					
						22					
						24			ML		
						26					
						28					
						30					
						32					
						34					
Sand			WT	2000	7 10 10	36					CLAYEY SILT: olive gray; high plasticity; stiff; HC odo r.
						38					
			WT	72	10 15 16	40					@40'; Same as above.
						42					
						44					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

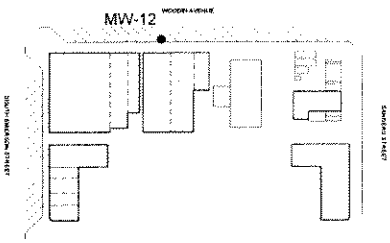
WELL/BORING: B-11D/MW-11D

INSTALLATION DATE: 11/15/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 60.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN:33-48' (0.010")
DRILLER: Cascade	SAND PACK: 29-49' (2X12)

CASING ELEVATION	
SURVEY DATE:	
DTW:	

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: MATTHEW R. MILLER
Sand			WT	12.7	8 14 15	46			ML		
						48					
			MST	37	60-6"	50			SM		SILTY SAND: gray; 20% fines; very fine sand; 10% fine to coarse sand; 20% gravel; very dense; slight HC odor.
						52					
Bentonite						54					
			MST	10	31 50-5"	56					SILTY SAND: light olive gray; 5-10% fines; very fine sand; trace - 5% fine to medium sand; trace gravel; very dense; no HC odor.
						58					
			MST	1.2	55-6"	60					@60'; Same as above.
						62					
						64					
						66					
						68					
						70					
						72					
						74					
						76					
						78					
						80					
						82					
						84					
						86					
						88					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-12/MW-12

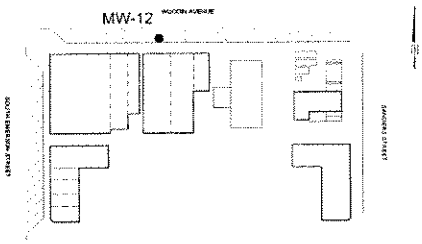
INSTALLATION DATE: 9/20/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 37'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN:17-37' (0.010")
DRILLER: Cascade	SAND PACK: 15-37' (2X12)

CASING ELEVATION	93.28
SURVEY DATE:	9/21/01
DTW:	28.80

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						1			SM		SILTY SAND (Fill): brown; 20% fines; very fine sand; 10% fine to coarse sand; 10% gravel; very dense; no hydrocarbon odor.
						2					
						3					
						4					
			DR	-	35 30	5					
Bentonite						6					
						7					
						8					
						9					
			DR	0	100	10			SM		
						11					@11.5'; 10% fines; very fine to medium sand; 25% coarse sand; 15% gravel; very dense; no hydrocarbon odor.
						12					
						13					
						14					
			MST	0	12 20 22	15					
						16			ML		SILT: dark grayish brown; low plasticity; very stiff; no hydrocarbon odor.
						17					
						18					
Sand						19					
	▽		WT	7	6 7 8	20			ML		@21.5'; as above; stiff; no hydrocarbon odor.
						21					
						22					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-12/MW-12

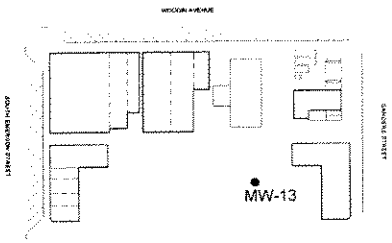
INSTALLATION DATE: 9/20/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 37'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 17-37' (0.010")
DRILLER: Cascade	SAND PACK: 15-37' (2X12)

CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Sand			WT	37	4 5 5	25–26			ML		SILT: as above; firm; slight hydrocarbon odor.
		▼				28–29					
			WT	1645	5 6 6	30–31					@31.5'; as above; stiff; hydrocarbon odor.
			WT	156	4 5 5	35–36					@36.5'; as above.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

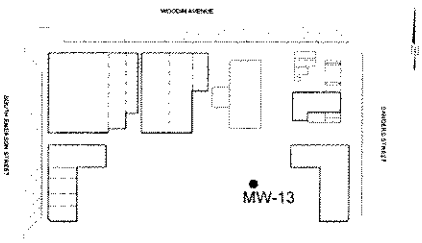
WELL/BORING: B-13/MW-13

INSTALLATION DATE: 9/20/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 37'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN:17-37' (0.010")
DRILLER: Cascade	SAND PACK: 15-37' (2X12)

CASING ELEVATION	93.13
SURVEY DATE:	9/20/01
DTW:	

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: MATT MILLER
Concrete						1					Asphalt surface
Bentonite			DR	0	6 7 8	5			SM		SILTY SAND (Fill): brown; 20% fines; very fine to medium sand; 10% coarse sand; 20% gravel; loose; no hydrocarbon odor.
			DR	0	50 6	10			SM		@10'; 10% fines; very fine to fine sand; 10% medium to coarse sand; 30% gravel; very dense; no hydrocarbon odor.
Sand			MST	0	16 12 8	15			ML		SILT: olive gray; low plasticity; trace very fine sand; stiff; no hydrocarbon odor.
	▽		WT	1	4 4 4	20			ML		@21.5'; moderate plasticity, firm; no hydrocarbon odor.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-13/MW-13

INSTALLATION DATE: 9/20/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 37'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 17-37' (0.010")
DRILLER: Cascade	SAND PACK: 15-37' (2X12)

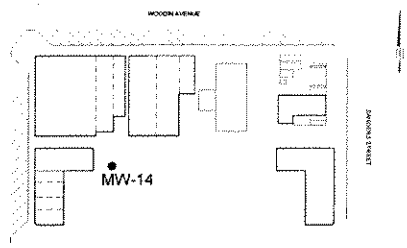
CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Sand			WT	1	4 4 4	25–26			ML		@26.5': as above.
			WT	2	3 4 4	30–31					@31.5': as above.
			WT	30	6 7 9	35–36					@36.5': as above.

23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-14/MW-14

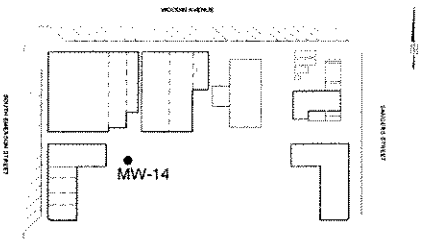
INSTALLATION DATE: 9/20/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 37'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN:17-37' (0.010")
DRILLER: Cascade	SAND PACK: 15-37' (2X12)

CASING ELEVATION	92.64
SURVEY DATE:	9/20/01
DTW:	

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						1					Asphalt surface
						2					
						3					
						4					
Bentonite			DR	0	6 12 15	5			SM		SILTY SAND: brown; 20% fines; very fine to fine sand; 10% medium to coarse sand; 25% gravel; medium dense; no hydrocarbon odor.
						6					
						7					
						8					
						9					
			DR	0	20 12 10	10			SM		SILTY SAND; light olive brown; 40% fines; very fine sand; 10% fine to coarse sand; trace gravel; loose; no hydrocarbon odor.
						11					
						12					
						13					
						14					
Sand			DP	0	6 10 10	15			ML		SILT: grayish brown; moderate plasticity, interbedded very fine sand layers; stiff; no hydrocarbon odor.
						16					
						17					
						18					
						19					
	▽		WT	0	4 4 4	20			ML		@21.5'; dark grayish brown, moderate plasticity, firm; no hydrocarbon odor.
						21					
						22					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-14/MW-14

INSTALLATION DATE: 9/19/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 W Woodin Ave	BORING DEPTH: 37'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 17-37' (0.010")
DRILLER: Cascade	SAND PACK: 15-37' (2X12)

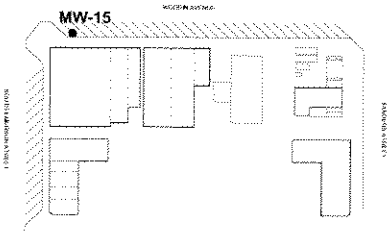
CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: MATT MILLER

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Sand			WT	5	3 4 4	25			ML		SILT: dark grayish brown; moderate plasticity; clayey; firm; slight hydrocarbon odor.
			WT	56	4 5 6	30					@31.5': as above; hydrocarbon odor.
			WT	40	4 5 5	35					@36.5': as above.

23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-15/MW-15

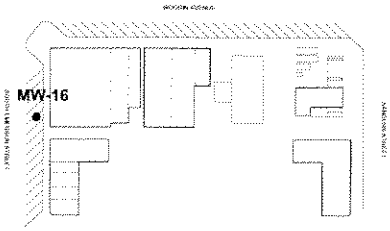
INSTALLATION DATE: 11/15/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 20-40' (0.010")
DRILLER: Cascade	SAND PACK: 18-41.5' (2X12)

CASING ELEVATION	1,122.33
SURVEY DATE:	11/15/01
DTW:	

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						0					Asphalt Surface
						2			SP		SAND: (fill); light olive brown; trace fines; very fine to coarse sand; loose; no odor.
			DP	0	8 7 7	4					
						6					
						8					
			DP	0	5 21 31	10					@10'; olive brown; trace fines; very fine to coarse sand; trace gravel; medium dense; no HC odor.
Bentonite						12					
						14					
			MST	0	12 14 20	16			ML		SILT: olive gray; low plasticity; very stiff; no HC odor.
						18					
			WT	0	10 11 11	20					@20'; as above; sand; stiff; sand lenses; no HC odor.
						22					
						24					
Sand	▽		WT	1	10 11 12	26					@25'; as above; very stiff.
						28					
			WT	958	4 6 7	30					@30' CLAYEY SILT: moderate to high plasticity; sand lenses; stiff; HC odor.
		▼				32					
						34					
			WT	12	5 9 15	36					@35' as above; very stiff.
						38					
			WT	11	10 10 10	40					@40'; as above; stiff.
						42					
						44					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-16/MW-16

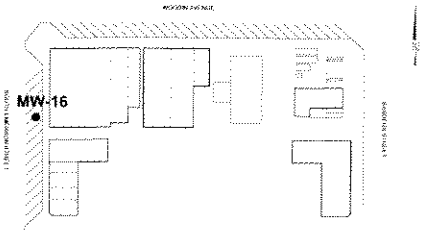
INSTALLATION DATE: 11/15/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 51.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 25-50' (0.010")
DRILLER: Cascade	SAND PACK: 23-51.5' (2X12)

CASING ELEVATION	1,121.67
SURVEY DATE:	11/15/01
DTW:	

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						0					Asphalt Surface
Bentonite						2			SP		SAND: as fill; light olive brown; trace fines; very fine to medium sand; trace -5% coarse sand; trace gravel; medium dense; no HC odor.
			DP	4.1	16 16 18	4					
						6					
						8					
			DP	3.8	100-4"	10					@10';as above; minimal sample recovery.
						12					
						14					
			MST-WT	2	15 16 15	16			ML		SILT: olive gray; moderate plasticity; very stiff; no HC odor.
						18					
			WT	1.6	5 7 9	20					@20'; as above; stiff; no HC odor.
						22					
						24					
Sand			WT	35	7 7 9	26					@25'; as above; slight HC odor.
						28					
			WT	67	10 12 11	30					CLAYEY SILT: olive gray; moderate plasticity; very stiff; HC odor.
						32					
						34					
			WT	25	7 9 12	36					@35' as above.
						38					
			WT	15	12 12 12	40					@40'; as above.
						42					
						44					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-16/MW-16

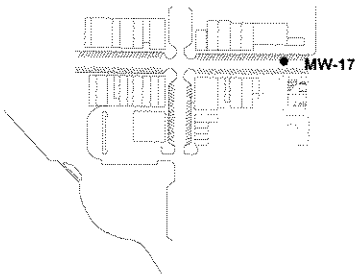
INSTALLATION DATE: 11/15/01	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 51.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 25-50' (0.010")
DRILLER: Cascade	SAND PACK: 23-51.5' (2X12)

CASING ELEVATION	
SURVEY DATE:	
DTW:	

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Sand			WT	42	12 15 20	46			ML		@45" as above
						48					
			WT	20	10 12 14	50					@50" as above
						52					
						54					
						56					
						58					
						60					
						62					
						64					
						66					
						68					
						70					
						72					
						74					
						76					
						78					
						80					
						82					
						84					
						86					
						88					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-17/MW-17

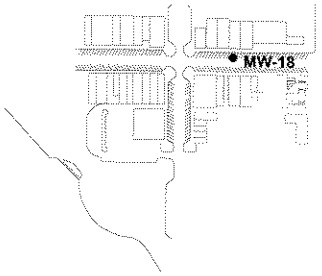
INSTALLATION DATE: 6/12/02	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 20-40' (0.010")
DRILLER: Cascade	SAND PACK: 18-40' (2X12)

CASING ELEVATION	1,123.41
SURVEY DATE:	6/12/02
DTW:	

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete						2					Asphalt surface
Bentonite			DRY	75	4 5 5	4 6			SM		SILTY SAND: brown; 30 to 40% fines; very fine sand; trace fine to coarse sand; loose.
			DP	20	8 15 16	8 10 12			SP		SAND: brown; trace fines; very fine to fine sand; trace medium to coarse sand; dense.
			DP	34	6 6 6	14 16 18			SM		SILTY SAND: brown; 40% fines; very fine sand; medium dense.
Sand	▽		WT	74	9 12 15	20 22			ML		SILT: dark grayish brown; low plasticity; slight odor; very stiff.
			WT	72	6 6 6	24 26 28					@25'; as above; stiff.
		▼	WT	21	5 8 12	30 32					@30' as above; very stiff.
			WT	52	5 7 7	34 36 38					@35' as above; stiff.
			WT	92	4 7 8	40 42 44					@40'; as above; stiff.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-18/MW-18

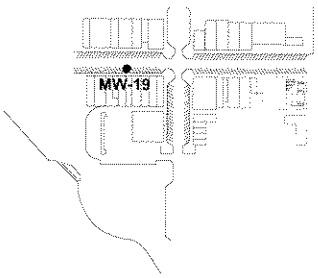
INSTALLATION DATE: 6/12/02	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 20-40' (0.010")
DRILLER: Cascade	SAND PACK: 18-40' (2X12)

CASING ELEVATION	1,122.38
SURVEY DATE:	6/12/02
DTW:	

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete						0					Asphalt surface
						2			SP		SAND: brown; trace fines; very fine to fine sand; 10% medium to coarse sand; medium dense; no odor.
			DRY	37	6 13 14	4 6					
Bentonite						8					
			DP	35	15 18 21	10			ML		SILT: olive gray; low to moderate plasticity; trace very fine sand; hard; no odor.
						12 14					
			MST	52	3 4 5	16					@15'; low plasticity; stiff; slight odor.
						18					
	▽		WT	36	4 4 5	20					@20'; as above.
						22 24					
Sand			WT	15	3 4 5	26					@25'; as above.
		▼				28					
			WT	113	5 5 6	30					@30' as above; strong HC odor.
						32 34					
			WT	32	4 5 5	36					@35' as above; no odor.
						38					
			WT	49	5 6 8	40					@40'; as above; odor; trace organics.
						42 44					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-19/MW-19

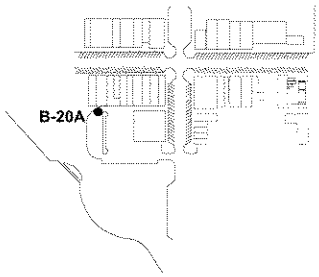
INSTALLATION DATE: 6/13/02	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 20-40' (0.010")
DRILLER: Cascade	SAND PACK: 18-40' (2X12)

CASING ELEVATION	1,120.40
SURVEY DATE:	6/13/02
DTW:	

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						0					Asphalt surface
Bentonite						2			SM		SILTY SAND: brown; 20% fines; very fine sand; trace to 5% fine to coarse sand; medium dense; no odor.
			DP	22	7 7 7	4 6					
						8					
					16 12 12	10					@10'; no recovery.
						12					
			DRY	29	6 7 7	14 16			SP		@15'; sand; light brown; trace fines; very fine to medium sand; trace coarse sand; medium dense.
						18					
			DP	29	4 5 5	20					
						22			ML		SILT: olive gray; moderate plasticity; stiff.
						24					
Sand			WT	44	3 4 5	26					@25'; as above; odor.
						28					
			WT	53	5 5 7	30					@30' as above; trace organics.
						32					
	▽	▼	WT	46	5 7 7	34 36					@35' as above.
						38					
			WT	29	4 5 5	40					@40'; as above; slight odor.
						42					
						44					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-20A

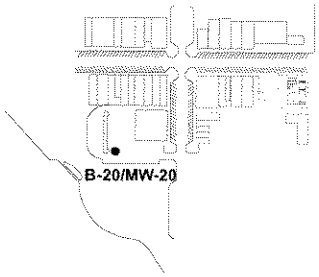
INSTALLATION DATE: 6/13/02	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 10'
CITY: Chelan	WELL CASING: NA
STATE: WA	WELL SCREEN: NA
DRILLER: Cascade	SAND PACK: NA

CASING ELEVATION	NA
SURVEY DATE:	NA
DTW:	

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Backfilled with Bentonite			DRY	0	4 3 3	2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44			SP		Asphalt surface SAND: dark brown; trace fines; very fine to fine sand; 10% medium to coarse sand; gravel; loose; no odor. - Encountered clay pipe remains in drill cuttings at approximately 10 feet below grade. Removed Auger and observed intact PVC pipe at edge of borehole. Boring was terminated.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-20/MW-20

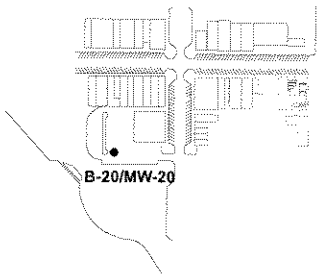
INSTALLATION DATE: 6/13/02	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 81.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 20-45' (0.010")
DRILLER: Cascade	SAND PACK: 18-46' (2X12)

CASING ELEVATION	1,116.43
SURVEY DATE:	6/14/02
DTW:	

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						0					Asphalt surface
						2			SP		SAND: brown; trace fines; fine to medium sand; trace coarse sand.
						4					
Bentonite			DRY	5	5 6 6	6			ML		CLAYEY SILT: olive gray; low plasticity; trace very fine to fine sand; stiff; no odor.
						8					
			DP	3	6 6 6	10					@10'; as above.
						12					
						14					
			MST	5	4 4 5	16			ML		@15'; as above.
						18					
Sand			WT	3	3 3 4	20					@20'; as above.
						22					
						24					
			WT	8	3 5 6	26			ML		SILT: olive gray; low to moderate plasticity; trace organics; stiff; no odor.
						28					
			MST	14	2 36 50	30					CLAYEY SILT: olive gray; moderate plasticity; 30% very fine to fine sand; gravel; very hard; no HC odor.
						32					
						34					
			DRY	25	35 50-5"	36			SP		SAND: grayish brown; trace fines; very fine to fine sand 10% medium to coarse sand; gravel; very dense.
						38					
			DP	18	50-6"	40			ML		SILT: olive gray; 10% very fine to coarse sand; very hard; no odor.
						42					
						44			SM		

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-20/MW-20

INSTALLATION DATE: 6/13/02	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 81.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 20-45' (0.010")
DRILLER: Cascade	SAND PACK: 18-46' (2X12)

CASING ELEVATION	
SURVEY DATE:	
DTW:	

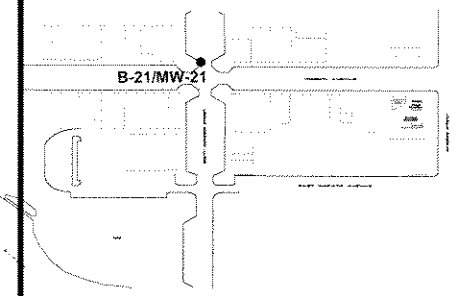
DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Sand			DRY	7	50-6"	46			SM		SILTY SAND: olive gray; 40% fines; very fine to fine sand; 10% medium to coarse sand; gravel; very dense; no HC odor.
						48					
			DP	14	20 26 28	50			SP		
						52					SAND: olive gray; trace fines; fine sand; trace medium to coarse sand; very dense.
						54					
			DP	10	18 24 55	56					@55'; as above.
						58					
Backfilled with Bentonite			DP	25	14 18 18	60					@60'; dense; as above.
						62					
						64					
			DP	8	30 32 35	66			ML		SILT: gray; low plasticity; 10 to 20% very fine sand; trace medium to coarse sand; very hard.
						68					
			DP	35	42 50-6"	70					@70'; as above.
						72					
						74					
			DP		37 50	76					@75' No recovery - rock.
						78			SP		SAND: light gray; trace fines; very fine sand; very dense; no odor.
					22	80					
			DRY	11	25 28	82					
						84					
						86					
						88					

APPENDIX B: SITE BORING LOGS

RI Site Boring Logs

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

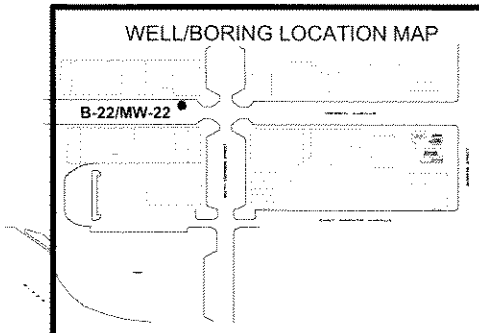
WELL/BORING: B-21/MW-21

INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 15 - 40' (0.010")
DRILLER: Cascade	SAND PACK: 13 - 41.5' (2X12)

CASING ELEVATION	1,121.22
SURVEY DATE:	03/04/2003
DTW:	31.97

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete						0					Asphalt Surface
						2			SM		SILTY SAND: olive brown; 20% fines; very fine to fine sand.
						4					
Bentonite			DP	0	7 16 11	6			SP		@5'; SAND: trace fines; fine sand; fine to medium sand; medium dense; no hydrocarbon odor.
						8					
			DP	9	10 10 11	10					@10'; Same as above.
						12					
						14					
			MST	>2000	10 12 14	16			ML		SILT: dark gray; low plasticity; trace very fine sand; very stiff; hydrocarbon odor.
						18					
			MST	>2000	5 5 6	20					@20'; increasing clay; stiff; hydrocarbon odor.
						22					
						24					
Sand			MST	109	3 3 3	26			CL		CLAY: olive gray; moderate plasticity; silty; firm; hydrocarbon odor.
						28					
	▽	▼	WT	102	5 6 10	30					SILT: olive gray; low plasticity; trace very fine sand; stiff; hydrocarbon odor.
						32			ML		
						34					
			WT	56	4 6 6	36					@35'; as above; clayey; no hydrocarbon odor.
						38					
						40			CL		
			WT	29	4 8 6	42					CLAY: olive gray; moderate plasticity; firm; no hydrocarbon odor.
						44					



Delta Environmental Consultants, Inc.

WELL/BORING: B-22/MW-22

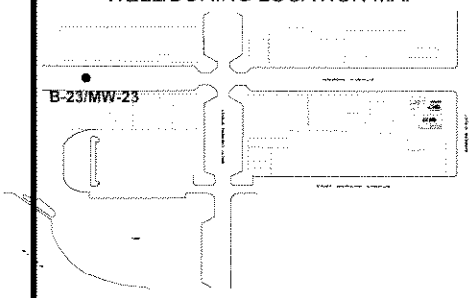
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 15 - 40' (0.010")
DRILLER: Cascade	SAND PACK: 13 - 41.5' (2X12)

CASING ELEVATION	1,118.71
SURVEY DATE:	03/04/2003
DTW:	31.74

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete						0					Asphalt Surface
Bentonite						2			SP		SAND: light brown; trace fines; very fine to medium sand; trace coarse sand; medium dense; no hydrocarbon odor.
			DP	3	5 13 15	4 6 8					
			DP	3	9 12 15	10 12					@10'; olive brown; as above.
			DP	1	4 6 5	14 16 18			ML		SILT: olive gray; low plasticity; trace very fine sand; stiff.
			MST	37	4 5 5	20 22			CL		CLAY: high plasticity; firm; slight odor.
Sand	▽		WT	140	3 3 4	24 26 28					@25'; as above; firm.
		▼	WT	8	3 4 5	30 32					@30'; as above; stiff; no hydrocarbon odor.
			WT	6	3 5 3	34 36 38					@35'; as above; silty; organics; no hydrocarbon odor.
			WT	6	2 3 3	40 42 44			CL		@40'; as above; no hydrocarbon odor.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-23/MW-23

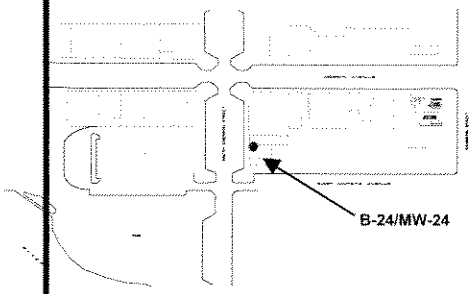
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 15 - 40' (0.010")
DRILLER: Cascade	SAND PACK: 13 - 41.5' (2X12)

CASING ELEVATION	1,118.97
SURVEY DATE:	03/04/2003
DTW:	34.42

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						0					Asphalt Surface
Bentonite			DR	1.6	5 5 3	2 4 6			SP		SAND: olive brown; trace fines; fine to medium sand; trace coarse sand; loose; no hydrocarbon odor.
			DR	3	20 20 23	8 10 12					@10'; increasing rock (cobbles); dense.
			MST	1.4	5 5 6	14 16 18			ML		SILT: olive gray; low plasticity; stiff; no hydrocarbon odor.
	▽		WT	0	2 3 3	20 22 24					@20'; as above.
Sand			WT	1.3	2 3 3	26 28					@25'; as above; clayey.
			WT	1	3 3 4	30 32 34			CL		CLAY: olive gray; moderate plasticity; firm; no hydrocarbon odor.
		▼	WT	0	3 3 4	36 38					@35'; as above.
			WT	0	3 3 3	40 42 44			CL		

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-24/MW-24

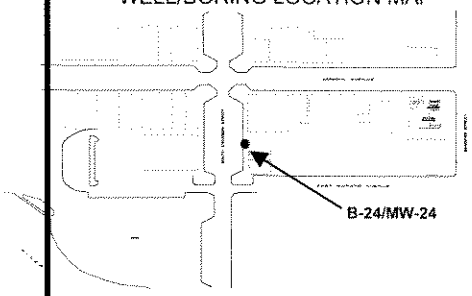
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 10"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 55.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 4"
STATE: WA	WELL SCREEN: 25 - 55' (0.010")
DRILLER: Cascade	SAND PACK: 22 - 55.5' (2X12)

CASING ELEVATION	1,120.54
SURVEY DATE:	
DTW:	Dry on 3/5/03 to 3/17/03

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	USCS SYMBOL	DESCRIPTION
Concrete						0		Asphalt Surface
Bentonite						2		
						4	SP	SAND: light brown; trace fines; very fine to medium sand; 10% coarse sand; 10% gravel; medium dense; no hydrocarbon odor.
			DR	0	8 9 9	6		
						8		
			DR	0	50-6"	10		SAND: brown; trace fines; very fine sand; trace to 5% fine to coarse sand; gravel; very dense; no hyrdrocarbon odor.
						12		
						14		
			MST	5	3 4 4	16	ML	SILT: dark grayish brown; moderate plasticity; hard; no hydrocarbon odor.
						18		
			MST	1	3 4 4	20		@20'; as above.
						22		
						24		
	▽		WT	200	4 3 3	26		@25'; as above; clayey; strong hydrocarbon odor.
						28		
Sand			WT	20	2 3 3	30	ML	@30'; as above.
						32		
						34		
			WT	37	2 2 2	36		@35'; as above.
						38		
						40	ML	
			WT	15	2 3 4	42		@40'; as above; no hydrocarbon odor.
						44		

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-24/MW-24

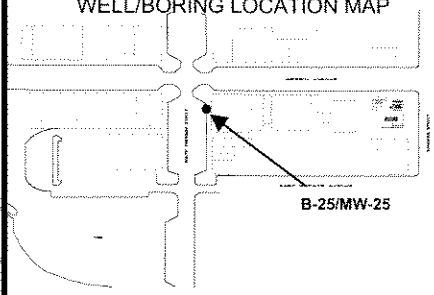
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 10"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 55.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 4"
STATE: WA	WELL SCREEN: 25 - 55' (0.010")
DRILLER: Cascade	SAND PACK: 22 - 55.5' (2X12)

CASING ELEVATION	1,120.54
SURVEY DATE:	
DTW:	Dry on 3/5/03 to 3/17/03

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Sand			WT	14	2 3 3	46			ML		SILT: as above; no hydrocarbon odor.
			WT	55	2 3 3	50			SM		@50'; as above. SILTY SAND: gray; 20% fines; very fine sand; trace fine to medium sand; very dense; no hydrocarbon odor.
			DP	8	50-6"	56					
						58					
						60					
						62					
						64					
						66					
						68					
						70					
						72					
						74					
						76					
						78					
						80					
						82					
						84					
						86					
						88					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-25/MW-25

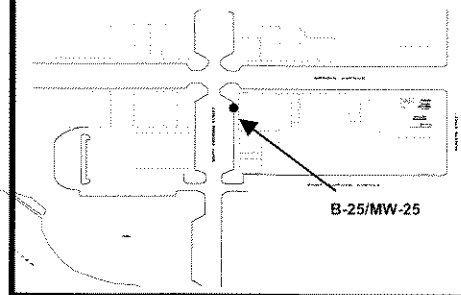
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 10"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 51.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 4"
STATE: WA	WELL SCREEN: 20 - 50' (0.010")
DRILLER: Cascade	SAND PACK: 17 - 51.5' (2X12)

CASING ELEVATION	1,121.38
SURVEY DATE:	03/06/2003
DTW:	42.60

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: MATTHEW R. MILLER
Concrete						0					
Bentonite			DP	1.5	3 3 3	2 4 6			SM		SILTY SAND: dark grayish brown; 30% fines; very fine sand; trace fine to coarse sand; loose; no hydrocarbon odor.
			DP	0	50-5"	8 10 12					@10'; as above; (rock).
			MST	0	1 2 3	14 16 18			ML		SILT: dark gray brown; moderate plasticity; firm; no hydrocarbon odor.
			WT	60	1 2 2	20 22					@20'; as above; dark gray; hydrocarbon odor; strong fuel odor in upper half of core; increased clay content.
			WT	1044	2 2 2	24 26					@25'; as above.
Sand	▽		WT	10	1 1 1	28 30 32			ML		@30'; as above.
			WT	37	2 3 2	34 36 38					@35'; as above.
		▼	WT	9	1 1 1	40 42 44			ML		@40'; as above.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

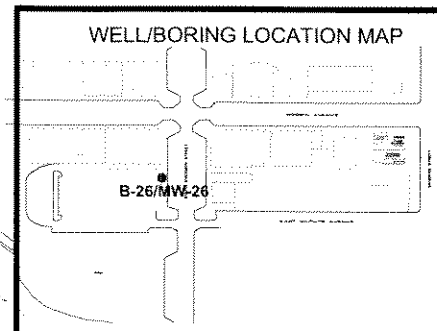
WELL/BORING: B-25/MW-25

INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 10"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 51.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 4"
STATE: WA	WELL SCREEN: 20 - 50' (0.010")
DRILLER: Cascade	SAND PACK: 17 - 51.5' (2X12)

CASING ELEVATION	1,121.38
SURVEY DATE:	03/06/2003
DTW:	42.60

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Sand						46					@45'; as above.
			WT	30	1 2 3	48			ML		
			WT	28	1 1 1	50					SILT: olive gray; moderate plasticity; very soft; no hydrocarbon odor.
						52					
						54					
						56					
						58					
						60					
						62					
						64					
						66					
						68					
						70					
						72					
						74					
						76					
						78					
						80					
						82					
						84					
						86					
						88					



Delta Environmental Consultants, Inc.

WELL/BORING: B-26/MW-26

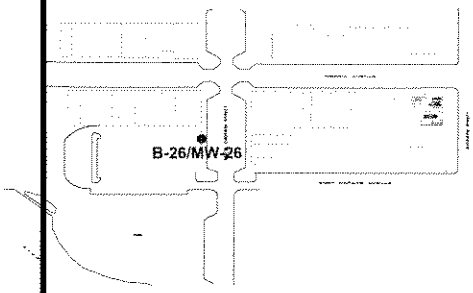
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 50'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 25 - 50' (0.010")
DRILLER: Cascade	SAND PACK: 23 - 50' (2X12)

CASING ELEVATION	1,119.52
SURVEY DATE:	03/06/2003
DTW:	

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete						0					Asphalt Surface
						2					
						4			SM		SAND: light olive brown; trace to 5% fines; very fine to fine sand; 10% medium to coarse sand; medium dense; no hydrocarbon odor.
Bentonite			DR	0	12 13 15	6					
						8					
			DP	0	6 7 8	10					SILT: low plasticity; trace very fine sand; stiff; no hydrocarbon odor.
						12					
						14					
			DP	2	3 3 4	16			ML		@15' ; as above.
						18					
			MST	2	3 3 4	20					@20'; as above; clayey; no hydrocarbon odor.
						22					
						24					
			MST	2	3 3 3	26					@25'; as above.
						28					
			MST	16	2 2 2	30			ML		@30'; as above; hydrocarbon odor.
Sand						32					
						34					
	▽		WT	536	2 2 2	36					@35'; as above; thin silty sand lense @36' bg (<2" thick); no hydrocarbon odor.
						38					
			WT	5	2 2 2	40			CL		CLAY: olive gray; moderate plasticity; silty.
						42			SM		
						44					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

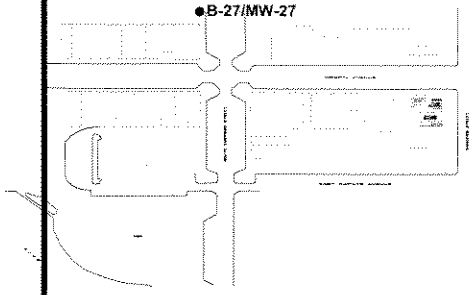
WELL/BORING: B-26/MW-26

INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 50'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 25 - 50' (0.010")
DRILLER: Cascade	SAND PACK: 23 - 50' (2X12)

CASING ELEVATION	1,119.52
SURVEY DATE:	03/06/2003
DTW:	

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: MATTHEW R. MILLER
Sand			WT	6	50-5"	46			SM		SILTY SAND: grayish brown; 20% fines; very fine sand; 10% fine to coarse sand; very dense; no hydrocarbon odor.
						48					
						50					@50'; encountered rock; no recovery.
						52					
						54					
						56					
						58					
						60					
						62					
						64					
						66					
						68					
						70					
						72					
						74					
						76					
						78					
						80					
						82					
						84					
						86					
						88					

WELL/BORING LOCATION MAP



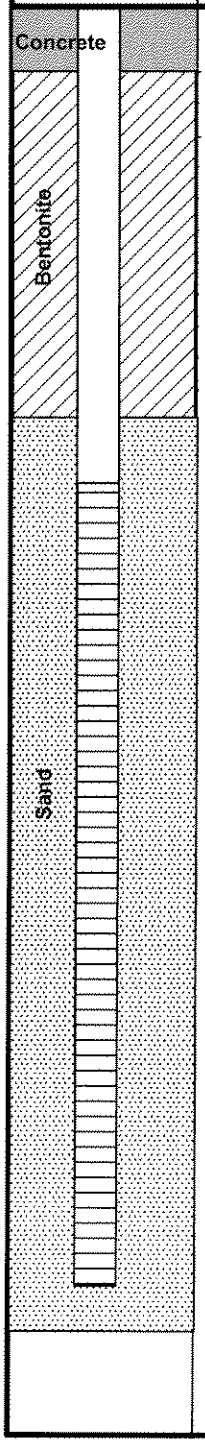
Delta Environmental Consultants, Inc.

WELL/BORING: B-27/MW-27

INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 15 - 40' (0.010")
DRILLER: Cascade	SAND PACK: 13 - 41.5' (2X12)

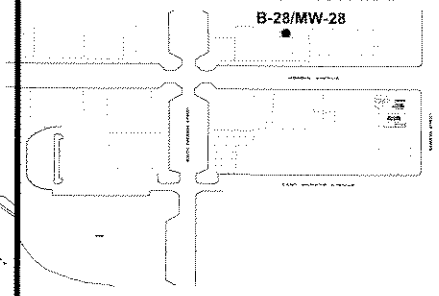
CASING ELEVATION	1,125.26
SURVEY DATE:	03/06/2003
DTW:	32.11

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER



FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
					0					Asphalt Surface
					2			SM		SILTY SAND: light olive brown; 30% fines; very fine sand; trace <5% fine to coarse sand; loose; no hydrocarbon odor.
		MST	0	3 4 4	4 6					
					8			SP		SAND: olive; trace fines; fine sand; 5% medium to coarse sand; trace gravel; very dense; no hydrocarbon odor.
		DR	2	50-5"	10 12					
		MST	461	7 4 3	14 16			ML		SILT: dark gray; moderate plasticity; trace fine sand; firm; hydrocarbon odor.
		MST	428	5 4 4	18 20					@20'; as above; low plasticity.
		WT	3	1 2 2	22 24 26			CL		CLAY: dark gray; moderate to high plasticity; soft; no hydrocarbon odor.
▽	▼	WT	1	2 2 2	28 30					@30'; as above; silty.
		WT	2	3 4 4	32 34 36					@35'; as above; firm.
		WT	2	2 2 2	38 40 42 44			CL		@40'; as above; soft.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-28/MW-28

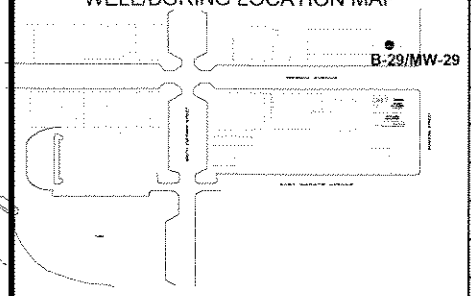
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 15 - 40' (0.010")
DRILLER: Cascade	SAND PACK: 13 - 41.5' (2X12)

CASING ELEVATION	1,124.65
SURVEY DATE:	03/06/2003
DTW:	30.45

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete						0					Asphalt Surface
						2			SM		SILTY SAND: dark olive brown; 20% fines; very fine to fine sand; 10% gravel.
						4					
Bentonite			DP	1	3 3 3	6			ML		@6'; SILT: olive brown; low plasticity; trace very fine to medium sand; firm; no hydrocarbon odor.
						8					
			DP	1.5	5 7 8	10			SM		SILTY SAND: olive brown; 5-10% fines; very fine sand; 10 % fine to medium sand; trace coarse sand; medium dense; no hydrocarbon odor.
						12					
						14					
			MST	6	2 2 2	16			ML		SILT: olive gray; low to moderate plasticity; soft; no hydrocarbon odor.
						18					
			WT	0	2 4 0	20					@20'; as above.
						22					
Sand						24					
			WT	1	3 4 5	26					@25'; as above; clayey; stiff.
						28					
	▽	▼	WT	2	2 3 3	30					@30'; as above; firm.
						32					
						34					
			WT	16	4 5 5	36					@35'; as above; stiff; no hydrocarbon odor.
						38					
			WT	52	4 4 5	40			CL		@40'; CLAY: olive; with some silt; stiff; high plasticity; no hydrocarbon odor.
						42					
						44					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-29/MW-29

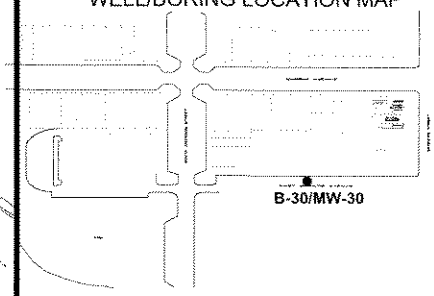
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 41.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 15 - 40' (0.010")
DRILLER: Cascade	SAND PACK: 13 - 41.5' (2X12)

CASING ELEVATION	1,124.74
SURVEY DATE:	03/06/2003
DTW:	28.40

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						0					Asphalt Surface
Bentonite			DR	0	4 5 5	2 4 6			SP		SAND: olive brown; trace fines; very fine sand; trace fine to coarse sand; loose; no hydrocarbon odor.
			DR	2	5 8 5	8 10 12					@10'; fine to coarse sand; medium dense.
			DP	16	15 16 16	14 16 18			ML		SILT: olive; low plasticity; trace to 20% very fine to fine sand; very stiff; no hydrocarbon odor.
Sand	▽		WT	2	5 6 6	20 22					@20'; olive gray; moderate plasticity; stiff; no hydrocarbon odor. clayey.
		▼	WT	10	2 3 3	24 26 28					@25'; as above; firm; no hydrocarbon odor.
			WT	7	2 3 3	30 32 34					@30'; as above; firm; no hydrocarbon odor.
			WT	9	4 5 5	36 38			ML		@35'; as above; stiff; no hydrocarbon odor.
			WT	4	2 3 3	40 42 44					@40'; as above; firm; no hydrocarbon odor.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-30/MW-30

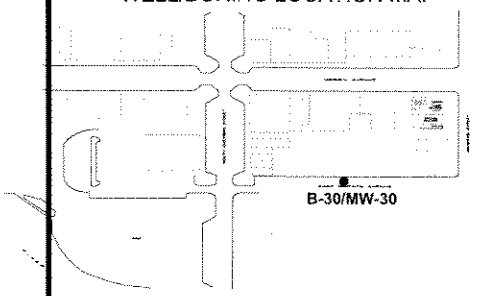
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 96.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 75 - 95' (0.010")
DRILLER: Cascade	SAND PACK: 73 - 96.5' (2X12)

CASING ELEVATION	1,121.66
SURVEY DATE:	03/06/2003
DTW:	84.33

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						0					Asphalt Surface
Bentonite						2					
						4			SM		SILTY SAND: olive brown; 20% fines; very fine to fine sand; 10% medium to coarse sand; medium dense; no hydrocarbon odor.
			DR	0	10 10 11	6					
						8					
			DR		10 11 12	10					
						12			ML		SILT: light olive brown; low plasticity; trace very fine to medium sand; very stiff; no hydrocarbon odor.
						14					
			DP		3 3 3	16					@15' ; olive; 20% very fine to coarse sand; firm; no hydrocarbon odor.
						18					
			MST	0	6 5 8	20					CLAY: olive gray; moderate plasticity; stiff; no hydrocarbon odor.
						22					
						24					
	▽		MST WT		2 2 2	26			CL		@25'; firm; hydrocarbon odor.
						28					
			WT	41	2 3 3	30					@30'; as above; hydrocarbon odor. collected duplicate sample 3603001
						32					
						34					
			WT	8	5 6 7	36			ML		
						38					SILT: olive gray; low plasticity; 10% very fine sand; stiff; no hydrocarbon odor.
			MST	0	6 8 9	40					
						42			SM		@40'; clayey; 2" thick interbedded sand lense.
						44					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-30/MW-30

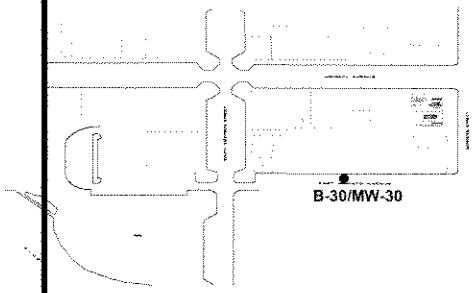
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 96.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 75 - 95' (0.010")
DRILLER: Cascade	SAND PACK: 73 - 96.5 (2X12)

CASING ELEVATION	1,121.66
SURVEY DATE:	03/06/2003
DTW:	84.33

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Bentonite			DP	1	50-6"	46					
						48			SM		SILTY SAND: olive gray; 30% fines; very fine sand; 5% fine to coarse sand; gravel; very dense; no hydrocarbon odor.
					50-5"	50					
						52					
						54					
			DP	0	50-5"	56					Minimal sample recovery @55'
						58					
			DP	5	50-6"	60					SILTY SAND: as above.
						62					SILTY SAND: olive gray; 10% fines; very fine to fine sand; 10% medium to fine sand; 10% medium to coarse sand; gravel; very dense; no hydrocarbon odor.
						64					
			DR		20 21 25	66					SILTY SAND: olive gray; 10% fines; very fine sand; trace fine to medium sand; hard; no hydrocarbon odor.
						68					
			DR	0	15 21 25	70					@70'; as above.
						72					
						74					
			DR	0	18 21 30	76					@75'; as above.
						78					
Sand			DP		21 40 50	80			SP		SAND: olive gray; trace <5% fines; very fine to fine sand; very hard; no hydrocarbon odor.
						82					
		▼				84					
	▽		WT		12 25 30	86					@85'; as above.
						88					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-30/MW-30

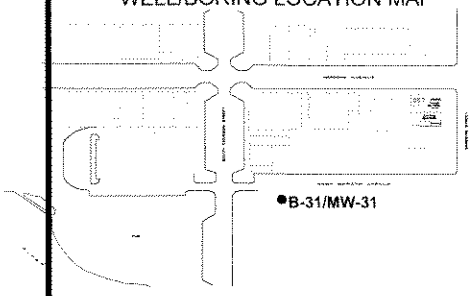
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 96.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 75 - 95' (0.010")
DRILLER: Cascade	SAND PACK: 73 - 96.5' (2X12)

CASING ELEVATION	1,121.66
SURVEY DATE:	03/06/2003
DTW:	84.33

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Sand			WT	0	18 28 35	90			SP		SAND: olive gray; trace to 5% fines; very fine to fine sand; gravel; very hard; no hydrocarbon odor.
						92					
						94			SP/ SM		SILTY SAND/SAND: olive gray; 30% fines; very fine to coarse sand; gravel; very dense; no hydrocarbon odor.
			WT	0	18 23 30-5"	96					
						98					
						100					

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-31/MW-31

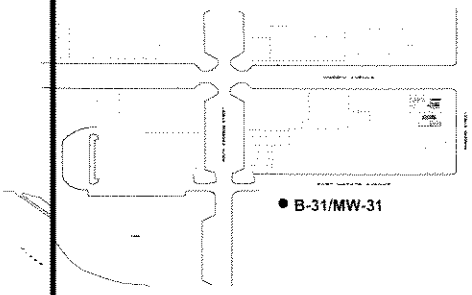
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 96.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 75 - 95' (0.010")
DRILLER: Cascade	SAND PACK: 73 - 96.5' (2X12)

CASING ELEVATION	1,120.27
SURVEY DATE:	03/07/2003
DTW:	83.10

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						0					Gravel Surface - Parking
Bentonite			DR		26 30 35	2 4 6			SM		GRAVELLY SAND: light olive brown; trace fines; very fine to fine sand; 10% medium to coarse sand; gravel; very dense; no hydrocarbon odor.
			DP		7 8 8	8 10 12			ML		SILT: olive; low plasticity; stiff; no hydrocarbon odor.
			DP		2 3 4	14 16 18			CL		CLAY: olive; moderate plasticity; firm; trace organics; silty; no hydrocarbon odor.
			DP		32- 50	20 22 24			SM		SILTY SAND: olive; 40% fines; very fine sand; 10% fine to medium sand; 10% gravel; very dense; no hydrocarbon odor.
			DR		50-6"	26 28					@25'; minimal sample recovery; rock; as above.
			DR		50-5"	30 32 34					@30; as above; very dense.
			DR		60-5"	36 38			ML		@35; SILT: olive; low plasticity; 20% very fine to coarse sand; gravel; very hard; no hydrocarbon odor.
			DR		50-6"	40 42 44			SP		@40'; <10% very fine to fine sand; 5% medium to coarse sand; very dense; no hydrocarbon odor; collected duplicate sample 3703001.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-31/MW-31

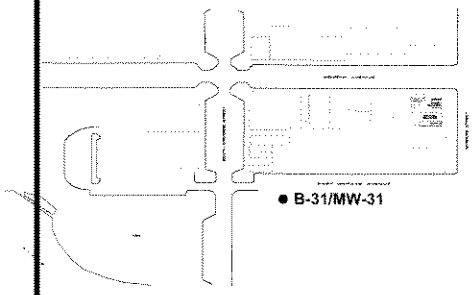
INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 96.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 75 - 95' (0.010")
DRILLER: Cascade	SAND PACK: 73 - 96.5 (2X12)

CASING ELEVATION	1,120.27
SURVEY DATE:	03/07/2003
DTW:	83.10

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Bentonite			DR		30 32 35	46			SP		SAND: light olive gray; trace fines; very fine sand; very dense; no hydrocarbon odor.
			DR		30 35 38	50					@50'; as above; minimal sample recovery.
					50-0"	56					No recovery @55'; rocks.
			DR		35- 50-6"	60					@60'; as above; gravel.
			DR		50-6"	66					@65'; as above.
			DR		42 50-6"	70			SM		SILTY SAND: olive gray; 10% fines; very fine sand; trace fine to coarse sand; gravel; very dense; no hydrocarbon odor.
Sand			DP		44 50-6"	76					@75'; as above; collected.
		▼	MST		46- 50-6"	80					@80'; as above; collected duplicate sample 3703002.
	▽		MST		35- 50-6"	86					@85'; as above; collected duplicate sample 3703003.

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: B-31/MW-31

INSTALLATION DATE: 03/03/2003	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 96590	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 9-6590	BORING DIAMETER: 8"
LOCATION: 232 West Woodin Ave	BORING DEPTH: 96.5'
CITY: Chelan	WELL CASING: SCH 40 PVC 2"
STATE: WA	WELL SCREEN: 75 - 95' (0.010")
DRILLER: Cascade	SAND PACK: 73 - 96.5' (2X12)

CASING ELEVATION	1,120.27
SURVEY DATE:	03/07/2003
DTW:	83.10

DESCRIPTION/LOGGED BY: MATTHEW R. MILLER

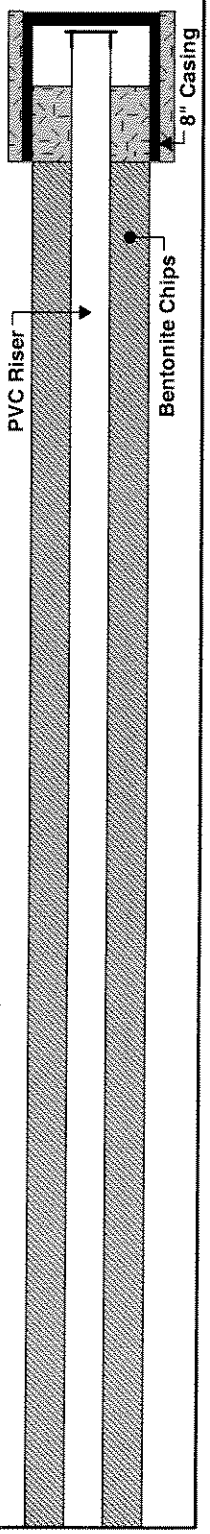
WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Sand	▽	▼	WT		38 50-6"	90			SM		SILTY SAND: olive gray; 10% fines; very fine to fine sand; very dense; no hydrocarbon odor.
						92					
						94			SP		SAND: olive gray; trace to 5% fines; fine to medium sand; 5-10% coarse sand; very dense; no hydrocarbon odor.
						96					
						98					
						100					

BORING/MONITORING WELL LOG: B-32/MW-32

An Employee-Owned Company

SITE No: 9-6590	DRILLER: Cascade	WELL SCREEN: 2" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 32.5'-42.5'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 2" Sch. 40 PVC
DATE: Drilled on 6-24-03	HOLE DIAMETER/DEPTH: 8"/44'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: 1121.30'

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			Ground Surface
			1			Asphalt pavement. (Airknife to 8 ft.) Concrete debris, Silt, and Gravel.
			2			
			3			Silt with some gravel.
			4			
			5			
			6			
			7			
			8			
			9			
		26	10			**Sandy GRAVEL (GW)**
Dry	0	21	11			Sandy Gravel, gravel is up to 1 inch. Loose, no odor. Pale-olive color.
		15	12			
			13			
			14			
		10	15			**SILT (ML)**
Dry	0	10	16			Silt and 15% Clay or clayey silt, interbedded. No odor, laminated. Olive color, variegated (variable weathering).
		8	17			
			18			
			19			
			20			

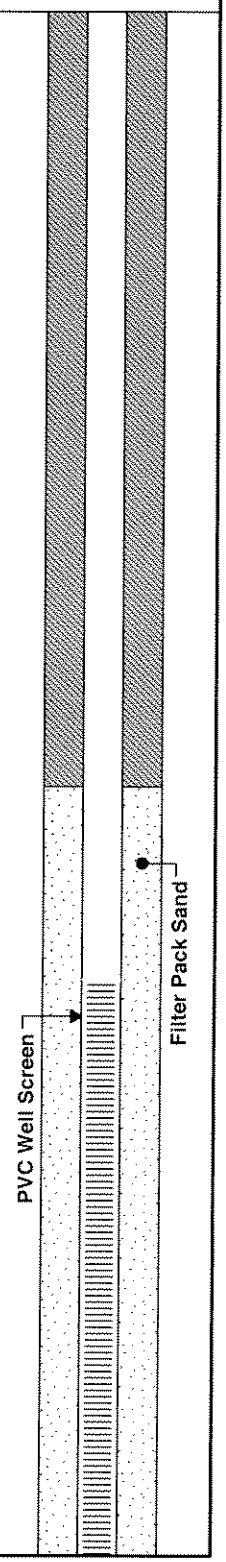


BORING/MONITORING WELL LOG: B-32/MW-32

SLR
An Employee-Owned Company

SITE No: 9-6590	DRILLER: Cascade	WELL SCREEN: 2" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 32.5'-42.5'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 2" Sch. 40 PVC
DATE: Drilled on 6-24-03	HOLE DIAMETER/DEPTH: 8"/44'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: 1121.30'

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	DESCRIPTION
Moist	0	4 4 7	20–21	**SILT (ML)** Same as above. No odor. Olive-gray color.
Moist to very moist	21	6 7 12	25–26	**SILT (ML)** Similar to above, but more clayey. No odor. Olive color.
Moist to very moist	1750	4 4 8	28	**Clayey SILT (ML/CL)** Similar to above, with 30% clay-rich material. Firm, moderate Hydrocarbon odor. Olive color.
Moist to very moist	15	5 6 10	30–31	**SILT (ML)** Similar to above, with 25% clay-rich layers, mostly in lower half. Locally wet; no noticeble odor.
Very moist to wet	18	6 10 11	33	**SILT (ML)** Silt with about 20% clay-rich material (evenly distributed). Weak odor in middle to lower part, mostly no odor. Olive color.
Very moist	476	4 4 6	35–36	**SILT (ML)** Silt with about 15% clay, some very fine sand near top. Weak odor in middle area of core. Olive color.
Wet to Sat.	47	9 5 8	38–39	**SILT (ML)** Silt with some clay-rich layers in upper half. Firm to stiff, no odor or very weak local odor.



BORING/MONITORING WELL LOG: B-32/MW-32

SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 6-24-03
LOGGED BY: Tom Dube'

DRILLER: Cascade
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split Spoon
HOLE DIAMETER/DEPTH: 8"/44'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 2" 0.010" Slots
SCREEN INTERVAL: 32.5'-42.5'
WELL CASING: 2" Sch. 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: 1121.30'

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION	WELL COMPLETION DETAILS
Saturated	2.2	6 6 7	40 41			**SILT (ML)** Silt with 10% clay-rich layers (at bottom and near top). No odor, very wet in middle. Olive color.	
			42				
Moist to Wet	0	5 5 10	43 44			**CLAY (CL)** Clay with 35% silt. Firm, no odor. Olive color.	
			45 46 47 48 49 50 51 52 53 54 55 56 57 58 59				

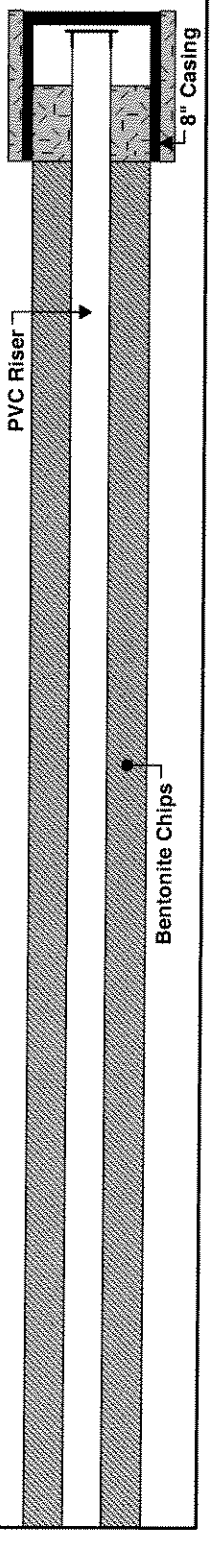
BORING/MONITORING WELL LOG: B-33/MW-33

SHAW
An Employee-Owned Company

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 2" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 23.5'-33'.5
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 2" SCH 40 PVC
DATE: Drilled on 6-25-03	HOLE DIAMETER/DEPTH: 8"/39'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: 1122.22'

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			**Ground Surface**
			1			Asphalt pavement. Airknife to 8 ft.
			2			Silt, gravel, and sand.
			3			Cobbles in lower airknife hole
			4			
			5			
			6			
			7			
			8			**Gravelly Drilling**
			9			
		30	10			**Sandy GRAVEL (GW)**
Dry		50	11			Sandy GRAVEL with some silt. Gravel up to 6 inches. No odor.
			12			-In the first boring, encountered a large cobble; refusal at 12 ft. The new borehole was moved several feet west.
			13			
			14			
		14	15			**SILT (ML)**
Dry	40	15				Upper foot is dark brown SILT with 10% clay.
		10	16			**Silty CLAY (CL/ML)**
			17			Lower 1/2 foot is silty Clay, laminated. Stiff, no odor. Olive color.
			18			
			19			
			20			

WELL COMPLETION DETAILS

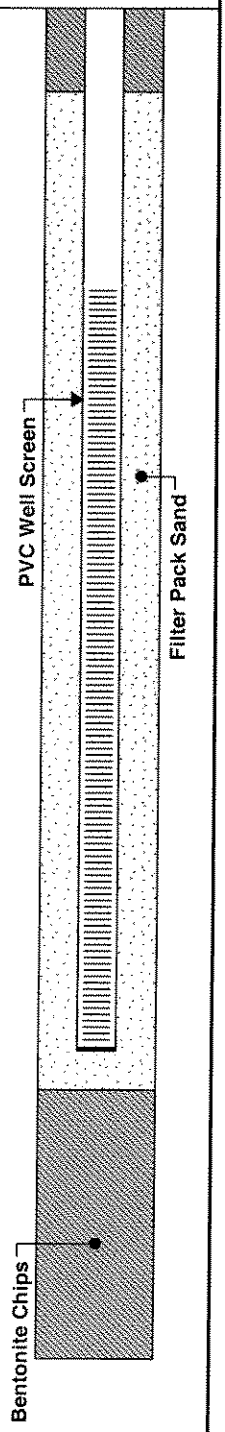


BORING/MONITORING WELL LOG: B-33/MW-33

SHE
An Employee-Owned Company

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 2" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 23.5'-33'.5
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 2" SCH 40 PVC
DATE: Drilled on 6-25-03	HOLE DIAMETER/DEPTH: 8"/39'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: 1122.22'

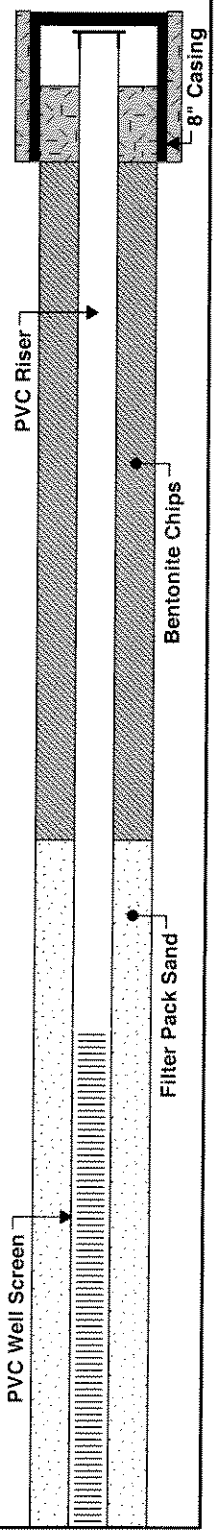
MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	DESCRIPTION
Moist	36	6 7 8	20 21	**Silty CLAY (CL/ML)** Silty Clay (45% silt). A couple wet layers. Firm, no odor. Olive-gray color.
			22	
Moist to wet	38	8 7 9	23 24	**SILT (ML)** Silt with clay (10%-15%). Firm to stiff, no odor. Olive-gray color.
Moist to wet	1470	5 5 9	25 26	**Clayey SILT (ML/CL)** Silt in upper half, grading down to clayey silt in lower half. Firm, strong HC odor in lower half. Olive-gray color.
			27	
Very moist to wet	425	10 10 10	28 29	**SILT (ML)** Silt with some clay (25%). Firm, fairly strong HC odor throughout. Most of the core is wet. Olive-gray color.
Very moist to wet	170	6 6 7	30 31	**SILT (ML)** Similar to above, less clay (15%), the silt is wet to saturated and clay appears moist. Moderate HC odor in lower half and at the top. Olive-gray color.
			32	
Wet	153	5 6 7	33 34	**SILT (ML)** Silt, with clay layers interbedded (15%) and clay-rich layers in lower 1/2 foot (overall approximately 25% clay). Stiff to firm, moderate HC odor throughout.
Wet to Sat.	153	6 9 10	35 36	**SILT (ML)** Silt with some clay (20-25% overall) Clay-rich in upper and lower parts. HC odor throughout. Olive-gray color.
			37	
Moist to Wet	281	4 4 5	38 39	**Clayey SILT (ML/CL)** Silt with some clay, interbedded, mainly in upper half (>50% clay). HC odor throughout. Overall clay content is approximately 30%.



BORING/MONITORING WELL LOG: B-34/MW-34

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 2" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 13.5'-28.5'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 2" SCH 40 PVC
DATE: Drilled on 6-25-03	HOLE DIAMETER/DEPTH: 8"/36.5'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: 1120.77'

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			Ground Surface
			1			Asphalt pavement. Airknife to 7.5 ft. Silt, gravel, and sand.
			2			
			3			
			4			
			5			
			6			
			7			
			8			Gravelly Drilling
			9			
			10			
Dry	36	15 50	11			**Gravelly SAND (SW)** Gravelly SAND, medium- to coarse-grained. No odor. Light olive-brown color.
			12			
			13			
			14			
			15			
Very Moist to Wet	36	8 12 12	16			**SILT (ML)** Silt with minor clay (10%). Firm to stiff, no odor. Olive-gray color.
			17			
			18			
			19			
			20			



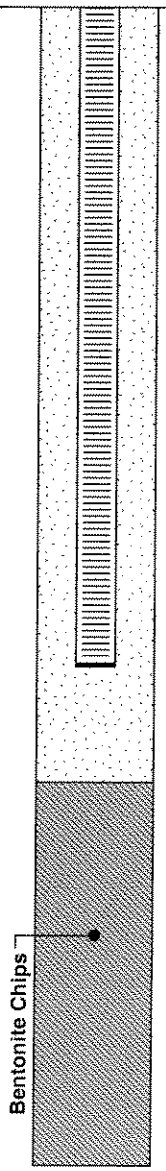
WELL COMPLETION DETAILS

BORING/MONITORING WELL LOG: B-34/MW-34

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 2" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 13.5'-28.5'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 2" SCH 40 PVC
DATE: Drilled on 6-25-03	HOLE DIAMETER/DEPTH: 8"/36.5'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: 1120.77'

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	DESCRIPTION
Wet	35	3 5 6	20–21	**SILT (ML)** Silt with some clay (15-20%). Firm, no odor. Olive-gray color.
Wet	42	3 4 7	22–23	**SILT (ML)** Silt with 15% clay. Firm, strong HC odor mainly in lower part. Olive-gray color.
Very Moist	210	3 5 8	24–26	**SILT (ML)** Silt with 15% clay. Firm, strong odor, not as strong as above. Olive-gray color. (Duplicate sample B-062503-D)
Wet to Moist	79	2 2 7	27–28	**SILT (ML)** Silt with some clay (20%-25%). Firm, moderate odor in bottom and top. Olive-gray color.
Wet	49	9 9 9	29–31	**SILT (ML)** Silt with minor clay (5-10%). Firm, weak HC odor. Olive-gray color.
Moist to Damp	98	3 3 5	32–33	**Silty CLAY (CL/ML)** Silty CLAY, about 40% silt. Firm to stiff, slight moderate odor. Olive-gray color.
Damp to Moist	150	3 5 8	34–36	**SILT and CLAY (ML/CL)** Silt and clay, about equal amounts. Firm, slight to moderate HC odor. Olive-gray color.
			37–39	

WELL COMPLETION DETAILS



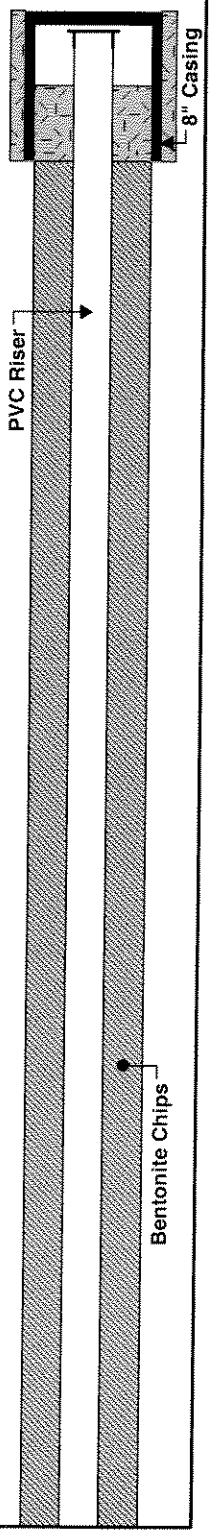
BORING/MONITORING WELL LOG: B-35/MW-35

An Employee-Owned Company

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 2" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 27.5'-37.5'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 2" SCH 40 PVC
DATE: Drilled on 6-26-03	HOLE DIAMETER/DEPTH: 8"/39'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: 1119.70'

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			Ground Surface
			1			Asphalt pavement. Airknife to 8 ft. Silt, gravel, and sand.
			2			
			3			
			4			
			5			
			6			
			7			
			8			Gravelly Drilling to 9.5'.
			9			
			10			**SILT (ML)** Silt with little very fine sand (15-20%) and trace clay (3-5%), interbedded. Firm to stiff, no odor.
Dry	~25	7 9 8	11			
			12			
			13			
			14			
			15			
Dry	0	4 7 10	16			**SILT (ML)** Silt with some clay (12-15%). Firm to stiff, no odor.
			17			
			18			
			19			
			20			

WELL COMPLETION DETAILS



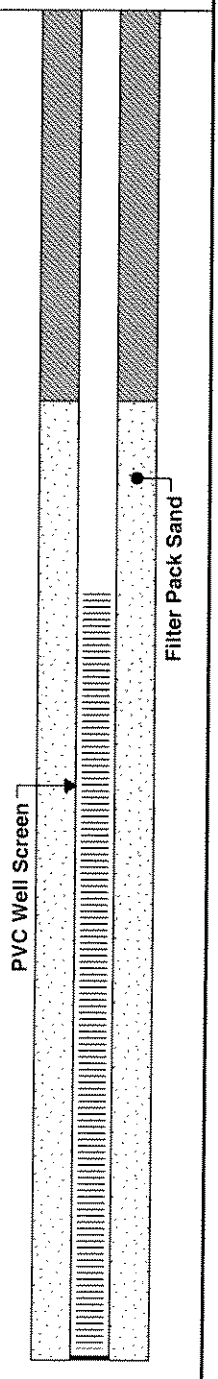
BORING/MONITORING WELL LOG: B-35/MW-35

An Employee-Owned Company

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 2" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 27.5'-37.5'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 2" SCH 40 PVC
DATE: Drilled on 6-26-03	HOLE DIAMETER/DEPTH: 8"/39'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: 1119.70'

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	DESCRIPTION
Dry	0	3, 7, 8	20–21	**SILT (ML)**
			22–23	
			24–25	
Damp to Moist	4	3, 5, 7	25–26	**CLAY (CL)** Clay w
			27	
Wet to Moist	9	2, 4, 5	28	**SILT and CLAY (ML-CL)** Silt and Clay (about equal). Firm, weak spotty HC odor. Olive-gray silt and pale yellow clay.
			29	
Moist to Wet	535	4, 6, 8	30–31	**SILT and CLAY (ML-CL)** Same as above. Moderate HC odor. Olive-gray color.
			32	
Very Moist to Wet	29	4, 5, 8	33	**SILT (ML)** Silt with some clay (clay 30%). Firm, moderately strong odor. Olive-gray silt and pale-yellow to pale-olive clay.
			34	
Very Moist to Sat.	30	4, 6, 10	35–36	**SILT (ML)** Silt with some clay (clay in upper and lower parts). Firm to stiff, weak HC odor. Saturated in middle silty part, very moist elsewhere. Olive-gray color,
			37	
Very Moist to Wet	15	5, 7, 11	38	**Clayey SILT (ML/CL)** Clayey SILT (40%) with clay in upper and middle part of the core. Less wet than above. Firm, weak HC odor. Olive color.
			39	

WELL COMPLETION DETAILS

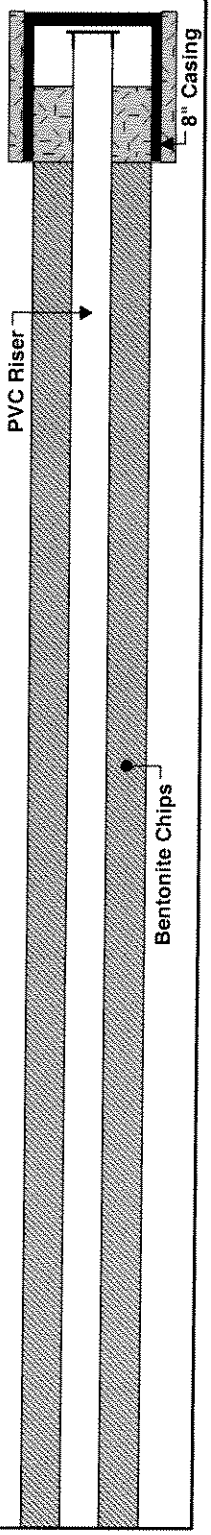


BORING/MONITORING WELL LOG: B-36/B-36

An Employee Owned Company

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 2" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 24.5-49.5'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 2" SCH 40 PVC
DATE: Drilled on 6-26-03	HOLE DIAMETER/DEPTH: 8"/51.5'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: 1121.46

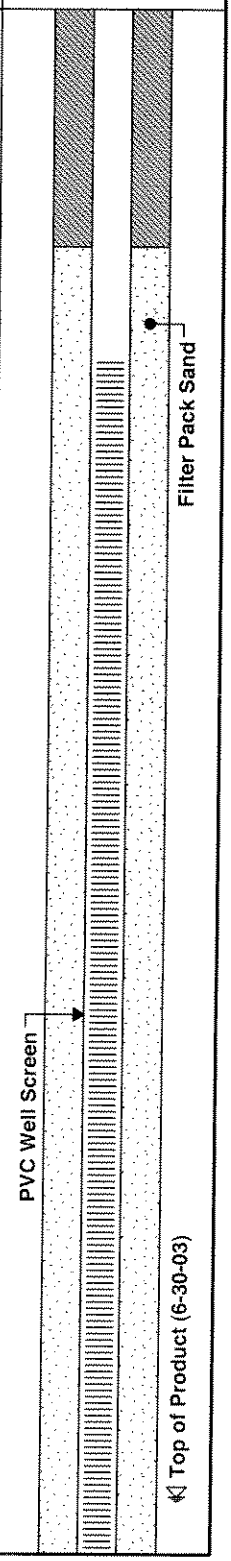
MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			**Ground Surface**
			1			Asphalt pavement. Airknife to 6 feet. Silt, gravel, and sand.
			2			
			3			
			4			
			5			
			6			**Rocky gravelly drilling**
			7			
			8			
			9			
			10			
Dry	21	10 17 30	11			**SAND (SP)** Fine to medium SAND, minor gravel (7%). Loose, no odor. Light olive-brown color.
			12			
			13			
			14			
			15			
Damp	25	7 10 15	16			**Clayey SILT (ML/CL)** Clayey silt with approximately 40% clay, interbedded, firm to stiff, weak to moderate HC odor. Greenish olive-gray color.
			17			
			18			
Moist	120	5 9 11	19			**SILT (ML)** Silt with some clay (20%). Firm, HC odor through much of core. Olive-gray color.
			20			



BORING/MONITORING WELL LOG: B-36/B-36

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 2" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 24.5-49.5'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 2" SCH 40 PVC
DATE: Drilled on 6-26-03	HOLE DIAMETER/DEPTH: 8"/51.5'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: 1121.46

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	DESCRIPTION
Moist to Wet	29	7, 7, 7	20–21	**SILT (ML)** Same as above, less clay (15%). Some of the silt is saturated. No odor or very weak odor. Olive-gray color.
Very moist	61	3, 5, 7	22–24	**Clayey SILT (ML/CL)** Clayey Silt (35%-40% clay-rich material). Interbedded, firm, weak odor but stronger in lower half. Olive-gray color.
Very moist to Wet	24	3, 4, 5	25–27	**SILT (ML)** Fine silt with minor clay (5%). More clay in lower 1/2 foot. Firm, very weak odor, mainly at base. Olive-gray color.
Wet to Saturated	62	3, 6, 7	28–29	**SILT (ML)** Same as above, fine silt, but to 10% clay, wet-saturated, especially lower foot. Moderate HC odor in bottom few inches. Olive-gray color.
Damp to moist	137	6, 6, 7	30–32	**SILT (ML)** Same as above. Fine silt, stiff to hard; clay is firm. Moderate to weak HC odor in middle and base. Olive-gray color.
Very moist	39	4, 4, 7	33–34	**SILT (ML)** Similar to above, with 10% clay, silt is fine. Firm, weak to moderate odor in lower 1/2 foot.
Very moist to Wet	68	4, 5, 10	35–37	**SILT (ML)** Similar to above, 5% clay, locally saturated. Firm, very strong HC odor.
Moist to Wet	82	4, 5, 10	38–39	**SILT (ML)** Fine silt with some clay (20%). Firm, with silt, medium plasticity. Weak odor scattered. Olive-gray, clay is lighter in color.



BORING/MONITORING WELL LOG: B-36/B-36

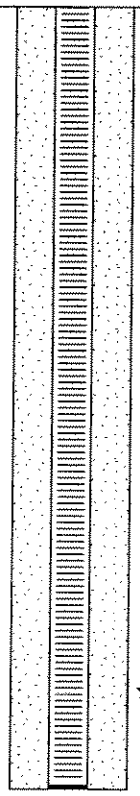
SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 6-26-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split Spoon
HOLE DIAMETER/DEPTH: 8"/51.5'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 2" 0.010" Slots
SCREEN INTERVAL: 24.5-49.5'
WELL CASING: 2" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: 1121.46

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	DESCRIPTION
Mostly Wet	64	6 7 8	40–41	**SILT (ML)** Fine silt with some clay (15%), firm, locally stiff, medium strong odor in lower 1/2 foot. Olive-gray, clay is lighter in color.
			42	
Moist to Wet	114	x x x	43–44	**SILT (ML)** Fine to coarse silt (coarse at base, almost to very fine sand), with minor clay (5%). Moderate odor in lower foot. Olive-gray, clay is lighter in color.
			45	
Wet to Saturated	250	6 9 10	46	**SILT (ML)** Fine to coarse silt, with minor clay (5%), silt coarser downward. Moderate to weak odor in lower foot. Olive-gray, clay is lighter in color.
			47	
Wet to Saturated	32	6 11 11	48–49	**SILT (ML)** Silt, medium-coarse, minor clay (5%), wet to saturated. Firm to stiff, moderately strong HC odor. Olive-gray, clay is lighter in color.
			50	
Wet to Saturated	156	6 9 12	51	**SILT (ML)** Silt, minor clay (5%), silt is med-coarse. Moderate HC odor. Olive-gray, clay is lighter in color.
			52–53	-Several feet of water standing in hole. -During removal of the lower 20 feet of auger flights, red gasoline product accumulates on the soil on the augers.
			54–59	

WELL COMPLETION DETAILS



BORING/MONITORING WELL LOG: B-37/MW-37

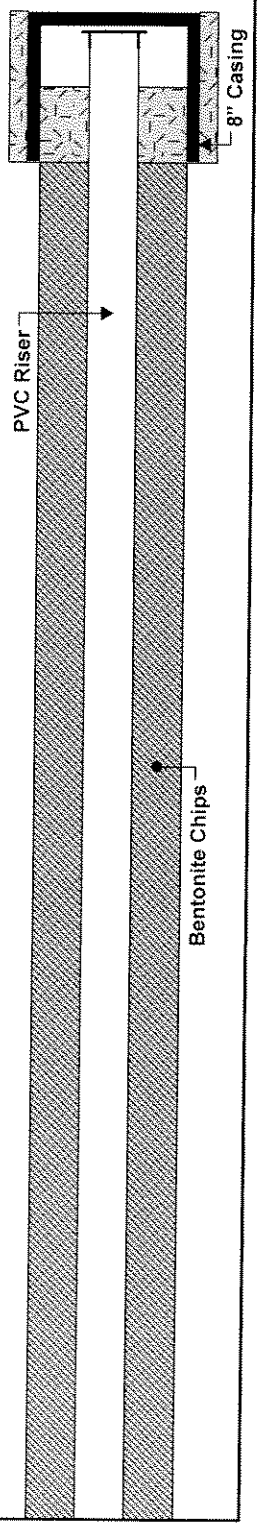
SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 5-10-04
LOGGED BY: Gabriel Cisneros

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split-Spoon
HOLE DIAMETER: 8"
HOLE DEPTH: 96'

WELL DIAMETER: 2"
SCREEN INTERVAL: 73.25-93.25'
WELL CASING: 2" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: 1122.24'

MOISTURE	PID (ppm)	BLOWS / 6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			Ground Surface
			1			Asphalt 3" Airknifed to 8.5 ft. Olive-brown, fine to medium SAND, no gravel, little silt (FILL).
			2			
			3			
			4			
			5			**Silty, Gravelly SAND (SM)** Brown, dense, silty, gravelly SAND.
			6			
			7			
			8			
			9			
Dry	0	20 50	10			**Gravelly SAND (SW)** Brown, dense to very dense, well-graded, gravelly, medium to coarse SAND with 20% gravel; no odor; no sheen.
			11			
			12			
			13			
			14			
Dry to Moist	0	23 50	15			**Gravelly SAND (SW)** Same as above; 20% gravel; no silt; no odor; no sheen.
			16			
			17			
			18			
			19			

WELL COMPLETION DETAILS



BORING/MONITORING WELL LOG: B-37/MW-37

SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 5-10-04
LOGGED BY: Gabriel Cisneros

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split-Spoon
HOLE DIAMETER: 8"
HOLE DEPTH: 96'

WELL DIAMETER: 2"
SCREEN INTERVAL: 73.25-93.25'
WELL CASING: 2" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: 1122.24'

MOISTURE	PID (ppm)	BLOWS / 6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
Moist to Wet	0.3	6 6 9	20–23			**Silty CLAY (CL/ML)** Olive gray-brown, stiff to medium stiff, silty CLAY with 15% silt; no sand; no gravel; 3-inch pure clay layers at 21'3"; no odor; no sheen.
Wet	336	5 4 4	25–26			**Clayey SILT (ML/CL)** Olive gray, medium stiff, clayey SILT with 15% clay and a 3-inch clay layer at 26'; no odor; no sheen.
Wet	368	5 6 12	30–31			**Clayey SILT (ML/CL)** Same as above, stiff; 3-inch clay layer at 30.5' and a 4-inch clay layer at 31.2'; no odor; no sheen.
Wet	358	4 4 6	35–36			**Clayey SILT (ML/CL)** Same as above, stiff; 2-inch clay layer at 35.5'; no odor; no sheen.

WELL COMPLETION DETAILS

BORING/MONITORING WELL LOG: B-37/MW-37

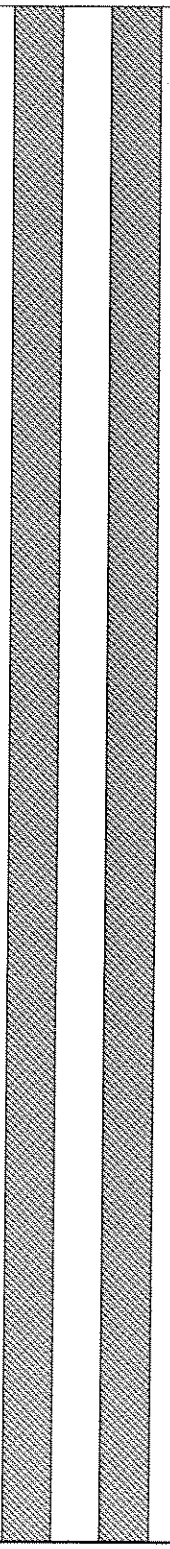
SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 5-10-04
LOGGED BY: Gabriel Cisneros

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split-Spoon
HOLE DIAMETER: 8"
HOLE DEPTH: 96'

WELL DIAMETER: 2"
SCREEN INTERVAL: 73.25-93.25'
WELL CASING: 2" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: 1122.24'

MOISTURE	PID (ppm)	BLOWS / 6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
Wet to Moist	11.3	12 19 21	40–42			**SILT (ML)** Similar to above, olive brown to olive gray, stiff, medium to coarse silt with 10% clay; no odor; no sheen.
Wet	2.1	8 9 16	45–47			**SILT (ML)** Same as above; less clay (5-10%); a thin 1-inch clay layer at 45.2'; no odor; no sheen. No standing water in borehole within silt unit.
Dry	351	60	50–51			**SILT (ML)** Same as above; no odor; no sheen **Gravelly SAND (SW)** Gray, very dense, gravelly, medium to coarse SAND; no silt; no odor; no sheen. Till?
Dry	6.3	55	55–59			**Gravelly Silty SAND (SM)** Gray, very dense, well-graded, gravelly, fine to coarse SAND with 20% gravel up to 10 cm in diameter and 15% silt; no odor; no sheen. Glacial Till.

WELL COMPLETION DETAILS



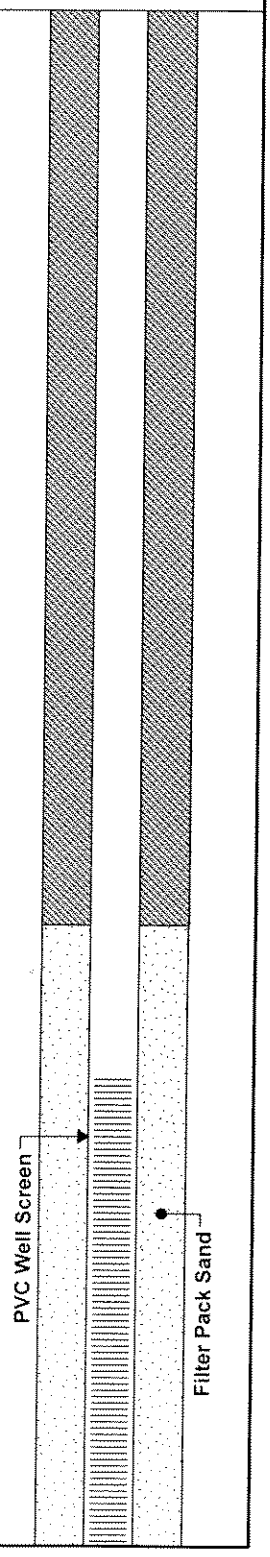
BORING/MONITORING WELL LOG: B-37/MW-37

SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 5-10-04
LOGGED BY: Gabriel Cisneros

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split-Spoon
HOLE DIAMETER: 8"
HOLE DEPTH: 96'

WELL DIAMETER: 2"
SCREEN INTERVAL: 73.25-93.25'
WELL CASING: 2" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: 1122.24'

MOISTURE	PID (ppm)	BLOWS / 6"	DEPTH	SAMPLE INTERVAL	DESCRIPTION
Dry	5.9	50	60–63		**Gravelly Silty SAND (SM)** Same as above; except fine to medium SAND with 10-15% silt and 20% gravel; no odor; no sheen. Glacial Till.
Dry	7.3	65	65–70		**Gravelly SAND (SW)** Olive-gray to brown, very dense, gravelly, fine to coarse SAND with <5% silt and 20% gravel; no odor; no sheen. Glacial Outwash
Dry	5.9	50	70–73		**Gravelly SAND (SW)** Gray-brown, very dense, gravelly, medium to coarse SAND; no silt; no odor; no sheen. Glacial Outwash
Moist	6.3	65	75–79		**Gravelly, Silty SAND (SM)** Olive-gray, very dense, gravelly, silty, fine to coarse SAND with 10% gravel and 20-25% silt; no odor; no sheen. Glacial Till.



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BORING/MONITORING WELL LOG: B-37/MW-37

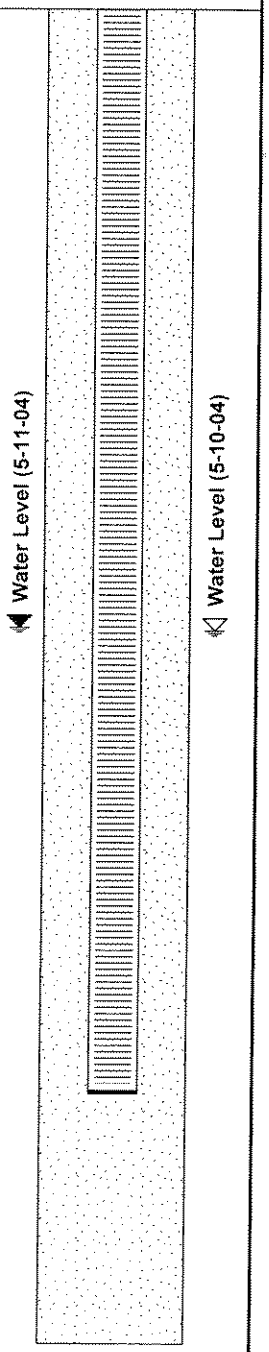
SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 5-10-04
LOGGED BY: Gabriel Cisneros

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split-Spoon
HOLE DIAMETER: 8"
HOLE DEPTH: 96'

WELL DIAMETER: 2"
SCREEN INTERVAL: 73.25-93.25'
WELL CASING: 2" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: 1122.24'

MOISTURE	PID (ppm)	BLOWS / 6"	DEPTH	SAMPLE INTERVAL	DESCRIPTION
Dry	4.9	75	80		**Gravelly SAND (SM)** Same as above; less silt, 10-15%; no odor; no sheen. Glacial Till.
			81		
			82		
			83		
			84		
Moist to Wet	0	23 50	85		**SAND (SP)** Olive-brown to gray, very dense, medium-grained SAND with 5-10% gravel and <5% silt; no odor; no sheen.
			86		
			87		
			88		
			89		
Wet to Saturated	1.7	21 50	90		**SAND (SP)** Gray, very dense, medium to fine SAND, no gravel or silt; 90% medium-grained and 10% fine-grained sand; no odor; no sheen. Bottom 3-inches contains approximately 15% silt.
			91		
			92		
			93		
			94		
Saturated to Wet	2.4	30 50	95		**SAND (SP)** Gray, very dense, fine to medium SAND with <5% gravel and no silt; bottom 6-inches contains approximately 10% silt; no odor; no sheen.
			96		
			97		
			98		
			99		

WELL COMPLETION DETAILS



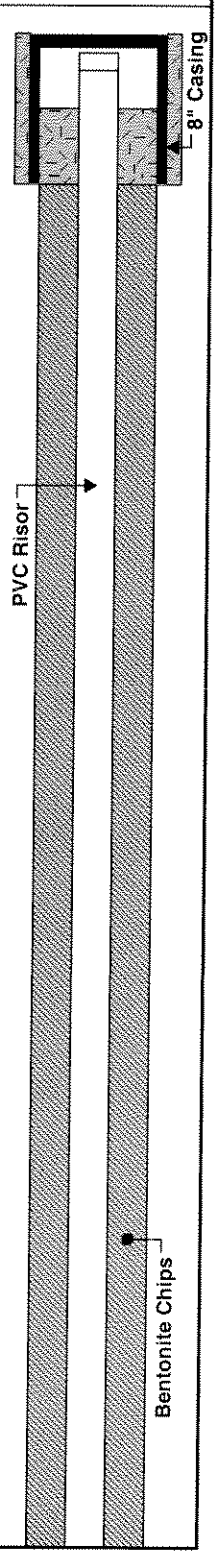
VAPOR BORING/WELL: VB-1A/VW-1A

SHEET 1 of 2

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 0.75" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 25'-27.5'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 0.75" SCH 40 PVC
DATE: Drilled 6-24-03	HOLE DIAMETER/DEPTH: 8"/34'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			Ground Surface
			1			Asphalt pavement. Airknife to 6' Silt with Sand and Gravel to 5'.
			2			
			3			
			4			
			5			Coarse cobbles up to 10"
			6			
			7			
			8			
			9			**Silty, Gravelly SAND (SM)**
Dry	0	26 50	10			Silty, gravelly fine SAND. Loose, no HC odor. Grayish brown color.
			11			
			12			
		14	13			**SILT (ML)**
Moist	0	5 6				Silt, with some clay-rich layers. Firm, no odor. Dark, grayish-brown color.
			14			
			15			
		5				**SILT (ML)**
Moist	0	6 10	16			Same as above, less clay. No odor. Olive-gray color.
			17			
		5	18			**SILT (ML)**
Moist	0	5 8				Same as above. Olive-gray color.
			19			
			20			

WELL COMPLETION DETAILS



VAPOR BORING/WELL: VB-1A/VW-1A

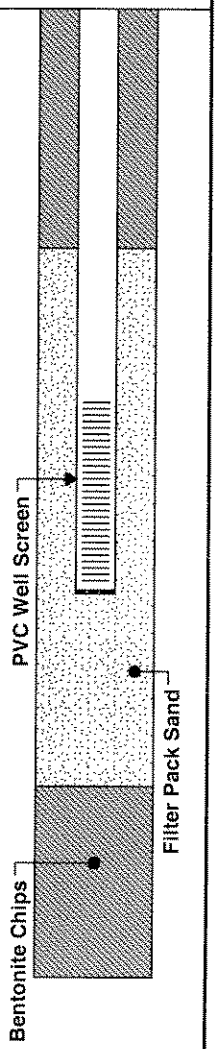
SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled 6-24-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split Spoon
HOLE DIAMETER/DEPTH: 8"/34'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 25'-27.5'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
Very Moist	0	7 7 14	20–22			**SILT (ML)** Same as above (Silt with clay, 5%). Laminated, no odor.
Wet	0	5 4 7	23–24			**SILT (ML)** Same as above (Silt with minor clay). Firm to stiff, no odor.
Very Moist to Wet	0	2 3 5	25–27			**SILT (ML)** Silt, no evident clay nor sand. Firm to stiff, no odor.
Very Moist to Wet	0	3 3 5	28–29			**SILT (ML)** Same as above, but with 7-8% clay estimated.
Very Moist	0	6 7 9	30–32			**SILT (ML)** Same as above with 5% clay. Stiff, no odor. Olive-gray color.
Very Moist to Moist	30	3 4 7	33–34			**Clayey SILT (ML/CL)** Clayey Silt. Estimated 40% clay. Firm, weak to moderate HC odor. Olive-gray color.

WELL COMPLETION DETAILS



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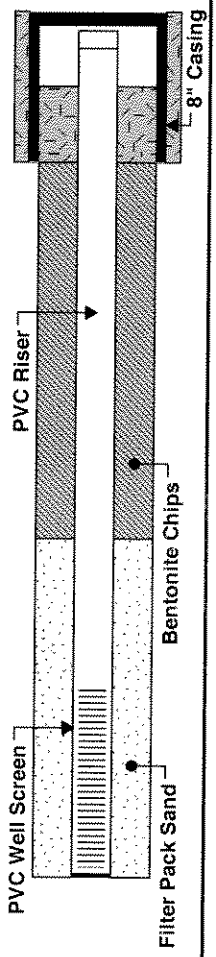
VAPOR BORING/WELL: VB-1B/VW-1B

SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 6-24-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: Split-Spoon
HOLE DIAMETER/DEPTH: 8"/11.5'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 9'-11.5'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION	WELL COMPLETION DETAILS
			0			Ground Surface	
						No Samples Collected Airknife to 6' See log VB-1A/VW-1A for stratigraphy.	
			1				
			2				
			3				
			4				
			5				
			6				
			7				
			8				
			9				
			10				
			11				
			12				
			13				
			14				
			15				
			16				
			17				
			18				
			19				
			20				



VAPOR BORING/WELL: VB-2/VW-2

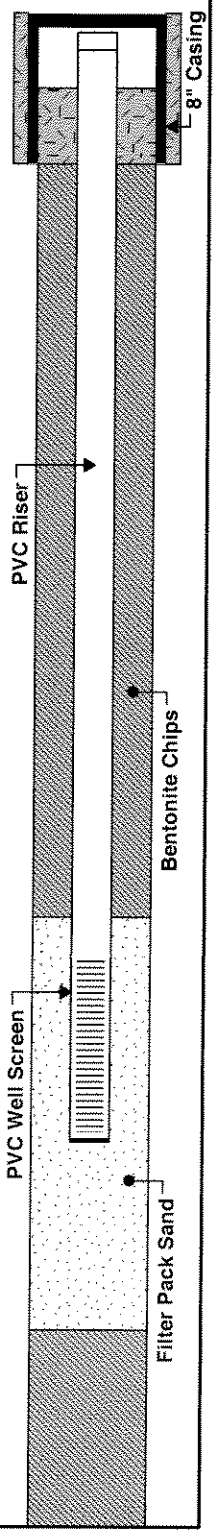
SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 6-24-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: Split-Spoon
HOLE DIAMETER/DEPTH: 8"/24'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 12.5'-15'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			Ground Surface
			0–5			Asphalt pavement. Airknife to 8.5 ft. Silt with some gravel to 5 ft.
			5–10			**Gravel and Cobbles** **Natural Pea Gravel** **Gravelly Drilling**
Dry	0	28 50	10–11			**GRAVEL and SAND (GW-SW)** Gravel and Sand. Gravel up to 3". No odor. Olive-brown color.
Dry to Moist	0	12 20 28	12–14			**SILT (ML)** Silt with interbeds (15%) of sand and fine gravel (at base) with oxidized orange-brown silt, gravel, and plant debris. Stiff, no odor.
Damp	0	7 11 11	15–17			**Clayey SILT (ML/CL)** Silt with 40% clay, interbedded, laminated. Minor plant debris and trace gravel. Firm, no odor. Olive color.
Wet to Saturated	0	3 3 4	18–20			**Clayey SILT (ML/CL)** Same as above, wetter with depth and saturated in lower half of core. Firm.

WELL COMPLETION DETAILS



VAPOR BORING/WELL: VB-2/VW-2

SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 6-24-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: Split-Spoon
HOLE DIAMETER/DEPTH: 8"/24'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 12.5'-15'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

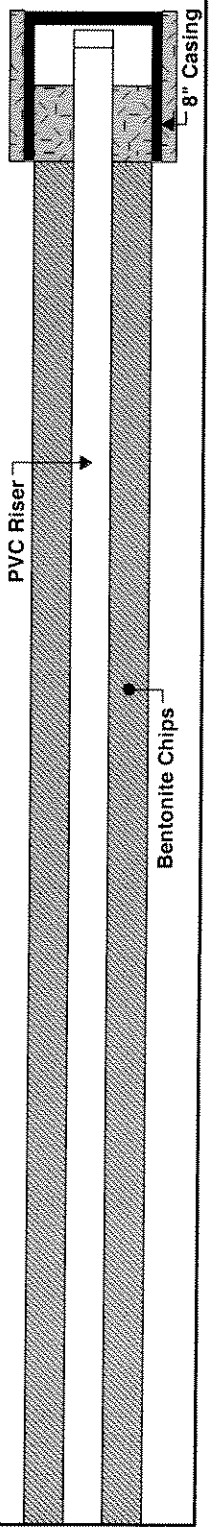
MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION	WELL COMPLETION DETAILS
Moist	0	5 5 7	20–21			**CLAY (CL)** Clay with lesser silt (about 30%). Interbedded and laminated. Clay is firm, and Silt is stiff to hard. No odor and no sand. Olive color.	Bentonite Chips
			22				
Wet to Moist	0	3 3 6	23–24			**CLAY (CL)** Similar to above, but some silt layers are wet. Clay is firm and Silt is firm to stiff. No odor. Olive color.	
			25–39				

VAPOR BORING/WELL: VB-3A/VW-3A

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 0.75" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 22.5'-25'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 0.75" SCH 40 PVC
DATE: Drilled on 6-25-03	HOLE DIAMETER/DEPTH: 8"/31.5'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			Ground Surface
			1			Concrete pavement. Airknife to 8 ft. Silt, gravel, and sand.
			2			
			3			
			4			
			5			
			6			
			7			
			8			Gravelly Drilling
			9			
		12	10			**SAND (SP)**
Dry	5	16	11			Medium Sand with minor gravel. Loose, no HC odor.
		19	12			
			13			
			14			
		5	15			**SILT (ML)**
Dry	13	7	16			Silt with trace clay (<5%). Laminated, firm, no odor.
		11	17			
		5				**Silty CLAY (CL/ML)**
Dry to Very Moist	14	6	18			Silty Clay, about 60% clay, laminated. Firm to stiff, no odor.
		10	19			
			20			

WELL COMPLETION DETAILS

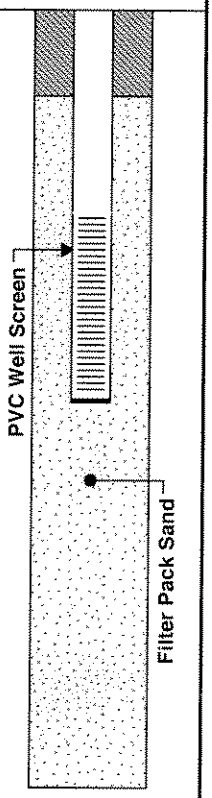


VAPOR BORING/WELL: VB-3A/VW-3A

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 0.75" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 22.5'-25'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 0.75" SCH 40 PVC
DATE: Drilled on 6-25-03	HOLE DIAMETER/DEPTH: 8"/31.5'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	DESCRIPTION
Damp to Dry	14	9 9 9	20–21	**SILT (ML)** Silt with some very fine sand. Dry to damp, stiff, no odor.
			21–22	**Silty CLAY (CL/ML)** Silty Clay. Firm, no odor.
Moist to Wet	10	8 12 15	22–24	**CLAY and SILT (CL-ML)** Silt and Clay, about equal amounts. Moist to wet, wetter in silty zones. More clay in the lower half, silt in the upper half. Firm to stiff, no odor.
Very Moist to Wet	10	4 4 5	25–27	**CLAY and SILT (ML-CL)** Clay and Silt, about equal amounts with finer material in lower half. Firm, no odor.
Very Moist to Wet	5	3 3 11	27–29	**SILT (ML)** Silt with some clay (15%-20%). Firm to stiff, no odor.
Wet	450	5 7 12	30–31	**Clayey SILT (ML/CL)** Clayey Silt about 30% clay. Firm, strong HC odor.
			32–39	

WELL COMPLETION DETAILS



VAPOR BORING/WELL: VB-3B/VW-3B

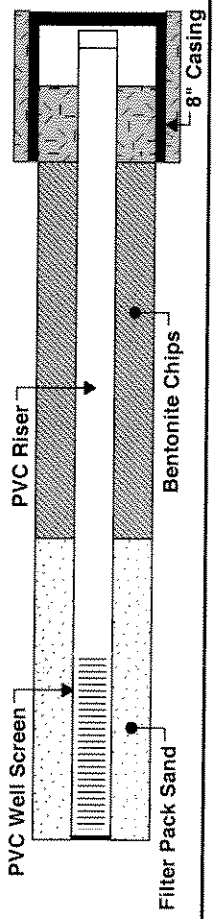
SHEET 1 of 1

SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 6-25-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split Spoon
HOLE DIAMETER/DEPTH: 8"/11'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 8.5'-11'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION	WELL COMPLETION DETAILS
			0			Ground Surface	
						No Samples Collected Airknife to 8 ft. See log VB-3A/VW-3A for stratigraphy.	



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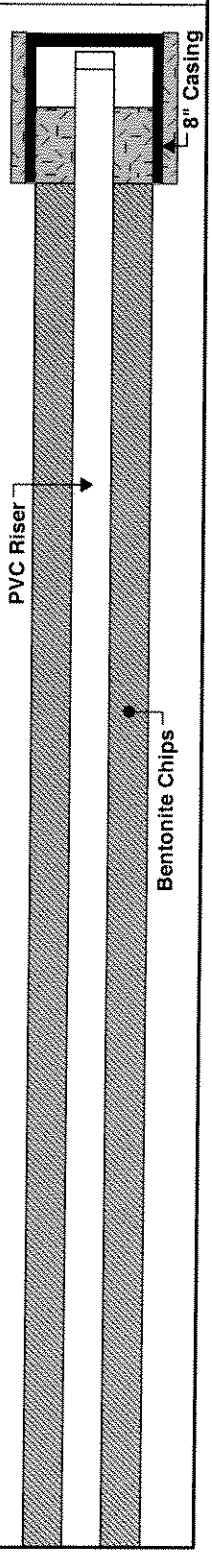
VAPOR BORING/WELL: VB-4A/VW-4A

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 0.75" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 22.5'-25'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 0.75" SCH 40 PVC
DATE: Drilled on 6-26-03	HOLE DIAMETER/DEPTH: 8"/26.5'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	DESCRIPTION
			0	Ground Surface
			1	Concrete pavement. Airknife to 8 ft.
			2	No samples, silt, gravel, sand; gravelly and cobbly near base.
			3	
			4	
			5	
			6	
			7	
			8	Gravelly Drilling
			9	
Dry	15	15	10	**Gravelly SAND (SW)** Gravelly Sand, loose, no odor. Grayish-brown color.
			11	
			12	
			13	
			14	
		8	15	**SILT (ML)** Silt mostly coarse, but not true sand. Clay in lower 2 inches, with silt. Stiff, no odor. Olive-gray color.
Dry	29	12	16	
		14	17	
			18	
			19	
			20	



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VAPOR BORING/WELL: VB-4A/VW-4A

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 0.75" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 22.5'-25'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split Spoon	WELL CASING: 0.75" SCH 40 PVC
DATE: Drilled on 6-26-03	HOLE DIAMETER/DEPTH: 8"/26.5'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION	WELL COMPLETION DETAILS
Dry	28	3 6 5	20–21			**SILT (ML)** Silt with some clay (30%). Silt is fine. Firm, no odor. Olive-gray color.	
Damp	152	x x x	25–26			**SILT (ML)** Silt with clay (25%) and some very fine sand/coarse silt layers (5%). Firm, strong HC odor. Olive color.	PVC Well Screen Filter Pack Sand

DEPTH: 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39

An Employee-Owned Company

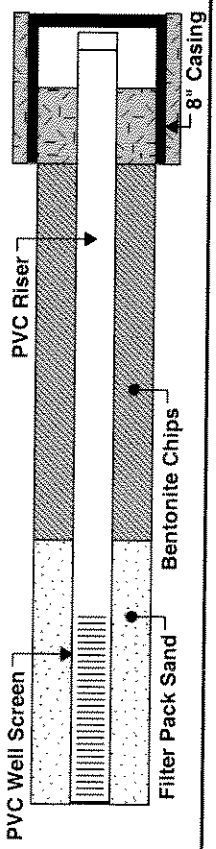
VAPOR BORING/WELL: VB-4B/VW-4B

SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 6-26-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split Spoon
HOLE DIAMETER/DEPTH: 8"/10.5'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 8'-10.5'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION	WELL COMPLETION DETAILS
			0			Ground Surface	
						No Samples Collected Airknife to 8 ft.	
			1			See log VB-4A/VW-4A for stratigraphy.	
			2				
			3				
			4				
			5				
			6				
			7				
			8				
			9				
			10				
			11				
			12				
			13				
			14				
			15				
			16				
			17				
			18				
			19				
			20				



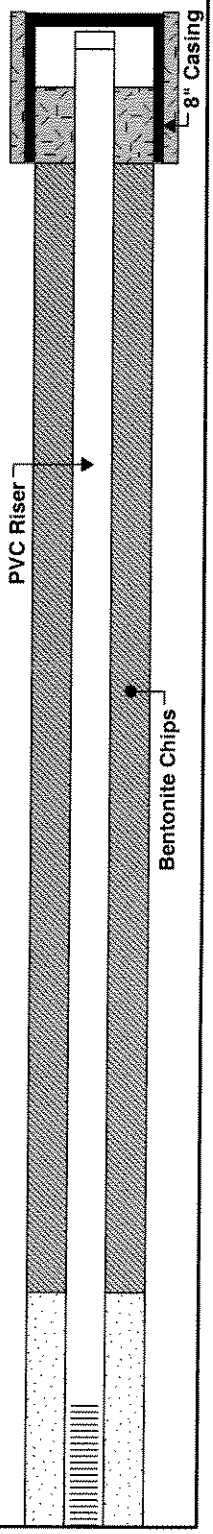
VAPOR BORING/WELL: VB-5A/VW-5A

SAIC — An Employee-Owned Company

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 0.75" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 18.5'-21'
CLIENT: Chevron	SAMPLE METHOD: Split-Spoon	WELL CASING: 0.75" SCH 40 PVC
DATE: Drilled on 6-27-03	HOLE DIAMETER/DEPTH: 8"/24'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			Ground Surface
			1			Asphalt pavement. Airknife to 8 ft.
			2			Silt, gravel, and sand.
			3			
			4			
			5			
			6			
			7			Cobbly/gravelly with depth.
			8			
			9			
			10			
			11			**Sandy Gravel (GW)** Sandy Gravel, gravel up to 1 inch, but greater in formation. Loose, no odor. Grayish brown color.
			12			
			13			
			14			
		3	15			**SILT (ML)**
Moist to Damp	25	5	16			Silt with some clay (25%). Silt is mostly coarse, clay all in lower 8 inches. Firm to Stiff, no HC odor. Olive-gray color.
		5	17			
			18			
			19			
			20			

WELL COMPLETION DETAILS



An Employee-Owned Company

VAPOR BORING/WELL: VB-5A/VW-5A

SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 0.75" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 18.5'-21'
CLIENT: Chevron	SAMPLE METHOD: Split-Spoon	WELL CASING: 0.75" SCH 40 PVC
DATE: Drilled on 6-27-03	HOLE DIAMETER/DEPTH: 8"/24'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION	WELL COMPLETION DETAILS
Damp to Moist	25	10 5 5	20 21 22			**SILT (ML)** Silt with minor clay (7%), silt is medium to coarse (almost very fine sand). Stiff, HC odor: weak in upper foot, strong in lower part. Greenish olive-gray color. (Sample labeled VB-5B-20; Duplicate Sample is VB-062703-D)	PVC Well Screen Filter Pack Sand
Moist	40	4 7 7	23 24			**Clayey SILT (ML/CL)** Silt with some clay (30%). Firm, Strong HC odor. Olive-gray color.	
			25 26 27 28 29 30 31 32 33 34 35 36 37 38 39				

VAPOR BORING/WELL: VB-5B/VW-5B

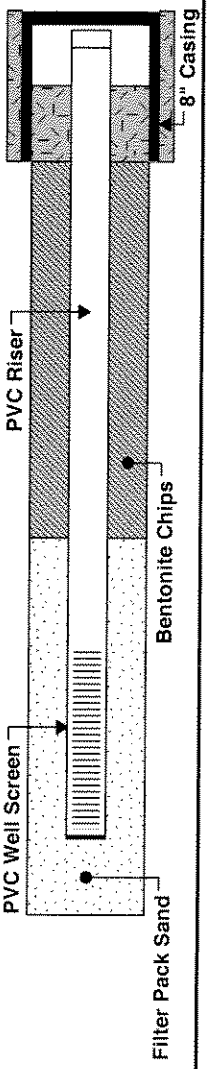
SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 6-27-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split Spoon
HOLE DIAMETER/DEPTH: 8"/12'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 8.5'-11'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			Ground Surface
						Asphalt pavement. Airknife to 8 ft.
			1			Silt, gravel, and sand; cobbly/gravelly with depth.
			2			
			3			
			4			
			5			
			6			
			7			
			8			Gravelly/Cobbly drilling. Less cobbles at 9.5'.
			9			
		18	10			**Sandy Gravel (GW)**
Dry	0	31	11			Sandy Gravel, gravel up to 1 inch, but greater in formation. Loose, no odor. Grayish-brown color.
		10	12			Very gravelly drilling, refusal at 12 feet, decide to set shallow well in this borehole further from building. (Sample is labeled as VB-5A-10)
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			

WELL COMPLETION DETAILS



VAPOR BORING/WELL: VB-6A/VW-6A

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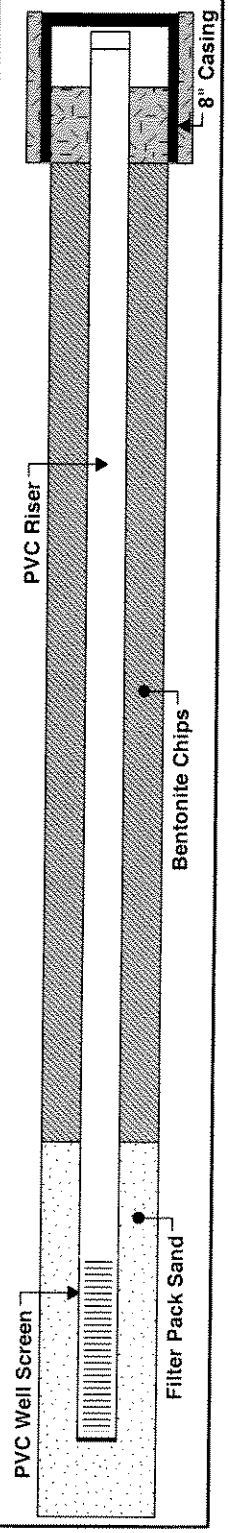
SITE No: 9-6590	DRILLER: Cascade Drilling	WELL SCREEN: 0.75" 0.010" Slots
LOCATION: Chelan, WA	DRILL METHOD: Hollow-Stem Auger	SCREEN INTERVAL: 16.5'-19'
CLIENT: Chevron	SAMPLE METHOD: 3" OD Split-Spoon	WELL CASING: 0.75" SCH 40 PVC
DATE: Drilled on 6-30-03	HOLE DIAMETER/DEPTH: 8"/21.5'	FILTER PACK: #2/12 Monterey Sand
LOGGED BY: Tom Dube'	HAMMER WEIGHT: 300 lbs	TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			Ground Surface
			1			Asphalt pavement. Airknife to 8 ft. Silt with minor gravel and sand; cobbly/gravelly with depth.
			2			
			3			
			4			
			5			
			6			Cobbly
			7			
			8			**SAND** Sandy material.
			9			
		12	10			**SAND (SP)**
Dry	10	14	11			Grayish brown, fine to medium SAND, no odor, loose. Cobbly near 12 feet.
		15	12			
			13			
			14			
		5	15			**Clayey SILT (ML)**
Moist to Very Moist to Damp	60	9	16			Upper half is clayey SILT, firm, gray brown, no odor. Lower half (10) is medium to coarse silt, moderate HC odor. Greenish olive-gray color.
		14	17			
		5	18			**SILT (ML)**
Moist to Very Moist	>2000	6				Silt with some clay (20-25%). Some silt is coarse, almost very fine sand. Firm to stiff, Strong HC odor throughout (possible sheen). Greenish olive-gray color.
		9	19			
			20			

WELL COMPLETION DETAILS



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VAPOR BORING/WELL: VB-6A/VW-6A

SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 6-30-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split-Spoon
HOLE DIAMETER/DEPTH: 8"/21.5'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 16.5'-19'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION	WELL COMPLETION DETAILS
Very Moist	192	7 7 7	20–21			**SILT (ML)** Silt with little clay (10%). Silty very fine sand (olive) in upper few inches. Moderate odor throughout core. Olive-gray color.	

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35
36
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38
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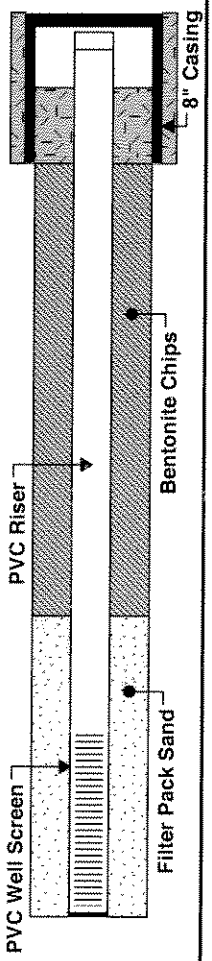
VAPOR BORING/WELL: VB-6B/VW-6B

SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 6-30-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split-Spoon
HOLE DIAMETER/DEPTH: 8"/12'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 9.5'-12'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION	WELL COMPLETION DETAILS
			0			Ground Surface	
						No Samples Collected	
						See log VB-6A/VW-6A for stratigraphy.	



VAPOR BORING/WELL: VB-7A/VW-7A

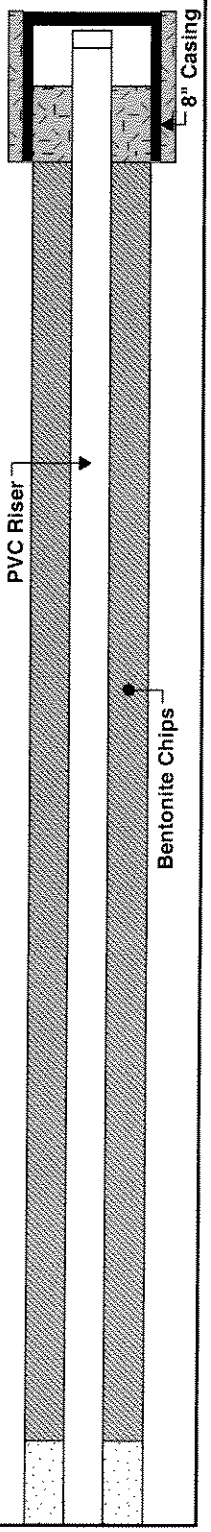
SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 7-1-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split Spoon
HOLE DIAMETER/DEPTH: 8"/26.5'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 21'-23.5'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
			0			**Ground Surface**
			1			Asphalt pavement. Airknife to 8 ft. Silt, gravel, and sand; cobbly/gravelly with depth.
			2			
			3			
			4			
			5			
			6			
			7			Cobbly drilling.
			8			
			9			
			10			**SILT (ML)** Top of sample: silt, soft to firm; no odor. Chocolate brown color.
Damp Dry	9	19 21 23	11			**SAND (SW)** Bottom of sample: gravelly fine to coarse Sand. Gravel up to 1.5". Loose; no odor. Brown color.
			12			
			13			
			14			**Silty SAND (SM)** Upper part of sample: silty, very fine Sand, homogeneous; no odor.
			15			
Dry to Damp	7	12 19 15	16			**Sandy Gravel (GW)** Lower 9+ inches: Sandy Gravel, up to 1 inch, mostly <1/4 inch. Dense, no odor or a very weak HC odor. Light olive-brown color.
			17			
			18			
			19			
			20			

WELL COMPLETION DETAILS



An Employee-Owned Company

VAPOR BORING/WELL: VB-7A/VW-7A

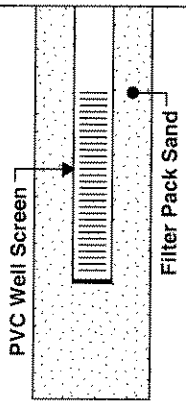
SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 7-1-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split Spoon
HOLE DIAMETER/DEPTH: 8"/26.5'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 21'-23.5'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION
Damp	64	12 7 9	20–21			**SILT (ML)** Silt with minor clay (10%). Silt is med-coarse, some is close to very fine sand. Firm to stiff; strong HC odor in lower half or 2/3 of core. Olive gray color.
			22			
Very Moist to Wet	281	3 4 6	23			**Clayey SILT (ML/CL)** Clayey Silt (30% clay); interbedded. Firm; moderate to weak HC odor throughout. Olive-gray color.
			24			
Very Moist to Wet	101	3 4 5	25–26			**Clayey SILT (ML/CL)** Same as above. Moderate to strong HC odor throughout. Olive-gray; clay is pale olive.
			27–39			

WELL COMPLETION DETAILS



VAPOR BORING/WELL: VB-7B/VW-7B

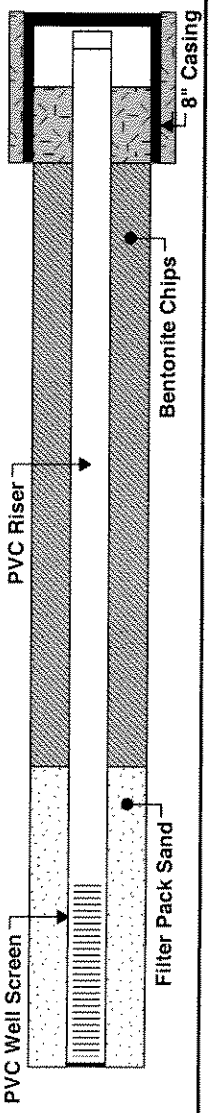
SHEET 1 of 1

SITE No: 9-6590
LOCATION: Chelan, WA
CLIENT: Chevron
DATE: Drilled on 7-1-03
LOGGED BY: Tom Dube'

DRILLER: Cascade Drilling
DRILL METHOD: Hollow-Stem Auger
SAMPLE METHOD: 3" OD Split Spoon
HOLE DIAMETER/DEPTH: 8"/14'
HAMMER WEIGHT: 300 lbs

WELL SCREEN: 0.75" 0.010" Slots
SCREEN INTERVAL: 11.5'-14'
WELL CASING: 0.75" SCH 40 PVC
FILTER PACK: #2/12 Monterey Sand
TOC ELEVATION: na

MOISTURE	PID (ppm)	BLOWS/6"	DEPTH	GRAPHIC LOG	SAMPLE INTERVAL	DESCRIPTION	WELL COMPLETION DETAILS
			0			Ground Surface	
						No Samples Collected Airknife to 8'	
			1			See log VB-7A/VW-7A for stratigraphy.	
			2				
			3				
			4				
			5				
			6				
			7				
			8				
			9				
			10				
			11				
			12				
			13				
			14				
			15				
			16				
			17				
			18				
			19				
			20				



APPENDIX C: GROUNDWATER ANALYTICAL REPORTS AND NAPL DATA

Summary Results of Groundwater Monitoring Events (1992 to 2006)

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 990970. Samples arrived at the laboratory on Thursday, May 25, 2006. The PO# for this group is 0015007062 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-8 Grab Water Sample	4779614
QA-1 Water Sample	4779615
MW-19 Grab Water Sample	4779616

ELECTRONIC COPY TO	SAIC	Attn: Romy Freier-Coppinger
ELECTRONIC COPY TO	SAIC	Attn: Tina King

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Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Valerie L. Tomayko
Group Leader

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4779614

MW-8 Grab Water Sample
Facility# 96590
232 E Woodin Avenue-Chelan, WA
Collected:05/23/2006 14:45 by AW

Account Number: 11255

Submitted: 05/25/2006 09:00
Reported: 06/06/2006 at 13:16
Discard: 07/07/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

EWA08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	91.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	110.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	06/01/2006 15:20	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	05/26/2006 16:36	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/26/2006 16:36	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/26/2006 16:36	Martha L Seidel	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	05/26/2006 15:15	Jason A Heisey	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4779615

QA-1 Water Sample
Facility# 96590
232 E Woodin Avenue-Chelan, WA
Collected:05/23/2006 01:00

Account Number: 11255

Submitted: 05/25/2006 09:00
Reported: 06/06/2006 at 13:16
Discard: 07/07/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05879	BTEX	SW-846 8021B	1	05/26/2006 13:51	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/26/2006 13:51	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/26/2006 13:51	Martha L Seidel	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4779616

MW-19 Grab Water Sample
Facility# 96590
232 E Woodin Avenue-Chelan, WA
Collected:05/23/2006 16:00 by AW

Account Number: 11255

Submitted: 05/25/2006 09:00
Reported: 06/06/2006 at 13:16
Discard: 07/07/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

EWA19

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	510.	84.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
	The observed sample pattern is not typical of #2 fuel/diesel. It elutes in the DRO range earlier than #2 fuel.					
05879	BTEX					
02161	Benzene	71-43-2	980.	2.5	ug/l	5
02164	Toluene	108-88-3	13.	2.5	ug/l	5
02166	Ethylbenzene	100-41-4	N.D.	2.5	ug/l	5
02171	Total Xylenes	1330-20-7	N.D.	7.5	ug/l	5
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,000.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	06/01/2006 16:08	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	05/26/2006 19:35	Martha L Seidel	5
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/26/2006 17:09	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/26/2006 17:09	Martha L Seidel	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	05/26/2006 15:15	Jason A Heisey	1

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Analysis Report

Quality Control Summary

Client Name: Chevron Group Number: 990970
Reported: 06/06/06 at 01:16 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 06145A51B	Sample number(s): 4779614-4779616							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	96	101	70-130	5	30
Benzene	N.D.	0.5	ug/l	96	95	86-119	1	30
Toluene	N.D.	0.5	ug/l	99	98	82-119	1	30
Ethylbenzene	N.D.	0.5	ug/l	101	99	81-119	3	30
Total Xylenes	N.D.	1.5	ug/l	103	100	82-120	3	30
Batch number: 061460008A	Sample number(s): 4779614,4779616							
Diesel Range Organics	N.D.	0.080	mg/l	78	76	51-113	2	20
Heavy Range Organics	N.D.	0.10	mg/l					

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 06145A51B	Sample number(s): 4779614-4779616 UNSPK: P778669, P779340								
TPH by NWTPH-Gx waters	95		63-154						
Benzene	98		78-131						
Toluene	103		78-129						
Ethylbenzene	105		75-133						
Total Xylenes	107		84-131						

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: BTEX
Batch number: 06145A51B

	Trifluorotoluene-P	Trifluorotoluene-F
4779614	100	102
4779615	101	103
4779616	101	117
Blank	101	103
LCS	102	106
LCSD	103	102
MS	102	103

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Group Number: 990970
Reported: 06/06/06 at 01:16 PM

Surrogate Quality Control

Limits: 69-129 63-135

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 061460008A

	Orthoterphenyl
4779614	101
4779616	91
Blank	95
LCS	105
LCSD	109
Limits:	50-150

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

Acct. #: 11255 | For Lancaster Laboratories use only Sample #: 4779614-16 | SCR#: 28920 | 220045

WBS # NWRTB-009590-0-OML

C# 990970

Facility #: 9-6590
Site Address: 232 E. Woodin Ave, Chelan, WA
Chevron PM: Brett Hunter | Lead Consultant: SAIC
Consultant/Office: Bothell, WA
Consultant Prj. Mgr.: Romy Freier-Coppinger
Consultant Phone #: 425-482-3322 | Fax #: 425-985-5500
Sampler: A. Wells / J. Waite
Service Order #: 15001853 | ☐ Non SAR:

Sample Identification	Sample Location	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Matrix: Water	Matrix: Oil ☐ Air ☐	Total Number of Containers	BTEX ~~MTBE~~ 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ___	TPH G	TPH D ☐ Extended Rng. ☐ Silica Gel Cleanup	Lead Total ☐ Diss. ☐ Method ___	VPH/EPH	NWTPH H HCID ☐ quantification
MW-8	MW-8	5/23/06	1445	X			X		5	X			X	X			
QA-1	QA-1		0100	X			X		2	X			X	X			
MW-19	MW-19		1600	X			X		5	X			X	X			

Alisa Wells

Preservation Codes
H = HCl | T = Thiosulfate
N = HNO_3 | B = NaOH
S = H_2SO_4 | O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks

Turnaround Time Requested (TAT) (please circle)
STD. TAT | 72 hour | 48 hour | 24 hour | 4 day | 5 day

Data Package Options (please circle if required)
QC Summary | Type I - Full
Type VI (Raw Data) | Disk / EDD
WIP (RWQCB) | Standard Format
Disk | ____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	5/24/06	14:00			
Alisa Wells	5/23/06	1100			

Relinquished by Commercial Carrier: UPS | FedEx | Other ____
Temperature Upon Receipt 3.1° C°

Received by: [signature] 5/25/06 0900
Custody Seals Intact? Yes | No

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 990751. Samples arrived at the laboratory on Wednesday, May 24, 2006. The PO# for this group is 0015007062 and the release number is HUNTER.

Client Description	Lancaster Labs Number
QA-1 Water Sample	4778529
MW-37 Grab Water Sample	4778530
FD-37 Grab Water Sample	4778531
MW-30 Grab Water Sample	4778532
MW-31 Grab Water Sample	4778533
MW-28 Grab Water Sample	4778534
MW-23 Grab Water Sample	4778535
MW-21 Grab Water Sample	4778536
MW-17 Grab Water Sample	4778537
MW-6 Grab Water Sample	4778538

ELECTRONIC COPY TO	SAIC	Attn: Romy Freier-Coppinger
ELECTRONIC COPY TO	SAIC	Attn: Tina King

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Analysis Report

Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Robert Heisey

Robert Heisey
Senior Specialist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4778529

QA-1 Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/22/2006 08:00

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

QA1CW

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05879	BTEX	SW-846 8021B	1	05/25/2006 22:56	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/25/2006 22:56	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/25/2006 22:56	Steven A Skiles	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778530

MW-37 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/22/2006 14:30 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

37RCW

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	220.	82.	ug/l	1
02096	Heavy Range Organics	n.a.	190.	100.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	06/01/2006 04:10	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	05/25/2006 23:29	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/25/2006 23:29	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/25/2006 23:29	Steven A Skiles	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	05/26/2006 06:15	Tracy L Schickel	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778531

FD-37 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/22/2006 14:00 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

FD37W

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	250.	150.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	190.	ug/l	1
	Due to insufficient sample size, we were unable to report our usual reporting limits. The values reported represent the lowest reporting limits obtainable.					
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	06/01/2006 04:34	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	05/26/2006 00:01	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/26/2006 00:01	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/26/2006 00:01	Steven A Skiles	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	05/26/2006 06:15	Tracy L Schickel	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778532

MW-30 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/22/2006 17:30 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

30FDW

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

A poor surrogate recovery was observed. The sample was used as the matrix spike and matrix spike duplicate, therefore there was not enough sample to perform an unspiked confimation analysis.

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	06/01/2006 04:58	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	05/26/2006 02:29	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/26/2006 02:29	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	2	05/26/2006 02:29	Steven A Skiles	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	05/26/2006 06:15	Tracy L Schickel	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778533

MW-31 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/22/2006 18:20 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

31WAW

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	86.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	110.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	06/01/2006 05:46	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	05/26/2006 03:01	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/26/2006 03:01	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/26/2006 03:01	Steven A Skiles	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	05/26/2006 06:15	Tracy L Schickel	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778534

MW-28 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/23/2006 08:00 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

28WAW

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	417,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	85,500.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	15,600.	500.	ug/l	10
08344	Ferrous Iron	n.a.	68.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259
The sample for ferrous Iron was lab filtered prior to analysis.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	05/26/2006 14:50	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	05/26/2006 14:50	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	05/25/2006 07:48	Shannon L Peterson	10
00368	Nitrate Nitrogen	EPA 300.0	1	05/25/2006 07:48	Shannon L Peterson	10
08344	Ferrous Iron	SM20 3500-Fe B modified	1	05/24/2006 23:30	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778534

MW-28 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/23/2006 08:00 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

28WAW

02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	05/31/2006 19:00	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	05/26/2006 03:34	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/26/2006 03:34	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/26/2006 03:34	Steven A Skiles	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	05/26/2006 06:15	Tracy L Schickel	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778535

MW-23 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/23/2006 09:00 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23WAW

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	259,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	18,000.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	4,400.	250.	ug/l	5
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	87.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	110.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	05/26/2006 14:50	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	05/26/2006 14:50	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	05/24/2006 23:30	Shannon L Peterson	5
00368	Nitrate Nitrogen	EPA 300.0	1	05/24/2006 23:30	Shannon L Peterson	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	05/24/2006 23:30	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	05/31/2006 19:24	Matthew E Barton	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778535

MW-23 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/23/2006 09:00 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23WAW

05879	BTEX	SW-846 8021B	1	05/26/2006 04:06	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/26/2006 04:06	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/26/2006 04:06	Steven A Skiles	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	05/26/2006 06:15	Tracy L Schickel	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778536

MW-21 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/23/2006 10:00 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

21WAW

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	374,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	9,900.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	250.	ug/l	5
08344	Ferrous Iron	n.a.	740.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	440.	88.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	110.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	3,000.	5.0	ug/l	10
02164	Toluene	108-88-3	69.	5.0	ug/l	10
02166	Ethylbenzene	100-41-4	85.	5.0	ug/l	10
02171	Total Xylenes	1330-20-7	180.	15.	ug/l	10
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	3,700.	480.	ug/l	10

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	05/26/2006 14:50	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	05/26/2006 14:50	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	05/24/2006 23:45	Shannon L Peterson	5
00368	Nitrate Nitrogen	EPA 300.0	1	05/24/2006 23:45	Shannon L Peterson	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	05/24/2006 23:30	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	05/31/2006 19:48	Matthew E Barton	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778536

MW-21 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/23/2006 10:00 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

21WAW

05879	BTEX	SW-846 8021B	1	05/26/2006 04:39	Steven A Skiles	10
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/26/2006 04:39	Steven A Skiles	10
01146	GC VOA Water Prep	SW-846 5030B	1	05/26/2006 04:39	Steven A Skiles	10
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	05/26/2006 06:15	Tracy L Schickel	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778537

MW-17 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/23/2006 10:30 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

17WAW

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	452,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	39,600.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	2,200.	250.	ug/l	5
08344	Ferrous Iron	n.a.	710.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	210.	77.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	96.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	20.	ug/l	1
02164	Toluene	108-88-3	12.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	54.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	170.	1.5	ug/l	1
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. benzene					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,200.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	05/26/2006 14:50	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	05/26/2006 14:50	Geraldine C Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778537

MW-17 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/23/2006 10:30 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

17WAW

00228	Sulfate	EPA 300.0	1	05/25/2006 00:00	Shannon L Peterson	5
00368	Nitrate Nitrogen	EPA 300.0	1	05/25/2006 00:00	Shannon L Peterson	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	05/24/2006 23:30	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	05/31/2006 20:12	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	05/26/2006 05:11	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	06/06/2006 05:10	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/26/2006 05:11	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	2	06/06/2006 05:10	Steven A Skiles	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	05/26/2006 06:15	Tracy L Schickel	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778538

MW-6 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/23/2006 11:20 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

W6WAW

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	497,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	43,400.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	250.	ug/l	5
08344	Ferrous Iron	n.a.	290.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	1,900.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	140.	100.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	20.	0.5	ug/l	1
02164	Toluene	108-88-3	1.1	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	0.5	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	2.8	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	510.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	05/26/2006 14:50	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	05/26/2006 14:50	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	05/25/2006 00:15	Shannon L Peterson	5
00368	Nitrate Nitrogen	EPA 300.0	1	05/25/2006 00:15	Shannon L Peterson	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	05/24/2006 23:30	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	05/31/2006 21:00	Matthew E Barton	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4778538

MW-6 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:05/23/2006 11:20 by AW

Account Number: 11255

Submitted: 05/24/2006 09:05
Reported: 06/07/2006 at 12:17
Discard: 07/08/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

W6WAW

05879	BTEX	SW-846 8021B	1	05/30/2006 22:23	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	05/30/2006 22:23	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/30/2006 22:23	Steven A Skiles	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	05/26/2006 06:15	Tracy L Schickel	1

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Analysis Report

Quality Control Summary

Client Name: Chevron Group Number: 990751
Reported: 06/07/06 at 12:17 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 06144401101A	Sample number(s): 4778534-4778535							
Sulfate	N.D.	0.30	mg/l	97		89-110		
Nitrate Nitrogen	N.D.	0.050	mg/l	98		90-110		
Batch number: 06144401101B	Sample number(s): 4778536-4778538							
Sulfate	N.D.	0.30	mg/l	97		89-110		
Nitrate Nitrogen	N.D.	0.050	mg/l	98		90-110		
Batch number: 06144834401A	Sample number(s): 4778534-4778538							
Ferrous Iron	N.D.	0.0080	mg/l	100		95-105		
Batch number: 061450027A	Sample number(s): 4778530-4778533							
Diesel Range Organics	N.D.	0.080	mg/l	73	83	51-113	13	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 061450028A	Sample number(s): 4778534-4778538							
Diesel Range Organics	N.D.	0.080	mg/l	76	78	51-113	2	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 06145A07A	Sample number(s): 4778529-4778537							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	95	96	70-130	1	30
Benzene	N.D.	0.5	ug/l	103	102	86-119	1	30
Toluene	N.D.	0.5	ug/l	103	103	82-119	0	30
Ethylbenzene	N.D.	0.5	ug/l	103	102	81-119	1	30
Total Xylenes	N.D.	1.5	ug/l	104	103	82-120	1	30
Batch number: 06146020201A	Sample number(s): 4778534-4778538							
Alkalinity to pH 4.5				100		98-103		
Batch number: 06150A07A	Sample number(s): 4778538							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	89	96	70-130	8	30
Benzene	N.D.	0.5	ug/l	105	107	86-119	2	30
Toluene	N.D.	0.5	ug/l	106	108	82-119	2	30
Ethylbenzene	N.D.	0.5	ug/l	103	105	81-119	2	30
Total Xylenes	N.D.	1.5	ug/l	105	106	82-120	2	30
Batch number: 06156A07A	Sample number(s): 4778537							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	90	95	70-130	5	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

	MS	MSD	MS/MSD	RPD	BKG	DUP	DUP	Dup RPD

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Group Number: 990751
Reported: 06/07/06 at 12:17 PM

Analysis Name	%REC	%REC	Limits	RPD	MAX	Conc	Conc	RPD	Max
Batch number: 06144401101A	Sample number(s): 4778534-4778535 UNSPK: 4778534 BKG: 4778534								
Sulfate	94		90-110			85.5	76.6	11*	3
Nitrate Nitrogen	102		90-110			15.6	15.7	0	2
Batch number: 06144401101B	Sample number(s): 4778536-4778538 UNSPK: 4778538 BKG: 4778538								
Sulfate	102		90-110			43.4	42.8	2	3
Nitrate Nitrogen	98		90-110			N.D.	N.D.	200* (1)	2
Batch number: 06144834401A	Sample number(s): 4778534-4778538 UNSPK: P778510 BKG: P778510								
Ferrous Iron	93	97	86-110	3	4	1.9	1.9	2 (1)	8
Batch number: 06145A07A	Sample number(s): 4778529-4778537 UNSPK: 4778532, 4778533								
TPH by NWTPH-Gx waters	94	93	63-154	1	30				
Benzene	112	116	78-131	4	20				
Toluene	112	115	78-129	3	30				
Ethylbenzene	111	115	75-133	4	30				
Total Xylenes	112	116	84-131	3	30				
Batch number: 06146020201A	Sample number(s): 4778534-4778538 UNSPK: P778508 BKG: P778508								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	98	99	64-130	0	2	160.	161.	1	4
Batch number: 06150A07A	Sample number(s): 4778538 UNSPK: P781529, P781530								
TPH by NWTPH-Gx waters	90		63-154						
Benzene	(2)		78-131						
Toluene	105		78-129						
Ethylbenzene	103		75-133						
Total Xylenes	107		84-131						
Batch number: 06156A07A	Sample number(s): 4778537 UNSPK: P784785								
TPH by NWTPH-Gx waters	110		63-154						

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 061450027A

	Orthoterphenyl
4778530	90
4778531	90
4778532	95
4778533	97
Blank	98
LCS	108
LCSD	108
Limits:	50-150

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 061450028A

	Orthoterphenyl

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Group Number: 990751
Reported: 06/07/06 at 12:17 PM

Surrogate Quality Control

4778534	95
4778535	99
4778536	92
4778537	87
4778538	102
Blank	94
LCS	105
LCSD	106
Limits:	50-150

Analysis Name: BTEX
Batch number: 06145A07A

	Trifluorotoluene-P	Trifluorotoluene-F
4778529	114	95
4778530	114	92
4778531	114	92
4778532	100	50*
4778533	114	94
4778534	114	93
4778535	113	92
4778536	133*	107
4778537	124	
Blank	113	91
LCS	115	100
LCSD	114	99
MS	115	95
MSD	115	99
Limits:	69-129	63-135

Analysis Name: BTEX
Batch number: 06150A07A

	Trifluorotoluene-P	Trifluorotoluene-F
4778538	138*	120
Blank	113	90
LCS	115	98
LCSD	115	97
MS	121	100
Limits:	69-129	63-135

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 06156A07A

	Trifluorotoluene-F
4778537	97
Blank	91
LCS	94
LCSD	94
MS	98
Limits:	63-135

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Group Number: 990751
Reported: 06/07/06 at 12:17 PM

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

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220496

Acct. #: 11255 For Lancaster Laboratories use only ~~Sample #~~ Grp #: 990751 SCR#:
Sample # 4778529-38

WBS # NWRTB-0096590-0-0ML

Facility #: 96590
Site Address: 232 E. Woodin Ave Chelan, WA
Chevron PM: Brett Hunter Lead Consultant: SAIC
Consultant/Office: Bothell, WA
Consultant Prj. Mgr.: ~~Tom DATW~~ Romy Freier-Coppinger
Consultant Phone #: 425-482-332[5] Fax #: 425-485-5566
Sampler: A. Wells / J. Wartes
Service Order #: 15001353 ☐ Non SAR:

Sample Identification	Sample Location	Date Collected	Time Collected	Grab	Composite	Soil	Water (☐ Potable ☐ NPDES)	Oil ☐ Air ☐	Total Number of Containers	BTEX + ~~MTBE~~ 8021 ☒ 8260 ☐ Naphth ☐ (H)	8260 full scan	___ Oxygenates	NWTPH Gx (H)	NWTPH Dx ☒ Extended Rng. ☒ Silica Gel Cleanup (H)	Lead Total ☐ Diss. ☐ Method	VPH/EPH	NWTPH H HCID ☐ quantification	Alkalinity 310.1	Nitrate/Sulfate 300.0	Ferrous Iron SM3500 Fe-D (H)
QA-1	QA-1	5/22/06	0800	X			X		2	X			X	~~X~~ HOW						
MW-37	MW-37		1430	X			X		5	X			X	X						
FD-37	FD-37		1400	X			X		5	X			X	X						
MW-30	MW-30		1730	X			X		6	X			X	X						
MW-31	MW-31		1820	X			X		6	X			X	X						
* MW-28	MW-28	5/23/06	0800	X			X		9	X			X	X				X	X	X
MW-23	MW-23		0900	X			X		9	X			X	X				X	X	X
MW-21	MW-21		1000	X			X		9	X			X	X				X	X	X
MW-17	MW-17		1030	X			X		9	X			X	X				X	X	X
MW-6	MW-6		1120	X			X		9	X			X	X				X	X	X

Alisa Wells

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ___ oxy s on highest hit
☐ Run ___ oxy s on all hits

Comments / Remarks
- Ferrous Iron Field Filtered
- Nitrate and ferrous Iron have short hold time
*MW-28 lab. filter Ferrous Iron prior to analysis

Turnaround Time Requested (TAT) (please circle)
(STD. TAT) 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk ________ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
Alisa Wells	5/23/06	1200			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS (FedEx) Other 3 coolers Ranges			Received by: Ness Zook	5/24/06	0905
Temperature Upon Receipt 2.5-4.9 °C			Custody Seals Intact? (Yes) No		

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

3468 Rev. 8/6/01

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY – In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions of Lancaster Laboratories and we hereby object to any conflicting terms contained in any acceptance or order submitted by client.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 981851. Samples arrived at the laboratory on Thursday, March 16, 2006. The PO# for this group is 0015001353 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-31 Grab Water Sample	4729722
MW-30 Grab Water Sample	4729723
MW-37 Grab Water Sample	4729724
MW-37_Dup Grab Water Sample	4729725
TB-2 Water Sample	4729726

ELECTRONIC COPY TO	SAIC	Attn: Tina King
ELECTRONIC COPY TO	SAIC	Attn: Romy Freier-Coppinger

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Analysis Report

Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Jenifer E. Hess
Manager

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4729722

MW-31 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 14:55 by SK

Account Number: 11255

Submitted: 03/16/2006 09:15
Reported: 03/28/2006 at 13:22
Discard: 04/28/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE31

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	79.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	99.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	03/23/2006 11:44	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	03/22/2006 08:23	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	03/22/2006 08:23	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2006 08:23	Martha L Seidel	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	03/22/2006 17:00	Olivia I Santiago	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4729723

MW-30 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 16:15 by SK

Account Number: 11255

Submitted: 03/16/2006 09:15
Reported: 03/28/2006 at 13:22
Discard: 04/28/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE30

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	86.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	110.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	03/23/2006 12:08	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	03/22/2006 10:01	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	03/22/2006 10:01	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2006 10:01	Martha L Seidel	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	03/22/2006 17:00	Olivia I Santiago	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4729724

MW-37 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/15/2006 08:30 by SK

Account Number: 11255

Submitted: 03/16/2006 09:15
Reported: 03/28/2006 at 13:22
Discard: 04/28/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE37

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	81.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	03/23/2006 12:32	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	03/22/2006 10:34	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	03/22/2006 10:34	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2006 10:34	Martha L Seidel	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	03/22/2006 17:00	Olivia I Santiago	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4729725

MW-37_Dup Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/15/2006 08:40 by SK

Account Number: 11255

Submitted: 03/16/2006 09:15
Reported: 03/28/2006 at 13:22
Discard: 04/28/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHEFD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	77.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	97.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	The vial submitted for volatile analysis did not have a pH < 2 at the time of analysis. Due to the volatile nature of the analytes, it is not appropriate for the laboratory to adjust the pH at the time of sample receipt. The pH of this sample was pH = 7.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1
	The vial submitted for volatile analysis did not have a pH < 2 at the time of analysis. Due to the volatile nature of the analytes, it is not appropriate for the laboratory to adjust the pH at the time of sample receipt. The pH of this sample was pH = 7.					

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	03/27/2006 14:42	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	03/22/2006 11:07	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	03/22/2006 11:07	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2006 11:07	Martha L Seidel	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4729725

MW-37_Dup Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/15/2006 08:40 by SK

Account Number: 11255

Submitted: 03/16/2006 09:15
Reported: 03/28/2006 at 13:22
Discard: 04/28/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHEFD

02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	03/25/2006 02:45	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4729726

TB-2 Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 14:00

Account Number: 11255

Submitted: 03/16/2006 09:15
Reported: 03/28/2006 at 13:22
Discard: 04/28/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHETB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05879	BTEX	SW-846 8021B	1	03/22/2006 09:29	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	03/22/2006 09:29	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2006 09:29	Martha L Seidel	1

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Analysis Report

Quality Control Summary

Client Name: Chevron Group Number: 981851
Reported: 03/28/06 at 01:22 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 060810008A	Sample number(s): 4729722-4729724							
Diesel Range Organics	N.D.	0.080	mg/l	80	79	51-113	2	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 06081A51A	Sample number(s): 4729722-4729726							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	89	91	70-130	3	30
Benzene	N.D.	0.5	ug/l	98	97	86-119	1	30
Toluene	N.D.	0.5	ug/l	99	98	82-119	2	30
Ethylbenzene	N.D.	0.5	ug/l	100	96	81-119	4	30
Total Xylenes	N.D.	1.5	ug/l	101	97	82-120	5	30
Batch number: 060830008A	Sample number(s): 4729725							
Diesel Range Organics	N.D.	0.080	mg/l	79	81	51-113	3	20
Heavy Range Organics	N.D.	0.10	mg/l					

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 06081A51A	Sample number(s): 4729722-4729726 UNSPK: 4729722, 4729723								
TPH by NWTPH-Gx waters	98		63-154						
Benzene	98		78-131						
Toluene	104		78-129						
Ethylbenzene	109		75-133						
Total Xylenes	111		84-131						

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 060810008A

	Orthoterphenyl
4729722	92
4729723	102
4729724	96
Blank	99

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Group Number: 981851
Reported: 03/28/06 at 01:22 PM

Surrogate Quality Control

LCS	116	
LCSD	109	
Limits:	52-141	

Analysis Name: BTEX
Batch number: 06081A51A

	Trifluorotoluene-P	Trifluorotoluene-F
4729722	96	97
4729723	105	104
4729724	105	103
4729725	96	97
4729726	106	105
Blank	98	97
LCS	106	105
LCSD	109	99
MS	96	99
Limits:	69-129	63-135

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 060830008A

	Orthoterphenyl
4729725	92
Blank	94
LCS	104
LCSD	108
Limits:	52-141

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

220481

For Lancaster Laboratories use only

Acct. #: 11255 Sample #: 4729722-26 SCR#:

WBS # NWRTB-0096590-0-OML

Group# 98185

Facility #: CVX 9-6590

Site Address: 232 E. Woodin Ave, Chelan, WA

Chevron PM: Brett Hunter Lead Consultant: SAIC

Consultant/Office: SAIC / Bothell

Consultant Prj. Mgr.: Romy Freier Coppinger

Consultant Phone #: 425-482-3222 Fax #: 425-485-5566

Sampler: S. Kline / G. Cisneros

Service Order #: 15001353 ☐ Non SAR:

Analyses Requested

Preservation Codes

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Matrix: Water	Matrix: Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ___	MW TPH G	MW TPH D ☒ Extended Rng. ☒ Silica Gel Cleanup	Lead Total ☐ Diss. ☐ Method ___	VPH/EPH	NWTPH H HCID ☐ quantification	Alkalinity 310.1	Nitrate/Sulfate EPA 300.0	Ferrous Iron SM3500 Fe-D	Total Mn+Fe EPA 6010
SK ~~MW-28~~	~~3/14/06~~	~~1245~~	X			X														
MW-31	3/14/06	1455	X			X		5	X			X	X							
MW-30	3/14/06	1615	X			X		5	X			X	X							
MW-37	3/15/06	0830	X			X		5	X			X	X							
D- MW-37 Dup	3/15/06	0840	X			X		5	X			X	X							
TB-2	3/14/06	1400	X			X		3	X			X								

Comments / Remarks

~~SK~~ SC

Turnaround Time Requested (TAT) (please circle)

STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)

QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk ____ Other.

	Date	Time		Date	Time
Relinquished by:	3-15-06 0915	0915	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS FedEx Other			Received by:	3/16/06	0915
Temperature Upon Receipt 2.0° C°			Custody Seals Intact? Yes No		

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 981617. Samples arrived at the laboratory on Wednesday, March 15, 2006. The PO# for this group is 0015001353 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-19 Grab Water Sample	4728292
MW-21 Grab Water Sample	4728293
MW-17 Grab Water Sample	4728294
MW-6 Grab Water Sample	4728295
MW-28 Grab Water Sample	4728296
TB-1 Water Sample	4728297

ELECTRONIC COPY TO	SAIC	Attn: Romy Freier-Coppinger
ELECTRONIC COPY TO	SAIC	Attn: Tina King

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Analysis Report

Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Robert Strocko Jr.
Manager

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4728292

MW-19 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 09:40 by SK

Account Number: 11255

Submitted: 03/15/2006 09:00
Reported: 03/27/2006 at 12:05
Discard: 04/27/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

WOO19

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	923.	66.7	ug/l	1
07058	Manganese	7439-96-5	243.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	471,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	19,700.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	430.	400.	ug/l	5
08344	Ferrous Iron	n.a.	560.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	210.	77.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	96.	ug/l	1

The surrogate recovery for the blank associated with this sample is below QC limits. The batch was reextracted within hold. The surrogate recoveries for all QC were below QC limits in the reextract. Since sufficient sample was not available for another extraction, the original data is reported.

05879	BTEX					
02161	Benzene	71-43-2	1,400.	5.0	ug/l	10
02164	Toluene	108-88-3	22.	5.0	ug/l	10
02166	Ethylbenzene	100-41-4	N.D.	5.0	ug/l	10
02171	Total Xylenes	1330-20-7	N.D.	15.	ug/l	10
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,300.	480.	ug/l	10

State of Washington Lab Certification No. C259
This sample was field filtered for ferrous iron.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Lancaster Laboratories Sample No. WW 4728292

MW-19 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 09:40 by SK

Account Number: 11255

Submitted: 03/15/2006 09:00
Reported: 03/27/2006 at 12:05
Discard: 04/27/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

WOO19

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	03/17/2006 10:01	Joanne M Gates	1
07058	Manganese	SW-846 6010B	1	03/17/2006 10:01	Joanne M Gates	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	03/17/2006 08:00	Michelle L Heidig	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	03/17/2006 08:00	Michelle L Heidig	1
00228	Sulfate	EPA 300.0	1	03/16/2006 03:02	Nicole M Kepley	5
00368	Nitrate Nitrogen	EPA 300.0	1	03/16/2006 03:02	Nicole M Kepley	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	03/15/2006 21:30	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	03/22/2006 15:55	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	03/21/2006 21:21	Steven A Skiles	10
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	03/21/2006 21:21	Steven A Skiles	10
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2006 21:21	Steven A Skiles	10
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	03/16/2006 20:19	James L Mertz	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	03/21/2006 04:00	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4728293

MW-21 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 10:30 by SK

Account Number: 11255

Submitted: 03/15/2006 09:00
Reported: 03/27/2006 at 12:05
Discard: 04/27/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

WOO21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	169.	66.7	ug/l	1
07058	Manganese	7439-96-5	365.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	375,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	17,400.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
08344	Ferrous Iron	n.a.	210.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	630.	81.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1

The surrogate recovery for the blank associated with this sample is below QC limits. The batch was reextracted within hold. The surrogate recoveries for all QC were below QC limits in the reextract. Since sufficient sample was not available for another extraction, the original data is reported.

05879	BTEX					
02161	Benzene	71-43-2	3,700.	13.	ug/l	25
02164	Toluene	108-88-3	72.	13.	ug/l	25
02166	Ethylbenzene	100-41-4	81.	13.	ug/l	25
02171	Total Xylenes	1330-20-7	130.	38.	ug/l	25
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	3,200.	1,200.	ug/l	25

State of Washington Lab Certification No. C259
This sample was field filtered for ferrous iron.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

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Analysis Report

Lancaster Laboratories Sample No. WW 4728293

MW-21 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 10:30 by SK

Account Number: 11255

Submitted: 03/15/2006 09:00
Reported: 03/27/2006 at 12:05
Discard: 04/27/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

WOO21

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	03/17/2006 10:05	Joanne M Gates	1
07058	Manganese	SW-846 6010B	1	03/17/2006 10:05	Joanne M Gates	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	03/17/2006 08:00	Michelle L Heidig	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	03/17/2006 08:00	Michelle L Heidig	1
00228	Sulfate	EPA 300.0	1	03/16/2006 03:15	Nicole M Kepley	5
00368	Nitrate Nitrogen	EPA 300.0	1	03/16/2006 03:15	Nicole M Kepley	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	03/15/2006 21:30	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	03/22/2006 16:18	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	03/21/2006 21:54	Steven A Skiles	25
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	03/21/2006 21:54	Steven A Skiles	25
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2006 21:54	Steven A Skiles	25
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	03/16/2006 20:19	James L Mertz	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	03/21/2006 04:00	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4728294

MW-17 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 11:25 by SK

Account Number: 11255

Submitted: 03/15/2006 09:00
Reported: 03/27/2006 at 12:05
Discard: 04/27/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

WOO17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	829.	66.7	ug/l	1
07058	Manganese	7439-96-5	606.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	398,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	45,500.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	2,200.	400.	ug/l	5
08344	Ferrous Iron	n.a.	28.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	330.	79.	ug/l	1
02096	Heavy Range Organics	n.a.	110.	99.	ug/l	1

The surrogate recovery for the blank associated with this sample is below QC limits. The batch was reextracted within hold. The surrogate recoveries for all QC were below QC limits in the reextract. Since sufficient sample was not available for another extraction, the original data is reported.

05879	BTEX					
02161	Benzene	71-43-2	41.	2.5	ug/l	5
02164	Toluene	108-88-3	47.	2.5	ug/l	5
02166	Ethylbenzene	100-41-4	110.	2.5	ug/l	5
02171	Total Xylenes	1330-20-7	330.	7.5	ug/l	5
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,900.	240.	ug/l	5

State of Washington Lab Certification No. C259
This sample was field filtered for ferrous iron.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

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Analysis Report

Lancaster Laboratories Sample No. WW 4728294

MW-17 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 11:25 by SK

Account Number: 11255

Submitted: 03/15/2006 09:00
Reported: 03/27/2006 at 12:05
Discard: 04/27/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

WOO17

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	03/17/2006 10:09	Joanne M Gates	1
07058	Manganese	SW-846 6010B	1	03/17/2006 10:09	Joanne M Gates	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	03/17/2006 08:00	Michelle L Heidig	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	03/17/2006 08:00	Michelle L Heidig	1
00228	Sulfate	EPA 300.0	1	03/16/2006 03:29	Nicole M Kepley	5
00368	Nitrate Nitrogen	EPA 300.0	1	03/16/2006 03:29	Nicole M Kepley	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	03/15/2006 21:30	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	03/22/2006 16:42	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	03/21/2006 22:27	Steven A Skiles	5
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	03/21/2006 22:27	Steven A Skiles	5
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2006 22:27	Steven A Skiles	5
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	03/16/2006 20:19	James L Mertz	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	03/21/2006 04:00	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4728295

MW-6 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 11:50 by SK

Account Number: 11255

Submitted: 03/15/2006 09:00
Reported: 03/27/2006 at 12:05
Discard: 04/27/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

WOOM6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	710.	66.7	ug/l	1
07058	Manganese	7439-96-5	1,820.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	498,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	37,300.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	450.	400.	ug/l	5
08344	Ferrous Iron	n.a.	27.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	3,400.	870.	ug/l	10
02096	Heavy Range Organics	n.a.	N.D.	1,100.	ug/l	10

The surrogate recovery for the blank associated with this sample is below QC limits. Since sufficient sample was not available for a reextraction, the data is reported.

05879	BTEX					
02161	Benzene	71-43-2	30.	0.5	ug/l	1
02164	Toluene	108-88-3	1.2	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	2.0	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	5.0	ug/l	1

An elevated surrogate recovery was observed. The analysis was repeated and an elevated surrogate recovery was again observed indicating a matrix effect.
Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for Ethylbenzene. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	460.	48.	ug/l	1

State of Washington Lab Certification No. C259
This sample was field filtered for ferrous iron.

All QC is compliant unless otherwise noted. Please refer to the Quality

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4728295

MW-6 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 11:50 by SK

Account Number: 11255

Submitted: 03/15/2006 09:00
Reported: 03/27/2006 at 12:05
Discard: 04/27/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

WOOM6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	03/20/2006 10:17	Deborah A Krady	1
07058	Manganese	SW-846 6010B	1	03/20/2006 10:17	Deborah A Krady	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	03/17/2006 08:00	Michelle L Heidig	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	03/17/2006 08:00	Michelle L Heidig	1
00228	Sulfate	EPA 300.0	1	03/16/2006 03:42	Nicole M Kepley	5
00368	Nitrate Nitrogen	EPA 300.0	1	03/16/2006 03:42	Nicole M Kepley	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	03/15/2006 21:30	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	03/24/2006 10:47	Matthew E Barton	10
05879	BTEX	SW-846 8021B	1	03/21/2006 22:59	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	03/21/2006 22:59	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2006 22:59	Steven A Skiles	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	03/17/2006 19:25	Annamaria Stipkovits	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	03/21/2006 04:00	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4728296

MW-28 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 12:45 by SK

Account Number: 11255

Submitted: 03/15/2006 09:00
Reported: 03/27/2006 at 12:05
Discard: 04/27/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

WOO28

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	2,170.	66.7	ug/l	1
07058	Manganese	7439-96-5	177.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	335,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	78,900.	15,000.	ug/l	50
00368	Nitrate Nitrogen	14797-55-8	15,900.	4,000.	ug/l	50
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	81.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1

The surrogate recovery for the blank associated with this sample is below QC limits. The batch was reextracted within hold. The surrogate recoveries for all QC were below QC limits in the reextract. Since sufficient sample was not available for another extraction, the original data is reported.

05879	BTEX					
02161	Benzene	71-43-2	1.7	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	0.7	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	2.1	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259
This sample was field filtered for ferrous iron.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

Lancaster Laboratories Sample No. WW 4728296

MW-28 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 12:45 by SK

Account Number: 11255

Submitted: 03/15/2006 09:00
Reported: 03/27/2006 at 12:05
Discard: 04/27/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

WOO28

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	03/17/2006 10:22	Joanne M Gates	1
07058	Manganese	SW-846 6010B	1	03/17/2006 10:22	Joanne M Gates	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	03/17/2006 08:00	Michelle L Heidig	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	03/17/2006 08:00	Michelle L Heidig	1
00228	Sulfate	EPA 300.0	1	03/16/2006 09:22	Nicole M Kepley	50
00368	Nitrate Nitrogen	EPA 300.0	1	03/16/2006 09:22	Nicole M Kepley	50
08344	Ferrous Iron	SM20 3500-Fe B modified	1	03/15/2006 21:30	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	03/22/2006 17:06	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	03/22/2006 01:09	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	03/22/2006 01:09	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2006 01:09	Steven A Skiles	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	03/16/2006 20:19	James L Mertz	1
02135	Extraction - DRO Water Special	ECY 97-602 NWTPH-Dx 06/97	1	03/21/2006 04:00	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4728297

TB-1 Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:03/14/2006 08:30

Account Number: 11255

Submitted: 03/15/2006 09:00
Reported: 03/27/2006 at 12:05
Discard: 04/27/2006

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

WOOTB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05879	BTEX	SW-846 8021B	1	03/21/2006 18:05	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	03/21/2006 18:05	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2006 18:05	Steven A Skiles	1

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Analysis Report

Quality Control Summary

Client Name: Chevron Group Number: 981617
Reported: 03/27/06 at 12:05 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 06074130102A	Sample number(s): 4728296							
Sulfate	N.D.	0.30	mg/l	98		89-110		
Nitrate Nitrogen	N.D.	0.080	mg/l	96		90-110		
Batch number: 06074130102B	Sample number(s): 4728292-4728295							
Sulfate	N.D.	0.30	mg/l	98		89-110		
Nitrate Nitrogen	N.D.	0.080	mg/l	96		90-110		
Batch number: 06074834401A	Sample number(s): 4728292-4728296							
Ferrous Iron	N.D.	0.0080	mg/l	100		95-105		
Batch number: 060751848004	Sample number(s): 4728292-4728294,4728296							
Iron	N.D.	0.0667	mg/l	98		80-120		
Manganese	N.D.	0.00096	mg/l	98		80-120		
Batch number: 06076020201A	Sample number(s): 4728292-4728296							
Alkalinity to pH 4.5				99		98-103		
Batch number: 060761848011	Sample number(s): 4728295							
Iron	N.D.	0.0667	mg/l	98		80-120		
Manganese	N.D.	0.00096	mg/l	98		80-120		
Batch number: 060790015A	Sample number(s): 4728292-4728296							
Diesel Range Organics	N.D.	0.080	mg/l	73	78	51-113	7	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 06080A07A	Sample number(s): 4728292-4728297							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	88	94	70-130	7	30
Benzene	N.D.	0.5	ug/l	92	94	86-119	2	30
Toluene	N.D.	0.5	ug/l	94	95	82-119	1	30
Ethylbenzene	N.D.	0.5	ug/l	92	94	81-119	1	30
Total Xylenes	N.D.	1.5	ug/l	94	95	82-120	2	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 06074130102A	Sample number(s): 4728296 UNSPK: P729044 BKG: P729044								
Sulfate	104		90-110			66.2	63.4	4*	3
Nitrate Nitrogen	98		90-110			N.D.	N.D.	4* (1)	2
Batch number: 06074130102B	Sample number(s): 4728292-4728295 UNSPK: P728419 BKG: P728419								

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Group Number: 981617
Reported: 03/27/06 at 12:05 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Sulfate	103		90-110			23.4	22.8	3 (1)	3
Nitrate Nitrogen	98		90-110			1.4	1.4	4* (1)	2
Batch number: 06074834401A	Sample number(s): 4728292-4728296 UNSPK: P728357 BKG: P728357								
Ferrous Iron	105	98	80-114	4	5	7.1	7.3	2 (1)	8
Batch number: 060751848004	Sample number(s): 4728292-4728294,4728296 UNSPK: P726496 BKG: P726496								
Iron	100	100	75-125	0	20	N.D.	N.D.	113* (1)	20
Manganese	99	99	75-125	0	20	N.D.	N.D.	18 (1)	20
Batch number: 06076020201A	Sample number(s): 4728292-4728296 UNSPK: P728363 BKG: P728363								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	97	102	64-130	3*	2	177.	183.	3	4
Batch number: 060761848011	Sample number(s): 4728295 UNSPK: P728591 BKG: P728591								
Iron	94	95	75-125	1	20	0.123	0.110	12 (1)	20
Manganese	95	95	75-125	0	20	0.225	0.223	1	20
Batch number: 06080A07A	Sample number(s): 4728292-4728297 UNSPK: P730768, P730769								
TPH by NWTPH-Gx waters	105		63-154						
Benzene	98		78-131						
Toluene	105		78-129						
Ethylbenzene	104		75-133						
Total Xylenes	105		84-131						

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 060790015A

	Orthoterphenyl
4728292	37*
4728293	89
4728294	96
4728295	89
4728296	89
Blank	47*
LCS	99
LCSD	100
Limits:	52-141

Analysis Name: BTEX
Batch number: 06080A07A

	Trifluorotoluene-P	Trifluorotoluene-F
4728292	109	106

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Group Number: 981617
Reported: 03/27/06 at 12:05 PM

Surrogate Quality Control

4728293	116	107
4728294	115	108
4728295	137*	131
4728296	113	104
4728297	112	102
Blank	114	105
LCS	115	110
LCSD	114	108
MS	113	114
Limits:	69-129	63-135

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11255 Sample #: 472829Z-97 SCR#:

WBS# NWRTB-009659O-0-OML

Group# 981617

Facility #: CVX 9-6590
Site Address: 232 E. Woodin Ave, Chelan, WA
Chevron PM: Brett Hunter Lead Consultant: SAIC
Consultant/Office: SAIC / Bothell
Consultant Prj. Mgr.: Romy Freis Coppinger
Consultant Phone #: 425-482-3222 Fax #: 425-485-5586
Sampler: S. Klick / G. Cisneros
Service Order #: 15001353 ☐ Non SAR:

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Water (Potable ☐ NPDES ☐)	Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☒ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates	NW TPH G	NV TPH D (Extended Rng. ☒ Silica Gel Cleanup ☒)	Lead Total ☐ Diss. ☐ Method	VPH/EPH	NWTPH HCID ☐ quantification	Alkalinity 310.1	Nitrate/Sulfate EPA 300.0	Ferrous Iron SM3500 Fe-D	Total Fe+Mn EPA 6010
MW-19	3/14/06	0940	X			X		10	X			X	X				X	X	X	X
MW-21	3/14/06	1030	X			X		10	X			X	X				X	X	X	X
MW-17	3/14/06	1125	X			X		10	X			X	X				X	X	X	X
MW-6	3/14/06	1150	X			X		9	X			X	X				X	X	X	X
MW-28	3/14/06	1245	X			X		10	X			X	X				X	X	X	X
TB-1	3/14/06	0830	X			X		3	X			X								

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
- Ferrous Iron - Field sampled/ filtered
- Nitrate & Ferrous Iron have shorting holding times

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk _____ Other.

	Date	Time		Date	Time
Relinquished by:	3/14	1315	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS FedEx Other			Received by:	3/15/06	0900
Temperature Upon Receipt 48°, 51°C			Custody Seals Intact? Yes No		

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 965282. Samples arrived at the laboratory on Saturday, October 29, 2005. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-19 Grab Water Sample	4636028
MW-19 Filtered Grab Water Sample	4636029
MW-37 Grab Water Sample	4636030
MW-37 Filtered Grab Water Sample	4636031
MW-30 Grab Water Sample	4636032
MW-30 Filtered Grab Water Sample	4636033
MW-31 Grab Water Sample	4636034
MW-31 Filtered Grab Water Sample	4636035
D102705-1 Grab Water Sample	4636036
D102705-1 Filtered Grab Water Sample	4636037
QA-1 Water Sample	4636038

1 COPY TO SAIC Attn: Romy Freier-Coppinger

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300

Respectfully Submitted,

Melissa A. McDermott
Senior Chemist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4636028

MW-19 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/27/2005 14:45 by AW

Account Number: 11255

Submitted: 10/29/2005 10:00
Reported: 11/14/2005 at 14:21
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

EWA19

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1,300.	5.0	ug/l	10
02164	Toluene	108-88-3	20.	5.0	ug/l	10
02166	Ethylbenzene	100-41-4	N.D.	5.0	ug/l	10
02171	Total Xylenes	1330-20-7	N.D.	15.	ug/l	10
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	25.	ug/l	10
	The reporting limits were raised because sample dilution was necessary to bring the internal standard compound within the acceptable QC limits.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	500.	83.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
	The observed sample pattern includes #2 fuel/diesel and an additional pattern which elutes earlier in the DRO range. The LCS surrogate recovery is above QC limits. Since the LCS spike recovery is within limits, the data is accepted.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,100.	480.	ug/l	10

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	11/04/2005 03:59	Martha L Seidel	10
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/02/2005 18:42	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	11/04/2005 03:59	Martha L Seidel	10
01146	GC VOA Water Prep	SW-846 5030B	1	11/04/2005 03:59	Martha L Seidel	10
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	11/02/2005 01:45	Sherry L Morrow	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4636029

MW-19 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/27/2005 14:45 by AW

Account Number: 11255

Submitted: 10/29/2005 10:00
Reported: 11/14/2005 at 14:21
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/09/2005 12:07	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/03/2005 15:46	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4636030

MW-37 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/27/2005 15:45 by AW

Account Number: 11255

Submitted: 10/29/2005 10:00
Reported: 11/14/2005 at 14:21
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

EWA37

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	81.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
	The LCS surrogate recovery is above QC limits. Since the LCS spike recovery is within limits, the data is accepted.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	11/04/2005 04:32	Martha L Seidel	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/02/2005 19:06	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	11/04/2005 04:32	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/04/2005 04:32	Martha L Seidel	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	11/02/2005 01:45	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4636031

MW-37 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/27/2005 15:45 by AW

Account Number: 11255

Submitted: 10/29/2005 10:00
Reported: 11/14/2005 at 14:21
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/09/2005 12:11	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/03/2005 15:46	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4636032

MW-30 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/27/2005 16:45 by AW

Account Number: 11255

Submitted: 10/29/2005 10:00
Reported: 11/14/2005 at 14:21
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

EWA30

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	85.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	110.	ug/l	1
	The LCS surrogate recovery is above QC limits. Since the LCS spike recovery is within limits, the data is accepted.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	11/04/2005 05:05	Martha L Seidel	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/02/2005 19:30	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	11/04/2005 05:05	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/04/2005 05:05	Martha L Seidel	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	11/02/2005 01:45	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4636033

MW-30 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/27/2005 16:45 by AW

Account Number: 11255

Submitted: 10/29/2005 10:00
Reported: 11/14/2005 at 14:21
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/09/2005 12:22	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/03/2005 15:46	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4636034

MW-31 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/27/2005 17:30 by AW

Account Number: 11255

Submitted: 10/29/2005 10:00
Reported: 11/14/2005 at 14:21
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

EWA31

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	81.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
	The LCS surrogate recovery is above QC limits. Since the LCS spike recovery is within limits, the data is accepted.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	11/04/2005 05:38	Martha L Seidel	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/02/2005 19:53	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	11/04/2005 05:38	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/04/2005 05:38	Martha L Seidel	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	11/02/2005 01:45	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4636035

MW-31 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/27/2005 17:30 by AW

Account Number: 11255

Submitted: 10/29/2005 10:00
Reported: 11/14/2005 at 14:21
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/09/2005 12:25	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/03/2005 15:46	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4636036

D102705-1 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/27/2005 18:00 by AW

Account Number: 11255

Submitted: 10/29/2005 10:00
Reported: 11/14/2005 at 14:21
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

EWA-1

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	82.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
	The LCS surrogate recovery is above QC limits. Since the LCS spike recovery is within limits, the data is accepted.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	11/04/2005 06:11	Martha L Seidel	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/02/2005 20:17	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	11/04/2005 06:11	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/04/2005 06:11	Martha L Seidel	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	11/02/2005 01:45	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4636037

D102705-1 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/27/2005 18:00 by AW

Account Number: 11255

Submitted: 10/29/2005 10:00
Reported: 11/14/2005 at 14:21
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/09/2005 12:29	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/03/2005 15:46	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4636038

QA-1 Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/27/2005 18:30

Account Number: 11255

Submitted: 10/29/2005 10:00
Reported: 11/14/2005 at 14:21
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

EWAQA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	11/03/2005 20:15	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	11/03/2005 20:15	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/03/2005 20:15	Martha L Seidel	1

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 965282
Reported: 11/14/05 at 02:21 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 053050012A	Sample number(s): 4636028,4636030,4636032,4636034,4636036							
Diesel Range Organics	N.D.	0.080	mg/l	65	70	51-113	7	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 053075704002	Sample number(s): 4636029,4636031,4636033,4636035,4636037							
Lead (furnace method)	N.D.	0.00087	mg/l	106		80-120		
Batch number: 05307A51A	Sample number(s): 4636028,4636030,4636032,4636034,4636036,4636038							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	87	89	70-130	2	30
Benzene	N.D.	0.5	ug/l	102	106	86-119	4	30
Toluene	N.D.	0.5	ug/l	100	103	82-119	3	30
Ethylbenzene	N.D.	0.5	ug/l	98	100	81-119	3	30
Total Xylenes	N.D.	1.5	ug/l	100	102	82-120	2	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	102	102	82-124	0	30

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 053075704002	Sample number(s): 4636029,4636031,4636033,4636035,4636037								
Lead (furnace method)	109	112	80-120	2	20	N.D.	N.D.	74* (1)	20
Batch number: 05307A51A	Sample number(s): 4636028,4636030,4636032,4636034,4636036,4636038								
TPH by NWTPH-Gx waters	99		63-154						
Benzene	114		78-131						
Toluene	110		78-129						
Ethylbenzene	108		75-133						
Total Xylenes	109		80-134						
Methyl tert-Butyl Ether	110		70-134						

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 053050012A

	Orthoterphenyl
4636028	101
4636030	92

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 965282
Reported: 11/14/05 at 02:21 PM

Surrogate Quality Control

4636032	95
4636034	88
4636036	87
Blank	92
LCS	175*
LCSD	118
Limits:	52-141

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 05307A51A

	Trifluorotoluene-P	Trifluorotoluene-F
4636028	91	102
4636030	103	107
4636032	102	107
4636034	102	110
4636036	101	107
4636038	101	107
Blank	102	106
LCS	101	106
LCSD	101	107
MS	101	106
Limits:	69-129	63-135

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories — Where quality is a science.

2 Coolers total

Acct. #: 11255 — For Lancaster Laboratories use only — Sample #: 4636028-38 — SCR#: 21136

WBS # : NWRTB-0096590-0-OML

C# 965282

Facility #: WX 9-6590

Site Address: 232 E. Woodin Ave, Chelan, WA

Chevron PM: Brent Hunter — Lead Consultant: SAIC

Consultant/Office: SAIC / Bothell

Consultant Prj. Mgr.: Romy Breier-Coppinger

Consultant Phone #: (425) 482-3322 — Fax #: (425) 485-5586

Sampler: Alisa Wells, Edmund Wong

Service Order #: 15001353 — ☐ Non SAR:

Analyses Requested

Preservation Codes

Matrix

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Oil	Air	Total Number of Containers	BTEX + MTBE 8021 / 8260 Naphth	8260 full scan	Oxygenates	NW TPH G	NW TPH D	Extended Rng. / Silica Gel Cleanup	Lead Total	Diss.	Method 7421	VPH/EPH	NWTPH H HCID	quantification
						Potable ☐ NPDES ☐				H			H	H		—					
MW-19	10/27/05	14.45	X			X			7	X			X	X		X					
MW-37	10/27/05	15.45	X			X			7	X			X	X		X					
MW-30	10/27/05	16.45	X			X			7	X			X	X		X					
MW-31	10/27/05	17.30	X			X			7	X			X	X		X					
D102705-1	10/27/05	18.00	X			X			7	X			X	X		X					
~~QA-1~~	~~10/27/05~~	~~18.30~~	~~X~~			X			3	X			X								

Preservative Codes

H = HCl — T = Thiosulfate
N = HNO_3 — B = NaOH
S = H_2SO_4 — O = Other

☐ J value reporting needed

☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks

-Pb lab filtered

EW

Turnaround Time Requested (TAT) (please circle)

STD. TAT — 72 hour — 48 hour
24 hour — 4 day — 5 day

Data Package Options (please circle if required)

QC Summary — Type I - Full
Type VI (Raw Data) — Disk / EDD
WIP (RWQCB) — Standard Format
Disk — _____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
S. Mukle	10/31/05	1545			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: 2 Coolers			Received by:	Date	Time
UPS FedEx Other				11/1/05	1000
Temperature Upon Receipt _____ C° 2.3-3.0C			Custody Seals Intact? Yes No		

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 965115. Samples arrived at the laboratory on Friday, October 28, 2005. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-28 Grab Water Sample	4634928
MW-28 Filtered Grab Water Sample	4634929
MW-27 Grab Water Sample	4634930
MW-27 Filtered Grab Water Sample	4634931
MW-21 Grab Water Sample	4634932
MW-21 Filtered Grab Water Sample	4634933
MW-17 Grab Water Sample	4634934
MW-17 Filtered Grab Water Sample	4634935
MW-8 Grab Water Sample	4634936
MW-8 Filtered Grab Water Sample	4634937
TB-1 Water Sample	4634938

1 COPY TO SAIC Attn: Romy Freier-Coppinger

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300

Respectfully Submitted,

Melissa A. McDermott
Senior Chemist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4634928

MW-28 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 08:45 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE28

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	88.5	37.8	ug/l	1
07058	Manganese	7439-96-5	46.8	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	364,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	88,900.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	12,500.	400.	ug/l	5
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	310.	77.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	97.	ug/l	1
	The observed sample pattern is not typical of #2 fuel/diesel. It elutes in the DRO range earlier than #2 fuel.					
05879	BTEX					
02161	Benzene	71-43-2	N.D.	2.0	ug/l	1
02164	Toluene	108-88-3	N.D.	2.0	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	17.	1.5	ug/l	1
	Due to the presence of interferents near their retention time, normal reporting limits were not attained for benzene or toluene. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	340.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/02/2005 12:55	Amanda S Bitner	1
07058	Manganese	SW-846 6010B	1	11/02/2005 12:55	Amanda S Bitner	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634928

MW-28 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 08:45 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE28

00201	Alkalinity to pH 8.3	EPA 310.1	1	10/31/2005 15:17	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	10/31/2005 15:17	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	11/02/2005 22:30	Shannon L Phillips	10
00368	Nitrate Nitrogen	EPA 300.0	1	10/28/2005 16:12	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	10/28/2005 17:00	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	ECY 97-602 NWTPH-Dx modified	1	11/02/2005 22:41	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	11/08/2005 05:03	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	ECY 97-602 NWTPH-Gx modified	1	11/08/2005 05:03	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/08/2005 05:03	Martha L Seidel	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	10/31/2005 15:13	Megersa Deyessa	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	10/31/2005 18:15	JoElla L Rice	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634929

MW-28 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 08:45 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved Pb.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/09/2005 11:49	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/03/2005 15:46	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634930

MW-27 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 10:10 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE27

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	123.	37.8	ug/l	1
07058	Manganese	7439-96-5	21.4	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	249,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	35,300.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	7,000.	400.	ug/l	5
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	84.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	110.	ug/l	1
	The LCS surrogate recovery is above QC limits. Since the LCS spike recovery is within limits, the data is accepted.					
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/02/2005 13:00	Amanda S Bitner	1
07058	Manganese	SW-846 6010B	1	11/02/2005 13:00	Amanda S Bitner	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	10/31/2005 15:17	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	10/31/2005 15:17	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	10/28/2005 16:26	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/28/2005 16:26	Shannon L Phillips	5

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Analysis Report

Lancaster Laboratories Sample No. WW 4634930

MW-27 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 10:10 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE27

08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	10/28/2005 17:00	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/02/2005 16:43	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	11/04/2005 01:47	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	11/04/2005 01:47	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/04/2005 01:47	Martha L Seidel	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	10/31/2005 15:13	Megersa Deyessa	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	11/02/2005 01:45	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634931

MW-27 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 10:10 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved Pb.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/09/2005 11:53	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/03/2005 15:46	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634932

MW-21 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 10:45 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	206.	37.8	ug/l	1
07058	Manganese	7439-96-5	539.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	363,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	20,500.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
08344	Ferrous Iron	n.a.	220.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	480.	82.	ug/l	1
02096	Heavy Range Organics	n.a.	120.	100.	ug/l	1

The observed sample pattern is not typical of #2 fuel/diesel. It elutes in the DRO range earlier than #2 fuel.
The LCS surrogate recovery is above QC limits. Since the LCS spike recovery is within limits, the data is accepted.

05879	BTEX					
02161	Benzene	71-43-2	3,500.	10.	ug/l	20
02164	Toluene	108-88-3	53.	2.5	ug/l	5
02166	Ethylbenzene	100-41-4	39.	2.5	ug/l	5
02171	Total Xylenes	1330-20-7	83.	7.5	ug/l	5

An elevated surrogate recovery was observed. The analysis was repeated and an elevated surrogate recovery was again observed indicating a significant matrix effect.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,300.	960.	ug/l	20

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/02/2005 13:05	Amanda S Bitner	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634932

MW-21 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 10:45 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE21

07058	Manganese	SW-846 6010B	1	11/02/2005 13:05	Amanda S Bitner	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	10/31/2005 15:17	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	10/31/2005 15:17	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	10/28/2005 16:40	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/28/2005 16:40	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	10/28/2005 17:00	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/02/2005 17:30	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	11/04/2005 02:20	Martha L Seidel	20
05879	BTEX	SW-846 8021B	1	11/04/2005 10:16	Martha L Seidel	5
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	11/04/2005 02:20	Martha L Seidel	20
01146	GC VOA Water Prep	SW-846 5030B	1	11/04/2005 02:20	Martha L Seidel	20
01146	GC VOA Water Prep	SW-846 5030B	2	11/04/2005 10:16	Martha L Seidel	5
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	10/31/2005 15:13	Megersa Deyessa	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	11/02/2005 01:45	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634933

MW-21 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 10:45 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved Pb.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/09/2005 11:56	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/03/2005 15:46	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634934

MW-17 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 11:50 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	729.	37.8	ug/l	1
07058	Manganese	7439-96-5	311.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	396,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	52,500.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	2,300.	400.	ug/l	5
08344	Ferrous Iron	n.a.	43.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	180.	82.	ug/l	1
02096	Heavy Range Organics	n.a.	120.	100.	ug/l	1

The observed sample pattern includes #2 fuel/diesel and an additional pattern which elutes earlier in the DRO range.
The LCS surrogate recovery is above QC limits. Since the LCS spike recovery is within limits, the data is accepted.

05879	BTEX					
02161	Benzene	71-43-2	20.	0.5	ug/l	1
02164	Toluene	108-88-3	6.3	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	2.1	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	14.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	710.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/02/2005 13:10	Amanda S Bitner	1
07058	Manganese	SW-846 6010B	1	11/02/2005 13:10	Amanda S Bitner	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	10/31/2005 15:17	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	10/31/2005 15:17	Geraldine C Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634934

MW-17 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 11:50 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE17

00228	Sulfate	EPA 300.0	1	10/28/2005 16:54	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/28/2005 16:54	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	10/28/2005 17:00	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/02/2005 17:54	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	11/04/2005 02:53	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	11/04/2005 02:53	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/04/2005 02:53	Martha L Seidel	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	10/31/2005 15:13	Megersa Deyessa	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	11/02/2005 01:45	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634935

MW-17 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 11:50 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved Pb.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/09/2005 12:00	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/03/2005 15:46	Megersa Deyessa	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4634936

MW-8 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 12:30 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE-8

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	282.	37.8	ug/l	1
07058	Manganese	7439-96-5	1,140.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	323,000.	460.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	60,000.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	11,600.	400.	ug/l	5
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	78.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	98.	ug/l	1
	The LCS surrogate recovery is above QC limits. Since the LCS spike recovery is within limits, the data is accepted.					
05879	BTEX					
02161	Benzene	71-43-2	2.0	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/02/2005 13:24	Amanda S Bitner	1
07058	Manganese	SW-846 6010B	1	11/02/2005 13:24	Amanda S Bitner	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	10/31/2005 15:17	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	10/31/2005 15:17	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	10/28/2005 17:08	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/28/2005 17:08	Shannon L Phillips	5

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Analysis Report

Lancaster Laboratories Sample No. WW 4634936

MW-8 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 12:30 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE-8

08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	10/28/2005 17:00	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/02/2005 18:18	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	11/04/2005 03:26	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	11/04/2005 03:26	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/04/2005 03:26	Martha L Seidel	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	10/31/2005 15:13	Megersa Deyessa	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	11/02/2005 01:45	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634937

MW-8 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 12:30 by AW

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved Pb.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/09/2005 12:04	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/03/2005 15:46	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4634938

TB-1 Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan WA
Collected:10/27/2005 12:45

Account Number: 11255

Submitted: 10/28/2005 09:00
Reported: 11/14/2005 at 14:32
Discard: 12/15/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHETB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05879	BTEX	SW-846 8021B	1	11/03/2005 19:42	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	11/03/2005 19:42	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/03/2005 19:42	Martha L Seidel	1

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 965115
Reported: 11/14/05 at 02:32 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 05301401301B	Sample number(s): 4634928,4634930,4634932,4634934,4634936							
Sulfate	N.D.	0.30	mg/l	101		90-110		
Nitrate Nitrogen	N.D.	0.080	mg/l	96		90-110		
Batch number: 05301834401A	Sample number(s): 4634928,4634930,4634932,4634934,4634936							
Ferrous Iron	N.D.	0.0080	mg/l	102		95-105		
Batch number: 053040003A	Sample number(s): 4634928							
Diesel Range Organics	N.D.	0.080	mg/l	74		51-113		
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 05304020201A	Sample number(s): 4634928,4634930,4634932,4634934,4634936							
Alkalinity to pH 4.5				100		98-103		
Batch number: 053041848003	Sample number(s): 4634928,4634930,4634932,4634934,4634936							
Iron	N.D.	0.0378	mg/l	102		80-120		
Manganese	N.D.	0.00096	mg/l	103		80-120		
Batch number: 053050012A	Sample number(s): 4634930,4634932,4634934,4634936							
Diesel Range Organics	N.D.	0.080	mg/l	65	70	51-113	7	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 053075704002	Sample number(s): 4634929,4634931,4634933,4634935,4634937							
Lead (furnace method)	N.D.	0.00087	mg/l	106		80-120		
Batch number: 05307A51A	Sample number(s): 4634930,4634932,4634934,4634936,4634938							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	87	89	70-130	2	30
Benzene	N.D.	0.5	ug/l	102	106	86-119	4	30
Toluene	N.D.	0.5	ug/l	100	103	82-119	3	30
Ethylbenzene	N.D.	0.5	ug/l	98	100	81-119	3	30
Total Xylenes	N.D.	1.5	ug/l	100	102	82-120	2	30
Batch number: 05307A51B	Sample number(s): 4634932							
Toluene	N.D.	0.5	ug/l	100	103	82-119	3	30
Ethylbenzene	N.D.	0.5	ug/l	98	100	81-119	3	30
Total Xylenes	N.D.	1.5	ug/l	100	102	82-120	2	30
Batch number: 05311A51A	Sample number(s): 4634928							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	86	88	70-130	1	30
Benzene	N.D.	0.5	ug/l	94	94	86-119	0	30
Toluene	N.D.	0.5	ug/l	93	93	82-119	0	30
Ethylbenzene	N.D.	0.5	ug/l	90	91	81-119	2	30
Total Xylenes	N.D.	1.5	ug/l	92	94	82-120	2	30

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 965115
Reported: 11/14/05 at 02:32 PM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 05301401301B	Sample number(s): 4634928,4634930,4634932,4634934,4634936								
Sulfate	97		90-110			63.7	62.1	2	3
Nitrate Nitrogen	98		90-110			6.3	6.2	2	2
Batch number: 05301834401A	Sample number(s): 4634928,4634930,4634932,4634934,4634936								
Ferrous Iron	94	99	80-114	5	5	0.22	0.22	2 (1)	8
Batch number: 053040003A	Sample number(s): 4634928								
Diesel Range Organics						N.D.	N.D.	0 (1)	20
Heavy Range Organics						1.3	1.3	2 (1)	20
Batch number: 05304020201A	Sample number(s): 4634928,4634930,4634932,4634934,4634936								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	99	100	64-130	0	2	89.6	93.0	4	4
Batch number: 053041848003	Sample number(s): 4634928,4634930,4634932,4634934,4634936								
Iron	(2)	(2)	75-125	27*	20	9.95	10.3	3	20
Manganese	100	101	75-125	1	20	0.0502	0.0498	1	20
Batch number: 053075704002	Sample number(s): 4634929,4634931,4634933,4634935,4634937								
Lead (furnace method)	109	112	80-120	2	20	N.D.	N.D.	74* (1)	20
Batch number: 05307A51A	Sample number(s): 4634930,4634932,4634934,4634936,4634938								
TPH by NWTPH-Gx waters	99		63-154						
Benzene	114		78-131						
Toluene	110		78-129						
Ethylbenzene	108		75-133						
Total Xylenes	109		80-134						
Batch number: 05307A51B	Sample number(s): 4634932								
Toluene	110		78-129						
Ethylbenzene	108		75-133						
Total Xylenes	109		80-134						
Batch number: 05311A51A	Sample number(s): 4634928								
TPH by NWTPH-Gx waters	95		63-154						
Benzene	104		78-131						
Toluene	103		78-129						
Ethylbenzene	103		75-133						
Total Xylenes	104		80-134						

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 053040003A

	Orthoterphenyl
4634928	102
Blank	93

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 965115
Reported: 11/14/05 at 02:32 PM

Surrogate Quality Control

DUP	93	
LCS	100	
Limits:	52-141	

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 053050012A

	Orthoterphenyl
4634930	97
4634932	103
4634934	96
4634936	94
Blank	92
LCS	175*
LCSD	118
Limits:	52-141

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 05307A51A

	Trifluorotoluene-P	Trifluorotoluene-F
4634930	101	106
4634932	223*	112
4634934	108	109
4634936	102	106
4634938	103	108
Blank	102	106
LCS	101	106
LCSD	101	107
MS	101	106
Limits:	69-129	63-135

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 05307A51B

	Trifluorotoluene-P	Trifluorotoluene-F
Blank	101	105
LCS	101	106
LCSD	101	107
MS	101	106
Limits:	69-129	57-146

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 05311A51A

	Trifluorotoluene-P	Trifluorotoluene-F
4634928	111	111
Blank	98	102
LCS	102	107
LCSD	102	105
MS	102	105
Limits:	69-129	63-135

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 965115
Reported: 11/14/05 at 02:32 PM

Surrogate Quality Control

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories — Where quality is a science.

2 coolers total

WBS # = NWRTB-009690-0-OML

Acct. #: 11255 — For Lancaster Laboratories use only — Sample #: 4634928-38/965115 SCR#: 21136

Facility #: CVX 9-6590

Site Address: 232 E. Woodin Ave, Chelan, WA

Chevron PM: Brett Hunter — Lead Consultant: SAIC

Consultant/Office: SAIC / Bothell

Consultant Prj. Mgr.: Romy Freier-Coppinger

Consultant Phone #: (425) 482-3322 — Fax #: (425) 485-5566

Sampler: Alisa Wells, Edmund Wong

Service Order #: 15001353 — ☐ Non SAR:

Analyses Requested

Matrix

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water (☐ Potable ☐ NPDES)	Oil ☐ Air ☐	Total Number of Containers	Preservation Codes	BTEX + ~~MTBE~~ 8021 ☒ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates	NW TPH G	NW TPH D (☒ Extended Rng. ☒ Silica Gel Cleanup)	Lead Total ☐ Diss. ☒ Method 7421	VPH/EPH	NWTPH H HCID ☐ quantification	Alkalinity EPA 310.1	Nitrate, Sulfate (SM 4110/EPA 300)	Ferrous Iron SM 3500-D	Total Fe & Mn 6010B
										H			H	H	I			I	I	H	N
MW-28	10/27/05	0845	X			X		11		X			X	X	X			X	X	X	X
MW-27	10/27/05	1010	X			X		11		X			X	X	X			X	X	X	X
MW-21	10/27/05	1045	X			X		11		X			X	X	X			X	X	X	X
MW-17	10/27/05	1150	X			X		11		X			X	X	X			X	X	X	X
MW-8	10/27/05	1230	X			X		11		X			X	X	X			X	X	X	X
TB-1	10/27/05	1245	X			X		3		X			X								

Preservative Codes

H = HCl — T = Thiosulfate
N = HNO_3 — B = NaOH
S = H_2SO_4 — O = Other

☐ J value reporting needed

☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks

- Ferrous Iron – field filtered
- Pb – lab filtered
- Nitrate & Ferrous Iron have short holding times.

BMW

Turnaround Time Requested (TAT) (please circle)

STD. TAT — 72 hour — 48 hour
24 hour — 4 day — 5 day

Data Package Options (please circle if required)

QC Summary — Type I - Full
Type VI (Raw Data) — Disk / EDD
WIP (RWQCB) — Standard Format
Disk — _____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
S. Murkle	10/27/05	1545			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx Other			Received by: Kathy Binkley	Date 10-28-05	Time 0900
Temperature Upon Receipt 4.5, 1.6°			Custody Seals Intact? Yes No (N/A)		

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 951596. Samples arrived at the laboratory on Monday, July 18, 2005. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-19 Grab Water Sample	4564917
MW-19_Filtered Grab Water Sample	4564918
MW-37 Grab Water Sample	4564919
MW-37_Filtered Grab Water Sample	4564920
MW-37-FD Grab Water Sample	4564921
MW-37-FD_Filtered Grab Water Sample	4564922
MW-30 Grab Water Sample	4564923
MW-30_Filtered Grab Water Sample	4564924

1 COPY TO SAIC Attn: Romy Freier-Coppinger

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300

Respectfully Submitted,

Jenifer E. Hess
Manager

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4564917

MW-19 Grab Water Sample
Facility# 96590
232 E Woodin Ave-Chelan, WA
Collected:07/14/2005 13:30 by AW

Account Number: 11255

Submitted: 07/18/2005 08:40
Reported: 08/05/2005 at 14:32
Discard: 09/05/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE19

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	400.	0.5	ug/l	1
02164	Toluene	108-88-3	11.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	0.7	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	4.5	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	10.	ug/l	1
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent. A poor surrogate recovery was observed. The analysis was repeated and a poor surrogate recovery was again observed indicating a significant matrix effect.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	610.	83.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	720.	48.	ug/l	1

State of Washington Lab Certification No. C259
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/26/2005 13:09	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/20/2005 18:37	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/25/2005 04:30	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	2	07/25/2005 04:30	Deborah S Garrison	1
01146	GC VOA Water Prep	SW-846 5030B	4	07/26/2005 13:09	Linda C Pape	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	07/19/2005 14:30	Jason A Heisey	1

Lancaster Laboratories Sample No. WW 4564917

MW-19 Grab Water Sample
Facility# 96590
232 E Woodin Ave-Chelan, WA
Collected:07/14/2005 13:30 by AW

Account Number: 11255

Submitted: 07/18/2005 08:40
Reported: 08/05/2005 at 14:32
Discard: 09/05/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE19

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Analysis Report

Lancaster Laboratories Sample No. WW 4564918

MW-19_Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave-Chelan, WA
Collected:07/14/2005 13:30 by AW

Account Number: 11255

Submitted: 07/18/2005 08:40
Reported: 08/05/2005 at 14:32
Discard: 09/05/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/26/2005 13:46	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/25/2005 23:00	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4564919

MW-37 Grab Water Sample
Facility# 96590
232 E Woodin Ave-Chelan, WA
Collected:07/14/2005 14:30 by AW

Account Number: 11255

Submitted: 07/18/2005 08:40
Reported: 08/05/2005 at 14:32
Discard: 09/05/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE37

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	89.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	110.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/22/2005 20:28	Deborah S Garrison	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/20/2005 19:01	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/22/2005 20:28	Deborah S Garrison	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2005 20:28	Deborah S Garrison	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	07/19/2005 14:30	Jason A Heisey	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4564920

MW-37_Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave-Chelan, WA
Collected:07/14/2005 14:30 by AW

Account Number: 11255

Submitted: 07/18/2005 08:40
Reported: 08/05/2005 at 14:32
Discard: 09/05/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/26/2005 13:49	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/25/2005 23:00	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4564921

MW-37-FD Grab Water Sample
Facility# 96590
232 E Woodin Ave-Chelan, WA
Collected:07/14/2005 12:00 by AW

Account Number: 11255

Submitted: 07/18/2005 08:40
Reported: 08/05/2005 at 14:32
Discard: 09/05/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CH37D

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	86.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	110.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/22/2005 21:01	Deborah S Garrison	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/20/2005 19:24	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/22/2005 21:01	Deborah S Garrison	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2005 21:01	Deborah S Garrison	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	07/19/2005 14:30	Jason A Heisey	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4564922

MW-37-FD_Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave-Chelan, WA
Collected:07/14/2005 12:00 by AW

Account Number: 11255

Submitted: 07/18/2005 08:40
Reported: 08/05/2005 at 14:33
Discard: 09/05/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/26/2005 13:53	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/25/2005 23:00	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4564923

MW-30 Grab Water Sample
Facility# 96590
232 E Woodin Ave-Chelan, WA
Collected:07/14/2005 15:45 by AW

Account Number: 11255

Submitted: 07/18/2005 08:40
Reported: 08/05/2005 at 14:33
Discard: 09/05/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE30

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	87.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	110.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/23/2005 00:50	Deborah S Garrison	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/20/2005 19:48	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/23/2005 00:50	Deborah S Garrison	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/23/2005 00:50	Deborah S Garrison	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	07/19/2005 14:30	Jason A Heisey	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4564924

MW-30_Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave-Chelan, WA
Collected:07/14/2005 15:45 by AW

Account Number: 11255

Submitted: 07/18/2005 08:40
Reported: 08/05/2005 at 14:33
Discard: 09/05/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/26/2005 13:56	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/25/2005 23:00	James L Mertz	1

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 951596
Reported: 08/05/05 at 02:33 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 052000001A	Sample number(s): 4564917,4564919,4564921,4564923							
Diesel Range Organics	N.D.	0.080	mg/l	94	94	51-113	0	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 05203A56A	Sample number(s): 4564919,4564921,4564923							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	120	90	70-130	29	30
Benzene	N.D.	0.5	ug/l	97	102	86-119	5	30
Toluene	N.D.	0.5	ug/l	98	102	82-119	4	30
Ethylbenzene	N.D.	0.5	ug/l	99	103	81-119	4	30
Total Xylenes	N.D.	1.5	ug/l	101	104	82-120	3	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	101	103	82-124	2	30
Batch number: 05203A56C	Sample number(s): 4564917							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	120	90	70-130	29	30
Batch number: 05203A56D	Sample number(s): 4564917							
Benzene	N.D.	0.5	ug/l	97	102	86-119	5	30
Toluene	N.D.	0.5	ug/l	98	102	82-119	4	30
Ethylbenzene	N.D.	0.5	ug/l	99	103	81-119	4	30
Total Xylenes	N.D.	1.5	ug/l	101	104	82-120	3	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	101	103	82-124	2	30
Batch number: 052065704002	Sample number(s): 4564918,4564920,4564922,4564924							
Lead (furnace method)	N.D.	0.00087	mg/l	101		80-120		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 05203A56A	Sample number(s): 4564919,4564921,4564923								
TPH by NWTPH-Gx waters	103	104	63-154	2	30				
Benzene	105	104	78-131	1	20				
Toluene	106	104	78-129	1	30				
Ethylbenzene	107	106	75-133	2	30				
Total Xylenes	109	107	86-132	2	30				
Methyl tert-Butyl Ether	103	103	70-134	0	30				
Batch number: 05203A56C	Sample number(s): 4564917								
TPH by NWTPH-Gx waters	103	104	63-154	2	30				
Batch number: 05203A56D	Sample number(s): 4564917								

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 951596
Reported: 08/05/05 at 02:33 PM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Benzene	105	104	78-131	1	20				
Toluene	106	104	78-129	1	30				
Ethylbenzene	107	106	75-133	2	30				
Total Xylenes	109	107	86-132	2	30				
Methyl tert-Butyl Ether	103	103	70-134	0	30				
Batch number: 052065704002	Sample number(s): 4564918,4564920,4564922,4564924								
Lead (furnace method)	103	103	80-120	0	20	0.0018	0.0018	0 (1)	20

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 052000001A

	Orthoterphenyl
4564917	106
4564919	107
4564921	109
4564923	100
Blank	110
LCS	121
LCSD	113
Limits:	50-150

Analysis Name: BTEX, MTBE
Batch number: 05203A56A

	Trifluorotoluene-P	Trifluorotoluene-F
4564919	88	105
4564921	87	103
4564923	88	102
Blank	79	90
LCS	82	94
LCSD	83	93
MS	88	100
MSD	88	100
Limits:	69-137	70-142

Analysis Name: BTEX, MTBE
Batch number: 05203A56C

	Trifluorotoluene-P	Trifluorotoluene-F
4564917		110
Blank	87	101
LCS	82	94
LCSD	83	93
MS	88	100
MSD	88	100
Limits:	69-137	70-142

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 951596
Reported: 08/05/05 at 02:33 PM

Surrogate Quality Control

Analysis Name: BTEX, MTBE
Batch number: 05203A56D

	Trifluorotoluene-P	Trifluorotoluene-F
4564917	64*	
Blank	86	
LCS	82	94
LCSD	83	93
MS	88	100
MSD	88	100
Limits:	69-137	57-146

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

220201

For Lancaster Laboratories use only
Acct. #: 11255 Sample #: 4564917-924 SCR#: Group# 951596

Facility #: 9-6590
Site Address: 232 E. Woodin Ave, Chelan, WA
Chevron PM: Brett Hunter Lead Consultant: SAIC
Consultant/Office: Bothell, WA
Consultant Prj. Mgr.: Romy Frier-Coppinger
Consultant Phone #: 425-482-3322 Fax #: 425-485-5566
Sampler: A. Wells / S. Kline
Service Order #: 0015001353 ☐ Non SAR:

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Matrix: Water	Matrix: Oil ☐ Air ☐	Total Number of Containers	Analyses Requested / Preservation Codes: BTEX + MTBE 8021 ☒ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates	NW TPH G	NW TPH D Extended Rng. ☒ Silica Gel Cleanup ☐	Lead Total ☐ Diss. ☒ Method 7421	VPH/EPH	NWTPH H HCID ☐ quantification			
MW-19	7/14/05	1330	X			X		7	X			X	X	X	3				
MW-37	7/14/05	1430	X			X		7	X			X	X	X	3	mm	7/18/05		
MW-37-FD	7/14/05	1200	X			X		7	X			X	X	X	3				

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
Lab Filter mm 7/18/05

Turnaround Time Requested (TAT) (please circle)
STD. TAT | 72 hour | 48 hour | 24 hour | 4 day | 5 day

Data Package Options (please circle if required)
QC Summary | Type I - Full
Type VI (Raw Data) | Disk / EDD
WIP (RWQCB) | Standard Format
Disk | _____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
	7/15	1200			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx Other ____			Received by: Mary Beth Stamm	7/18/05	0840
Temperature Upon Receipt 17.9-18.5 C°			Custody Seals Intact? Yes No		

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11255 Sample #: 4516491 7-24 SCR#: 220202
Group# 951596

Facility #: 9-6590
Site Address: 232 E. Woodin Ave, Chelan, WA
Chevron PM: Brett Hunter Lead Consultant: SAIC
Consultant/Office: Bothell, WA
Consultant Prj. Mgr.: Romy Frier-Coppinger
Consultant Phone #: 425-482-3322 Fax #: 425-485-5566
Sampler: A. Wells / S. Kline
Service Order #: 001500 1353 ☐ Non SAR:

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Matrix: Water	Matrix: Oil	Matrix: Air	Total Number of Containers	BTEX + MTBE 8021 ☒ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ___	NW TPH G	NW TPH D ☒ Extended Rng. ☒ Silica Gel Cleanup	Lead Total ☐ Diss. ☒ Method 7421	VPH/EPH	NWTPH H HCID ☐ quantification	Alkalinity EPA 310-1	Nitrate/Sulfate EPA 300-0	Ferrous Iron SM3500 F-D	Fe + Mn 6010
MW-30	7/14/05	1545	X			X			3	X			X	X	X	mm		X	X	X	X
MW-8	7/14/05	1100	X			X			2	X					X		7/15/05	X	X	X	X
MW-21	7/14/05	0900	X			X			1						X			X	X	X	X
MW-23	7/14/05	0815	X			X			1*						X			X	X	X	X
MW-28	7/14/05	0700	X			X			1						X			X	X	X	X
MW-17	7/14/05	0955	X			X			1						X			X	X	X	X

Analyses Requested
Preservation Codes

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
- No VOAs for MW-30 collected
- Samples from MW-8, MW-21, MW-23, MW-28 MW-17 are to be combined w/ MNA samples shipped from site 9-0590 on 7/14/05

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk _____ Other.

	Date	Time		Date	Time
Relinquished by:	7/15/05	1200	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS (FedEx) Other ___			Received by: MaryBeth Stamos	7/18/05	0840
Temperature Upon Receipt 17.3-17.6 C°			Custody Seals Intact? (Yes) No		

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 951386. Samples arrived at the laboratory on Friday, July 15, 2005. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
QA-1 Water Sample	4563780
MW-31 Grab Water Sample	4563781
MW-31 Filtered Grab Water Sample	4563782
MW-28 Grab Water Sample	4563783
MW-28 Filtered Grab Water Sample	4563784
MW-23 Grab Water Sample	4563785
MW-23 Filtered Grab Water Sample	4563786
MW-21 Grab Water Sample	4563787
MW-21 Filtered Grab Water Sample	4563788
MW-17 Grab Water Sample	4563789
MW-17 Filtered Grab Water Sample	4563790
MW-8 Grab Water Sample	4563791
MW-8 Filtered Grab Water Sample	4563792

1 COPY TO SAIC Attn: Romy Freier-Coppinger

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300

Respectfully Submitted,

Erik J. Frederiksen
Manager

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4563780

QA-1 Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/13/2005 18:00

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:00
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

QAWAC

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/19/2005 13:10	Deborah S Garrison	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/19/2005 13:10	Deborah S Garrison	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/19/2005 13:10	Deborah S Garrison	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563781

MW-31 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/13/2005 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:00
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

31EWA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/20/2005 00:04	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/20/2005 15:05	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/20/2005 00:04	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/20/2005 00:04	Linda C Pape	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	07/18/2005 14:30	Sarah B Pennell	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563782

MW-31 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/13/2005 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:00
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/26/2005 13:18	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/25/2005 23:00	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563783

MW-28 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 07:00 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:00
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

28EAC

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	19,400.	37.8	ug/l	1
07058	Manganese	7439-96-5	509.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	319,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	99,800.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	13,100.	400.	ug/l	5
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	8.5	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	3.7	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	130.	88.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	110.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	140.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	07/25/2005 06:52	Donna R Sackett	1
07058	Manganese	SW-846 6010B	1	07/25/2005 06:52	Donna R Sackett	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	07/15/2005 15:57	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	07/15/2005 15:57	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	07/19/2005 10:03	Shannon L Phillips	10
00368	Nitrate Nitrogen	EPA 300.0	1	07/15/2005 21:30	William L Hamaker Jr	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	07/16/2005 06:10	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563783

MW-28 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 07:00 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:00
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

28EAC

02159	BTEX, MTBE	SW-846 8021B	1	07/20/2005 00:36	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/20/2005 15:28	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/20/2005 00:36	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/20/2005 00:36	Linda C Pape	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	07/23/2005 07:10	Suzette L Lehman	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	07/18/2005 14:30	Sarah B Pennell	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563784

MW-28 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 07:00 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:00
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/26/2005 13:22	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/25/2005 23:00	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563785

MW-23 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 08:15 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:00
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23EAC

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	1,790.	37.8	ug/l	1
07058	Manganese	7439-96-5	45.6	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	236,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	17,800.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	4,800.	400.	ug/l	5
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	82.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	07/25/2005 06:56	Donna R Sackett	1
07058	Manganese	SW-846 6010B	1	07/25/2005 06:56	Donna R Sackett	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	07/15/2005 15:57	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	07/15/2005 15:57	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	07/19/2005 10:44	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	07/15/2005 22:38	William L Hamaker Jr	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	07/16/2005 06:10	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563785

MW-23 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 08:15 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:00
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23EAC

02159	BTEX, MTBE	SW-846 8021B	1	07/20/2005 03:53	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/21/2005 04:50	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/20/2005 03:53	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/20/2005 03:53	Linda C Pape	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	07/23/2005 07:10	Suzette L Lehman	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	07/19/2005 02:30	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563786

MW-23 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 08:15 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:01
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/26/2005 13:25	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/25/2005 23:00	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563787

MW-21 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 09:00 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:01
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

21EAC

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	629.	37.8	ug/l	1
07058	Manganese	7439-96-5	390.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	371,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	30,800.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
08344	Ferrous Iron	n.a.	690.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1,600.	2.5	ug/l	5
02164	Toluene	108-88-3	34.	2.5	ug/l	5
02166	Ethylbenzene	100-41-4	15.	2.5	ug/l	5
02171	Total Xylenes	1330-20-7	47.	7.5	ug/l	5
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	20.	ug/l	5
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	650.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,400.	240.	ug/l	5

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	07/25/2005 07:00	Donna R Sackett	1
07058	Manganese	SW-846 6010B	1	07/25/2005 07:00	Donna R Sackett	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	07/15/2005 15:57	Geraldine C Smith	1

Lancaster Laboratories Sample No. WW 4563787

MW-21 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 09:00 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:01
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

21EAC

00202	Alkalinity to pH 4.5	EPA 310.1	1	07/15/2005 15:57	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	07/19/2005 10:57	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	07/15/2005 22:52	William L Hamaker Jr	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	07/16/2005 06:10	Daniel S Smith	1
02159	BTEX, MTBE	SW-846 8021B	1	07/20/2005 14:14	Linda C Pape	5
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/21/2005 05:13	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/20/2005 14:14	Linda C Pape	5
01146	GC VOA Water Prep	SW-846 5030B	1	07/20/2005 14:14	Linda C Pape	5
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	07/23/2005 07:10	Suzette L Lehman	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	07/19/2005 02:30	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563788

MW-21 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 09:00 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:01
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/26/2005 13:29	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/25/2005 23:00	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563789

MW-17 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 09:55 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:01
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

17EAC

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	2,340.	37.8	ug/l	1
07058	Manganese	7439-96-5	386.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	441,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	64,400.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	1,100.	400.	ug/l	5
08344	Ferrous Iron	n.a.	870.	32.	ug/l	4
02159	BTEX, MTBE					
02161	Benzene	71-43-2	3.8	0.5	ug/l	1
02164	Toluene	108-88-3	0.8	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	5.6	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	16.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	340.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	470.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	07/25/2005 07:04	Donna R Sackett	1
07058	Manganese	SW-846 6010B	1	07/25/2005 07:04	Donna R Sackett	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	07/15/2005 15:57	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	07/15/2005 15:57	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	07/19/2005 11:11	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	07/15/2005 23:05	William L Hamaker Jr	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	07/16/2005 06:10	Daniel S Smith	4

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Analysis Report

Lancaster Laboratories Sample No. WW 4563789

MW-17 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 09:55 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:01
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

17EAC

02159	BTEX, MTBE	SW-846 8021B	1	07/26/2005 16:22	Deborah S Garrison	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/21/2005 05:37	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/20/2005 04:58	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/20/2005 04:58	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	2	07/26/2005 16:22	Deborah S Garrison	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	07/23/2005 07:10	Suzette L Lehman	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	07/19/2005 02:30	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563790

MW-17 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 09:55 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:01
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/26/2005 13:32	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/25/2005 23:00	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563791

MW-8 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 11:00 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:01
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

W8EAC

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	607.	37.8	ug/l	1
07058	Manganese	7439-96-5	329.	0.96	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	344,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	63,400.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	12,800.	400.	ug/l	5
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1.0	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	83.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	07/25/2005 07:09	Donna R Sackett	1
07058	Manganese	SW-846 6010B	1	07/25/2005 07:09	Donna R Sackett	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	07/15/2005 15:57	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	07/15/2005 15:57	Geraldine C Smith	1
00228	Sulfate	EPA 300.0	1	07/19/2005 11:25	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	07/15/2005 23:19	William L Hamaker Jr	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	07/16/2005 06:10	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563791

MW-8 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 11:00 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:01
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

W8EAC

02159	BTEX, MTBE	SW-846 8021B	1	07/20/2005 07:05	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/21/2005 06:00	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/20/2005 07:05	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/20/2005 07:05	Linda C Pape	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	07/23/2005 07:10	Suzette L Lehman	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	07/19/2005 02:30	Sherry L Morrow	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4563792

MW-8 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:07/14/2005 11:00 by AW

Account Number: 11255

Submitted: 07/15/2005 09:05
Reported: 07/28/2005 at 10:01
Discard: 08/28/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/26/2005 13:35	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/25/2005 23:00	James L Mertz	1

Quality Control Summary

Client Name: ChevronTexaco Group Number: 951386
Reported: 07/28/05 at 10:01 AM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 05196020201A	Sample number(s): 4563783,4563785,4563787,4563789,4563791							
Alkalinity to pH 4.5				101		98-103		
Batch number: 05196621302A	Sample number(s): 4563783,4563785,4563787,4563789,4563791							
Sulfate	N.D.	0.30	mg/l	97		90-110		
Nitrate Nitrogen	N.D.	0.080	mg/l	99		90-110		
Batch number: 051970016A	Sample number(s): 4563781,4563783							
Diesel Range Organics	N.D.	0.080	mg/l	88		51-113		
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 05197834401A	Sample number(s): 4563783,4563785,4563787,4563789,4563791							
Ferrous Iron	N.D.	0.0080	mg/l	99		95-105		
Batch number: 051990014A	Sample number(s): 4563785,4563787,4563789,4563791							
Diesel Range Organics	N.D.	0.080	mg/l	86	85	51-113	1	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 05200A56B	Sample number(s): 4563780-4563781,4563783							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	93	94	70-130	1	30
Benzene	N.D.	0.5	ug/l	105	98	86-119	7	30
Toluene	N.D.	0.5	ug/l	110	102	82-119	7	30
Ethylbenzene	N.D.	0.5	ug/l	104	98	81-119	7	30
Total Xylenes	N.D.	1.5	ug/l	106	100	82-120	6	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	101	100	82-124	2	30
Batch number: 05200A56C	Sample number(s): 4563785,4563787,4563789,4563791							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	93	94	70-130	1	30
Benzene	N.D.	0.5	ug/l	105	98	86-119	7	30
Toluene	N.D.	0.5	ug/l	110	102	82-119	7	30
Ethylbenzene	N.D.	0.5	ug/l	104	98	81-119	7	30
Total Xylenes	N.D.	1.5	ug/l	106	100	82-120	6	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	101	100	82-124	2	30
Batch number: 05200A56D	Sample number(s): 4563789							
Benzene	N.D.	0.5	ug/l	105	98	86-119	7	30
Toluene	N.D.	0.5	ug/l	110	102	82-119	7	30
Ethylbenzene	N.D.	0.5	ug/l	104	98	81-119	7	30
Total Xylenes	N.D.	1.5	ug/l	106	100	82-120	6	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	101	100	82-124	2	30
Batch number: 052041848001	Sample number(s): 4563783,4563785,4563787,4563789,4563791							
Iron	N.D.	0.0378	mg/l	99		91-114		
Manganese	N.D.	0.00096	mg/l	98		90-110		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 951386
Reported: 07/28/05 at 10:01 AM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 052065704002	Sample number(s): 4563782,4563784,4563786,4563788,4563790,4563792							
Lead (furnace method)	N.D.	0.00087	mg/l	101		80-120		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 05196020201A	Sample number(s): 4563783,4563785,4563787,4563789,4563791								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	101	100	64-130	0	2	153.	154.	1	4
Batch number: 05196621302A	Sample number(s): 4563783,4563785,4563787,4563789,4563791								
Sulfate	105		90-110			99.8	96.9	3	3
Nitrate Nitrogen	100		90-110			13.1	13.1	0	2
Batch number: 051970016A	Sample number(s): 4563781,4563783								
Diesel Range Organics						N.D.	N.D.	0 (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 05197834401A	Sample number(s): 4563783,4563785,4563787,4563789,4563791								
Ferrous Iron	93	97	80-114	2	5	3.2	3.1	4 (1)	8
Batch number: 05200A56B	Sample number(s): 4563780-4563781,4563783								
TPH by NWTPH-Gx waters	93	100	63-154	7	30				
Benzene	111	107	78-131	3	20				
Toluene	111	107	78-129	3	30				
Ethylbenzene	112	108	75-133	4	30				
Total Xylenes	113	108	86-132	4	30				
Methyl tert-Butyl Ether	108	105	70-134	3	30				
Batch number: 05200A56C	Sample number(s): 4563785,4563787,4563789,4563791								
TPH by NWTPH-Gx waters	93	100	63-154	7	30				
Benzene	111	107	78-131	3	20				
Toluene	111	107	78-129	3	30				
Ethylbenzene	112	108	75-133	4	30				
Total Xylenes	113	108	86-132	4	30				
Methyl tert-Butyl Ether	108	105	70-134	3	30				
Batch number: 05200A56D	Sample number(s): 4563789								
Benzene	111	107	78-131	3	20				
Toluene	111	107	78-129	3	30				
Ethylbenzene	112	108	75-133	4	30				
Total Xylenes	113	108	86-132	4	30				
Methyl tert-Butyl Ether	108	105	70-134	3	30				
Batch number: 052041848001	Sample number(s): 4563783,4563785,4563787,4563789,4563791								
Iron	101	99	75-125	2	20	N.D.	N.D.	0 (1)	20
Manganese	101	100	85-111	1	20	0.0053	0.0052	2 (1)	20
Batch number: 052065704002	Sample number(s): 4563782,4563784,4563786,4563788,4563790,4563792								
Lead (furnace method)	103	103	80-120	0	20	0.0018	0.0018	0 (1)	20

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 951386
Reported: 07/28/05 at 10:01 AM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 051970016A

	Orthoterphenyl
4563781	112
4563783	101
Blank	112
DUP	98
LCS	111
Limits:	50-150

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 051990014A

	Orthoterphenyl
4563785	128
4563787	114
4563789	103
4563791	99
Blank	101
LCS	115
LCSD	114
Limits:	50-150

Analysis Name: BTEX, MTBE
Batch number: 05200A56B

	Trifluorotoluene-P	Trifluorotoluene-F
4563780	86	95
4563781	83	95
4563783	85	98
Blank	86	96
LCS	83	96
LCSD	85	96
MS	85	95
MSD	85	95
Limits:	69-137	70-142

Analysis Name: BTEX, MTBE
Batch number: 05200A56C

	Trifluorotoluene-P	Trifluorotoluene-F
4563785	85	96
4563787	98	109
4563789		100
4563791	86	97

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 951386
Reported: 07/28/05 at 10:01 AM

Surrogate Quality Control

Blank	85	96
LCS	83	96
LCSD	85	96
MS	85	95
MSD	85	95
Limits:	69-137	70-142

Analysis Name: BTEX, MTBE
Batch number: 05200A56D

	Trifluorotoluene-P	Trifluorotoluene-F
4563789	91	
Blank	84	97
LCS	83	96
LCSD	85	96
MS	85	95
MSD	85	95
Limits:	69-137	57-146

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only — GRP # 951386 — 220205

Acct. #: 11255 Sample #: 4563780-92 SCR#:

Facility #: 9-6590
Site Address: 232 East Woodin Ave, Chelan, WA
Chevron PM: Brett Hunter Lead Consultant: SAIC
Consultant/Office: Bothell, WA
Consultant Prj. Mgr.: Romy Frier-Cuppingers
Consultant Phone #: 425-482-3322 Fax #: 425-485-5506
Sampler: A. Wells & S. Kline
Service Order #: 001500 1353 ☐ Non SAR:

Sample Identification / Well ID	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Water (Potable ☐ NPDES ☐)	Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☒ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ___	MW TPH G	NW TPH D	Extended Rng. ☒ Silica Gel Cleanup ☒	Lead Total ☐ Diss. ☒ Method 7421	VPH/EPH	NWTPH H HCID ☐ quantification	Alkalinity EPA 310.1	Nitrate/Sulfate EPA 300.0	Ferrous Iron SM3500 Fe-D	Fe, Mn 6010
MW-31 MW-31	7/13/05		X			X			X			X	X		X						
DA-1	7/13/05	1800	X			X			X			X									
MW-28	7/14/05	0700	X			X			X			X	X		X			X	X	X	X
MW-23	7/14/05	0815	X			X			X			X	X		X			X	X	X	X
MW-21	7/14/05	0900	X			X			X			X	X		X			X	X	X	X
MW-17	7/14/05	0955	X			X			X			X	X		X			X	X	X	X
MW-8	7/14/05	1100	X			X			X			X	X		X			X	X	X	X

Analyses Requested

Preservation Codes

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
WBS #: NW RTB-009659O-0-OML

NOTE: Natural attenuation analysis (48 hour) short turn around
Ferrous Iron field filtered

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
~~24 hour~~ 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk _____ Other.

	Date	Time
Relinquished by: Lisa Wells	7/14	1140
Relinquished by:		
Relinquished by:		
Relinquished by Commercial Carrier: UPS FedEx Other		
Temperature Upon Receipt 2.2°C / 2.6°C		

	Date	Time
Received by:		
Received by:		
Received by:		
Received by: Kaeley Birkey	7-15-05	0905
Custody Seals Intact? Yes No (N/A)		

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2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 942431. Samples arrived at the laboratory on Friday, May 06, 2005. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-19 Grab Water Sample	4519096
MW-19 Filtered Grab Water Sample	4519097
MW-28 Grab Water Sample	4519098
MW-23 Grab Water Sample	4519099
MW-21 Grab Water Sample	4519100
MW-17 Grab Water Sample	4519101
QA Water Sample	4519102

1 COPY TO SAIC Attn: Romy Freier-Coppinger

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,

Michele M. Turner

Michele M. Turner
Director

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4519096

MW-19 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 16:00 by AW

Account Number: 11255

Submitted: 05/06/2005 09:10
Reported: 05/18/2005 at 14:57
Discard: 06/18/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

19VOA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1,200.	2.5	ug/l	5
02164	Toluene	108-88-3	16.	2.5	ug/l	5
02166	Ethylbenzene	100-41-4	2.9	2.5	ug/l	5
02171	Total Xylenes	1330-20-7	N.D.	7.5	ug/l	5
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	13.	ug/l	5
	The reporting limits were raised because sample dilution was necessary to bring the internal standard compound within the acceptable QC limits.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	550.	79.	ug/l	1
02096	Heavy Range Organics	n.a.	170.	98.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	890.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	05/10/2005 06:10	Deborah S Garrison	5
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/15/2005 21:57	Robert Brown	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/09/2005 16:48	Deborah S Garrison	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/09/2005 16:48	Deborah S Garrison	1
01146	GC VOA Water Prep	SW-846 5030B	2	05/10/2005 06:10	Deborah S Garrison	5
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	05/11/2005 07:10	Darin P Wagner	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4519097

MW-19 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 16:00 by AW

Account Number: 11255

Submitted: 05/06/2005 09:10
Reported: 05/18/2005 at 14:57
Discard: 06/18/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	05/16/2005 14:27	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	05/12/2005 15:56	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4519098

MW-28 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 07:15 by AW

Account Number: 11255

Submitted: 05/06/2005 09:10
Reported: 05/18/2005 at 14:57
Discard: 06/18/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	608.	37.8	ug/l	1
07058	Manganese	7439-96-5	489.	0.96	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	05/11/2005 06:43	Joanne M Gates	1
07058	Manganese	SW-846 6010B	1	05/11/2005 06:43	Joanne M Gates	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	05/10/2005 15:35	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4519099

MW-23 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 09:10 by AW

Account Number: 11255

Submitted: 05/06/2005 09:10
Reported: 05/18/2005 at 14:57
Discard: 06/18/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	388.	37.8	ug/l	1
07058	Manganese	7439-96-5	185.	0.96	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	05/11/2005 06:47	Joanne M Gates	1
07058	Manganese	SW-846 6010B	1	05/11/2005 06:47	Joanne M Gates	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	05/10/2005 15:35	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4519100

MW-21 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 11:00 by AW

Account Number: 11255

Submitted: 05/06/2005 09:10
Reported: 05/18/2005 at 14:57
Discard: 06/18/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	3,740.	37.8	ug/l	1
07058	Manganese	7439-96-5	1,200.	0.96	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	05/11/2005 06:51	Joanne M Gates	1
07058	Manganese	SW-846 6010B	1	05/11/2005 06:51	Joanne M Gates	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	05/10/2005 15:35	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4519101

MW-17 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 12:30 by AW

Account Number: 11255

Submitted: 05/06/2005 09:10
Reported: 05/18/2005 at 14:57
Discard: 06/18/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	340.	37.8	ug/l	1
07058	Manganese	7439-96-5	137.	0.96	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	05/11/2005 06:56	Joanne M Gates	1
07058	Manganese	SW-846 6010B	1	05/11/2005 06:56	Joanne M Gates	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	05/10/2005 15:35	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4519102

QA Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005

Account Number: 11255

Submitted: 05/06/2005 09:10
Reported: 05/18/2005 at 14:57
Discard: 06/18/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	05/09/2005 14:09	Jamie A Lutz	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/09/2005 14:09	Jamie A Lutz	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/09/2005 14:09	Jamie A Lutz	1

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 942431
Reported: 05/18/05 at 02:57 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 05128A53A	Sample number(s): 4519096,4519102							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	93	90	70-130	3	30
Benzene	N.D.	0.5	ug/l	103	101	86-119	2	30
Toluene	N.D.	0.5	ug/l	107	105	82-119	2	30
Ethylbenzene	N.D.	0.5	ug/l	107	105	81-119	2	30
Total Xylenes	N.D.	1.5	ug/l	108	107	82-120	1	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	95	96	82-124	0	30
Batch number: 05128A53B	Sample number(s): 4519096							
Benzene	N.D.	0.5	ug/l	103	101	86-119	2	30
Toluene	N.D.	0.5	ug/l	107	105	82-119	2	30
Ethylbenzene	N.D.	0.5	ug/l	107	105	81-119	2	30
Total Xylenes	N.D.	1.5	ug/l	108	107	82-120	1	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	95	96	82-124	0	30
Batch number: 051290017A	Sample number(s): 4519096							
Diesel Range Organics	N.D.	0.080	mg/l	85	89	51-113	4	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 051301848004	Sample number(s): 4519098-4519101							
Iron	N.D.	0.0378	mg/l	95		91-114		
Manganese	N.D.	0.00096	mg/l	100		93-110		
Batch number: 051325704002	Sample number(s): 4519097							
Lead (furnace method)	N.D.	0.00087	mg/l	109		80-120		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 05128A53A	Sample number(s): 4519096,4519102								
TPH by NWTPH-Gx waters	93	99	63-154	4	30				
Benzene	99	104	78-131	4	20				
Toluene	96	102	78-129	6	30				
Ethylbenzene	98	105	75-133	5	30				
Total Xylenes	98	104	86-132	5	30				
Methyl tert-Butyl Ether	100	103	70-134	3	30				
Batch number: 05128A53B	Sample number(s): 4519096								
Benzene	99	104	78-131	4	20				
Toluene	96	102	78-129	6	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 942431
Reported: 05/18/05 at 02:57 PM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Ethylbenzene	98	105	75-133	5	30				
Total Xylenes	98	104	86-132	5	30				
Methyl tert-Butyl Ether	100	103	70-134	3	30				
Batch number: 051301848004	Sample number(s): 4519098-4519101								
Iron	94	94	75-125	0	20	N.D.	N.D.	0 (1)	20
Manganese	100	101	85-111	0	20	0.142	0.142	0	20
Batch number: 051325704002	Sample number(s): 4519097								
Lead (furnace method)	106	105	80-120	1	20	0.0081	0.0083	2 (1)	20

Surrogate Quality Control

Analysis Name: BTEX, MTBE
Batch number: 05128A53A

	Trifluorotoluene-P	Trifluorotoluene-F
4519096		121
4519102	98	96
Blank	98	94
LCS	99	96
LCSD	98	95
MS	87	97
MSD	92	96
Limits:	69-137	70-142

Analysis Name: BTEX, MTBE
Batch number: 05128A53B

	Trifluorotoluene-P	Trifluorotoluene-F
4519096	86	
Blank	98	95
LCS	99	96
LCSD	98	95
MS	87	97
MSD	92	96
Limits:	69-137	57-146

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 051290017A

	Orthoterphenyl
4519096	109
Blank	110
LCS	121
LCSD	125
Limits:	50-150

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 942431
Reported: 05/18/05 at 02:57 PM

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

Acct. #: 11255 — For Lancaster Laboratories use only — Sample #: 942431 — SCR#:

4519096-102

Facility #: 9-6596
Site Address: 732 East Woodin Ave, Chelan, WA
Chevron PM: Brett Hunter — Lead Consultant: SAIC
Consultant/Office: Bothell, WA
Consultant Prj. Mgr.: Romy Freier-Coppinger
Consultant Phone #: 425-482-3322 — Fax #: 425-485-5506
Sampler: A. Wells / E. Wong
Service Order #: 001500 1353 — ☐ Non SAR:

Matrix

Sample Identification / Sample location	Date Collected	Time Collected	Grab	Composite	Soil	Water	Oil	Air	Total Number of Containers
MW-19 MW-19	5/4/05	1400	X			X			7
MW-28 MW-28	5/4/05	0715	X			X			1
MW-23 MW-23	5/4/05	0910	X			X			1
MW-21 MW-21	5/4/05	1100	X			X			1
MW-17 MW-17	5/4/05	1230	X			X			1
QA	5/4/05		X			X			2

Analyses Requested

Preservation Codes

BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ___	NW TPH G	NW TPH D	Extended Rng. Silica Gel Cleanup	Lead Total ☒ Diss. ☒ Method *	VPH/EPH	NWTPH H HCID ☐ quantification	Fe; Mn EPA 6010
X			H	H		H			N
			1	1		1			1
									X
									X
									X
									X
X			X						X

Preservative Codes
H = HCl — T = Thiosulfate
N = HNO_3 — B = NaOH
S = H_2SO_4 — O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks

*Diss. lead samples need lab. filter
WSB#
NWRTB-00-905900-0ML
Note: short (48hr) Hold times for natural attenuation analyses

Turnaround Time Requested (TAT) (please circle)

STD. TAT — 72 hour — 48 hour
24 hour — 4 day — 5 day

Data Package Options (please circle if required)

QC Summary — Type I - Full
Type VI (Raw Data) — Disk / EDD
WIP (RWQCB) — Standard Format
Disk — _____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
Alisa Wells	5/5/05				
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx Other			Received by:	Date	Time
Temperature Upon Receipt 4.2 C°			Custody Seals Intact? Yes No	5/6/05	0910

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2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 942246. Samples arrived at the laboratory on Thursday, May 05, 2005. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-28 Grab Water Sample	4518155
MW-28 Filtered Grab Water Sample	4518156
MW-23 Grab Water Sample	4518157
MW-23 Filtered Grab Water Sample	4518158
MW-21 Grab Water Sample	4518159
MW-21 Filtered Grab Water Sample	4518160
MW-17 Grab Water Sample	4518161
MW-17 Filtered Grab Water Sample	4518162
QA Water Sample	4518163

1 COPY TO SAIC Attn: Romy Freier-Coppinger

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,

Dana M. Kauffman
Manager

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4518155

MW-28 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 07:15 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23228

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	601,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	96,200.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	9,700.	400.	ug/l	5
08344	Ferrous Iron	n.a.	9.4	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	2.0	ug/l	1
02164	Toluene	108-88-3	0.6	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	26.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	16.	2.5	ug/l	1
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for benzene. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	250.	82.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	560.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	05/09/2005 17:11	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	05/09/2005 17:11	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	05/09/2005 18:48	Shannon L Phillips	10
00368	Nitrate Nitrogen	EPA 300.0	1	05/05/2005 17:46	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	05/05/2005 22:35	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518155

MW-28 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 07:15 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23228

02159	BTEX, MTBE	SW-846 8021B	1	05/09/2005 17:20	Deborah S Garrison	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/14/2005 01:57	Robert Brown	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/09/2005 17:20	Deborah S Garrison	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/09/2005 17:20	Deborah S Garrison	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	05/09/2005 19:00	Elia R Botrous	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518156

MW-28 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 07:15 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	05/13/2005 14:37	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	05/09/2005 15:17	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518157

MW-23 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 09:10 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23223

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	386,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	18,800.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	5,000.	400.	ug/l	5
08344	Ferrous Iron	n.a.	31.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	79.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	99.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	05/09/2005 17:11	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	05/09/2005 17:11	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	05/05/2005 18:01	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	05/05/2005 18:01	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	05/05/2005 22:35	Daniel S Smith	1
02159	BTEX, MTBE	SW-846 8021B	1	05/09/2005 17:55	Deborah S Garrison	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/14/2005 02:20	Robert Brown	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/09/2005 17:55	Deborah S Garrison	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/09/2005 17:55	Deborah S Garrison	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518157

MW-23 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 09:10 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23223

02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	05/09/2005 19:00	Elia R Botrous	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518158

MW-23 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 09:10 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	05/16/2005 07:45	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	05/09/2005 15:17	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518159

MW-21 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 11:00 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23221

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	595,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	27,600.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
08344	Ferrous Iron	n.a.	4,100.	80.	ug/l	10
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1,400.	5.0	ug/l	10
02164	Toluene	108-88-3	26.	5.0	ug/l	10
02166	Ethylbenzene	100-41-4	11.	5.0	ug/l	10
02171	Total Xylenes	1330-20-7	35.	15.	ug/l	10
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	25.	ug/l	10
	Due to dilution of the sample made necessary by the high level of benzene, normal reporting limits were not attained.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	630.	81.	ug/l	1
02096	Heavy Range Organics	n.a.	210.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,200.	480.	ug/l	10

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	05/09/2005 17:11	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	05/09/2005 17:11	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	05/05/2005 18:17	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	05/05/2005 18:17	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	05/05/2005 22:35	Daniel S Smith	10
02159	BTEX, MTBE	SW-846 8021B	1	05/09/2005 21:05	Deborah S Garrison	10

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Analysis Report

Lancaster Laboratories Sample No. WW 4518159

MW-21 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 11:00 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23221

02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/15/2005 20:48	Robert Brown	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/09/2005 21:05	Deborah S Garrison	10
01146	GC VOA Water Prep	SW-846 5030B	1	05/09/2005 21:05	Deborah S Garrison	10
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	05/11/2005 07:10	Darin P Wagner	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518160

MW-21 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 11:00 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	05/13/2005 14:42	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	05/09/2005 15:17	Megersa Deyessa	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4518161

MW-17 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 12:30 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23217

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	400,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	60,100.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	1,600.	400.	ug/l	5
08344	Ferrous Iron	n.a.	22.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	7.0	0.5	ug/l	1
02164	Toluene	108-88-3	2.7	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	5.8	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	10.	ug/l	1
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	300.	78.	ug/l	1
02096	Heavy Range Organics	n.a.	180.	98.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	620.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	05/09/2005 17:11	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	05/09/2005 17:11	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	05/05/2005 18:33	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	05/05/2005 18:33	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	05/05/2005 22:35	Daniel S Smith	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4518161

MW-17 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 12:30 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23217

02159	BTEX, MTBE	SW-846 8021B	1	05/09/2005 21:38	Deborah S Garrison	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/15/2005 21:11	Robert Brown	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/09/2005 21:38	Deborah S Garrison	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/09/2005 21:38	Deborah S Garrison	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	05/11/2005 07:10	Darin P Wagner	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4518162

MW-17 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005 12:30 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	05/13/2005 14:47	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	05/09/2005 15:17	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518163

QA Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/04/2005

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 18:38
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	05/09/2005 14:40	Jamie A Lutz	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/09/2005 14:40	Jamie A Lutz	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/09/2005 14:40	Jamie A Lutz	1

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 942246
Reported: 05/19/05 at 06:38 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 05125401301A	Sample number(s): 4518155,4518157,4518159,4518161							
Sulfate	N.D.	0.30	mg/l	98		89-110		
Nitrate Nitrogen	N.D.	0.080	mg/l	99		90-110		
Batch number: 05125834403A	Sample number(s): 4518155,4518157,4518159,4518161							
Ferrous Iron	N.D.	0.0080	mg/l	100		95-105		
Batch number: 05128A53A	Sample number(s): 4518155,4518157,4518159,4518161,4518163							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	93	90	70-130	3	30
Benzene	N.D.	0.5	ug/l	103	101	86-119	2	30
Toluene	N.D.	0.5	ug/l	107	105	82-119	2	30
Ethylbenzene	N.D.	0.5	ug/l	107	105	81-119	2	30
Total Xylenes	N.D.	1.5	ug/l	108	107	82-120	1	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	95	96	82-124	0	30
Batch number: 051290004A	Sample number(s): 4518155,4518157							
Diesel Range Organics	N.D.	80.	ug/l	83	85	51-113	3	20
Heavy Range Organics	N.D.	100.	ug/l					
Batch number: 051290017A	Sample number(s): 4518159,4518161							
Diesel Range Organics	N.D.	0.080	mg/l	85	89	51-113	4	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 05129020201A	Sample number(s): 4518155,4518157,4518159,4518161							
Alkalinity to pH 4.5				101		98-103		
Batch number: 051295704001	Sample number(s): 4518156,4518158,4518160,4518162							
Lead (furnace method)	N.D.	0.00087	mg/l	98		80-120		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 05125401301A	Sample number(s): 4518155,4518157,4518159,4518161								
Sulfate	98		90-110			9.0	9.1	1 (1)	3
Nitrate Nitrogen	100		90-110			N.D.	N.D.	0 (1)	2
Batch number: 05125834403A	Sample number(s): 4518155,4518157,4518159,4518161								
Ferrous Iron	98	98	80-114	0	5	4.1	4.2	1 (1)	8
Batch number: 05128A53A	Sample number(s): 4518155,4518157,4518159,4518161,4518163								

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 942246
Reported: 05/19/05 at 06:38 PM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
TPH by NWTPH-Gx waters	93	99	63-154	4	30				
Benzene	99	104	78-131	4	20				
Toluene	96	102	78-129	6	30				
Ethylbenzene	98	105	75-133	5	30				
Total Xylenes	98	104	86-132	5	30				
Methyl tert-Butyl Ether	100	103	70-134	3	30				
Batch number: 05129020201A	Sample number(s): 4518155,4518157,4518159,4518161								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	101	100	64-130	1	2	186.	189.	2	4
Batch number: 051295704001	Sample number(s): 4518156,4518158,4518160,4518162								
Lead (furnace method)	95	96	80-120	1	20	N.D.	N.D.	200* (1)	20

Surrogate Quality Control

Analysis Name: BTEX, MTBE
Batch number: 05128A53A

	Trifluorotoluene-P	Trifluorotoluene-F
4518155	104	96
4518157	97	95
4518159	110	99
4518161	130	127
4518163	98	94
Blank	98	94
LCS	99	96
LCSD	98	95
MS	87	97
MSD	92	96
Limits:	69-137	70-142

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 051290004A

	Orthoterphenyl
4518155	110
4518157	102
Blank	109
LCS	125
LCSD	123
Limits:	50-150

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 051290017A

	Orthoterphenyl
4518159	112
4518161	113
Blank	110

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 942246
Reported: 05/19/05 at 06:38 PM

Surrogate Quality Control

LCS	121
LCSD	125
Limits:	50-150

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

Acct. #: 11255 — For Lancaster Laboratories use only — Group# 942246 — Sample #: 4518155-63 — SCR#:

Facility #: 9-6590
Site Address: 232 East Woodin Ave Chelan, WA
Chevron PM: Brett Hunter — Lead Consultant: SAIC
Consultant/Office: Bothell, WA
Consultant Prj. Mgr.: Romy Freier-Coppinger
Consultant Phone #: 425-482-3322 — Fax #: 425-485-5506
Sampler: A. Wells / E. Wong
Service Order #: 001501353 — ☐ Non SAR:

Sample Identification / Sample Location		Date Collected	Time Collected	Grab	Composite	Soil	Water	Oil	Air	Total Number of Containers
MW-28	MW-28	5/4/05	0715	X			X			9
MW-23	MW-23	5/4/05	0910	X			X			9
MW-21	MW-21	5/4/05	1100	X			X			9
MW-17	MW-17	5/4/05	1230	X			X			9
QA		5/4/05	—	X			X			2

Matrix: ☐ Potable ☐ NPDES

Analyses Requested / Preservation Codes

BTEX + MTBE 8021 ☒ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ___	NW TPH G	NW TPH D ☒ Extended Rng. ☒ Silica Gel Cleanup	Lead Total ☐ Diss. ☐ Method EPA 3421	VPH/EPH	NWTPH H HCID ☐ quantification	Alkalinity EPA 310.1*	Nitrate/Sulfate EPA 300.0*	Ferrous Iron SM 3500 Fe**
H				N	H					
X			X	X	X			X	X	X
X			X	X	X			X	X	X
X			X	X	X			X	X	X
X			X	X	X			X	X	X
X			X							

Preservative Codes
H = HCl — T = Thiosulfate
N = HNO_3 — B = NaOH
S = H_2SO_4 — O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
WBS # = NWRTB-00-960590-0-OML
Ferrous Iron samples were field filtered
~~Total~~ Dissolved lead will need to be lab filtered
* Rec short (48 hr) Hold times for natural attenuation analyses

Turnaround Time Requested (TAT) (please circle)
STD. TAT — 72 hour — 48 hour
24 hour — 4 day — 5 day

Data Package Options (please circle if required)
QC Summary — Type I - Full
Type VI (Raw Data) — Disk / EDD
WIP (RWQCB) — Standard Format
Disk — _____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
Alison Wells	5/4/05	1300			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS (FedEx) Other ____			Received by:	Date	Time
				5/5/05	0900
Temperature Upon Receipt 22, 6.2, 2.5°C 2.5			Custody Seals Intact? (Yes) No		

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 942265. Samples arrived at the laboratory on Thursday, May 05, 2005. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-8 Grab Water Sample	4518276
MW-37 Grab Water Sample	4518277
MW-37 Filtered Grab Water Sample	4518278
MW-55 Grab Water Sample	4518279
MW-55 Filtered Grab Water Sample	4518280
MW-30 Grab Water Sample	4518281
MW-30 Filtered Grab Water Sample	4518282
MW-31 Grab Water Sample	4518283
MW-31 Filtered Grab Water Sample	4518284
MW-27 Grab Water Sample	4518285
QA Water Sample	4518286

1 COPY TO SAIC Attn: Romy Freier-Coppinger

Lancaster Laboratories

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,

Susan M. Goshert
Group Leader

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4518276

MW-8 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/03/2005 08:00 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 10:44
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHEM8

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1.0	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	79.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	99.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	05/08/2005 23:00	Jamie A Lutz	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/14/2005 02:43	Robert Brown	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/08/2005 23:00	Jamie A Lutz	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/08/2005 23:00	Jamie A Lutz	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	05/09/2005 19:00	Elia R Botrous	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4518277

MW-37 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/03/2005 09:45 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 10:44
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE37

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	79.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	99.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	05/08/2005 23:32	Jamie A Lutz	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/14/2005 03:05	Robert Brown	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/08/2005 23:32	Jamie A Lutz	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/08/2005 23:32	Jamie A Lutz	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	05/09/2005 19:00	Elia R Botrous	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518278

MW-37 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/03/2005 09:45 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 10:44
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	05/13/2005 14:53	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	05/09/2005 15:17	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518279

MW-55 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/03/2005 12:00 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 10:44
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE55

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	78.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	98.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	05/09/2005 00:04	Jamie A Lutz	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/14/2005 05:22	Robert Brown	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/09/2005 00:04	Jamie A Lutz	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/09/2005 00:04	Jamie A Lutz	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	05/09/2005 19:00	Elia R Botrous	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518280

MW-55 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/03/2005 12:00 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 10:44
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	05/13/2005 14:58	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	05/09/2005 15:17	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518281

MW-30 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/03/2005 11:45 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 10:44
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE30

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	81.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	05/09/2005 00:36	Jamie A Lutz	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/14/2005 03:28	Robert Brown	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/09/2005 00:36	Jamie A Lutz	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/09/2005 00:36	Jamie A Lutz	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	05/09/2005 19:00	Elia R Botrous	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518282

MW-30 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/03/2005 11:45 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 10:44
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	05/13/2005 15:14	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	05/09/2005 15:17	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518283

MW-31 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/03/2005 15:30 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 10:44
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE31

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	83.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	05/09/2005 01:08	Jamie A Lutz	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/14/2005 03:51	Robert Brown	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/09/2005 01:08	Jamie A Lutz	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/09/2005 01:08	Jamie A Lutz	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	05/09/2005 19:00	Elia R Botrous	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518284

MW-31 Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/03/2005 15:30 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 10:44
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.87	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	05/13/2005 15:19	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020	1	05/09/2005 15:17	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518285

MW-27 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/03/2005 17:00 by AW

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 10:44
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE27

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	05/09/2005 01:40	Jamie A Lutz	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/14/2005 04:36	Robert Brown	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/09/2005 01:40	Jamie A Lutz	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/09/2005 01:40	Jamie A Lutz	1
02135	Extraction - DRO Water Special	NWTPH-Dx, ECY 97-602, 6/97	1	05/09/2005 19:00	Elia R Botrous	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4518286

QA Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:05/03/2005

Account Number: 11255

Submitted: 05/05/2005 09:00
Reported: 05/19/2005 at 10:44
Discard: 06/19/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	05/08/2005 22:28	Jamie A Lutz	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/08/2005 22:28	Jamie A Lutz	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/08/2005 22:28	Jamie A Lutz	1

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 942265
Reported: 05/19/05 at 10:44 AM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 05126A53B	Sample number(s): 4518276-4518277,4518279,4518281,4518283,4518285-4518286							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	91	91	70-130	0	30
Benzene	N.D.	0.5	ug/l	105	102	86-119	3	30
Toluene	N.D.	0.5	ug/l	108	106	82-119	2	30
Ethylbenzene	N.D.	0.5	ug/l	108	106	81-119	2	30
Total Xylenes	N.D.	1.5	ug/l	109	107	82-120	2	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	92	91	82-124	1	30
Batch number: 051290004A	Sample number(s): 4518276-4518277,4518279,4518281,4518283,4518285							
Diesel Range Organics	N.D.	80.	ug/l	83	85	51-113	3	20
Heavy Range Organics	N.D.	100.	ug/l					
Batch number: 051295704001	Sample number(s): 4518278,4518280,4518282,4518284							
Lead (furnace method)	N.D.	0.00087	mg/l	98		80-120		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 05126A53B	Sample number(s): 4518276-4518277,4518279,4518281,4518283,4518285-4518286								
TPH by NWTPH-Gx waters	96	103	63-154	7	30				
Benzene	99	100	78-131	1	20				
Toluene	104	105	78-129	1	30				
Ethylbenzene	107	108	75-133	1	30				
Total Xylenes	107	108	86-132	1	30				
Methyl tert-Butyl Ether	87	85	70-134	2	30				
Batch number: 051295704001	Sample number(s): 4518278,4518280,4518282,4518284								
Lead (furnace method)	95	96	80-120	1	20	N.D.	N.D.	200* (1)	20

Surrogate Quality Control

Analysis Name: BTEX, MTBE
Batch number: 05126A53B

	Trifluorotoluene-P	Trifluorotoluene-F
4518276	97	93
4518277	99	94

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 942265
Reported: 05/19/05 at 10:44 AM

Surrogate Quality Control

4518279	98	93
4518281	98	95
4518283	99	97
4518285	99	95
4518286	98	96
Blank	98	93
LCS	98	94
LCSD	97	94
MS	99	96
MSD	98	95
Limits:	69-137	70-142

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 051290004A

	Orthoterphenyl
4518276	101
4518277	109
4518279	106
4518281	110
4518283	105
4518285	108
Blank	109
LCS	125
LCSD	123
Limits:	50-150

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

Acct. #: 11255 For Lancaster Laboratories use only Sample #: 4518276-286 Group# 942265 SCR#: 1202715

Facility #: 9-6590
Site Address: 232 East Woodin Ave, Chelan WA
Chevron PM: Brett Hunter Lead Consultant: SAIC
Consultant/Office: Bothell, WA
Consultant Prj. Mgr.: Romy Freier-Coppinger
Consultant Phone #: 425-482-3322 Fax #: 425-485-5566
Sampler: AW/EW
Service Order #: 0015001353 ☐ Non SAR: ____

Analyses Requested — Preservation Codes: HCl (BTEX + MTBE), HCl (NWTPH G), HCl (NWTPH D)

Sample Identification	Location ID	Date Collected	Time Collected	Grab	Composite	Soil	Water (☐ Potable ☐ NPDES)	Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☒ 8260 ☐ Naphth ☐	8260 full scan	___ Oxygenates	NWTPH G	NWTPH D ☒ Extended Rng. ☒ Silica Gel Cleanup	Lead Total ☐ Diss. ☐ Method ___	VPH/EPH	NWTPH H HCID ☐ quantification	lead EPA 7421* (Dissolved)			
MW-8	MW-8	5/3/05	0800	X			X		5	X			X	X							
MW-37	MW-37	5/3/05	0945	X			X		7 [unclear]	X			X	X				X			
MW-55	MW-55	5/3/05	1200	X			X		7 [unclear]	X			X	X				X			
MW-30	MW-30	5/3/05	1145	X			X		7	X			X	X				X			
MW-31	MW-31	5/3/05	1330	X			X		7	X			X	X				X			
MW-27	MW-27	5/3/05	1700	X			X		6	X			X	X							
QA		5/3/05	—	X			X		2	X			X								

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
*Dissolved Lead samples to be lab filtered

WBS #
NWRTB-00-96590-OML

Turnaround Time Requested (TAT) (please circle)
(STD. TAT) 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk ________ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	4-22-05	[illegible]			
Alisa Wells	5/3/05	1800			

Relinquished by Commercial Carrier: UPS (FedEx) Other ____ Received by: [signature] Date 5/5/05 Time 0900

Temperature Upon Receipt 2.1-6.2, 2.5 °C 2.5 Custody Seals Intact? (Yes) No

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 928289. Samples arrived at the laboratory on Friday, January 14, 2005. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-6 Grab Water Sample	4447210
MW-6_Filtered Grab Water Sample	4447211
MW-37 Grab Water Sample	4447212
MW-37_Filtered Grab Water Sample	4447213
MW-31 Grab Water Sample	4447214
MW-31_Filtered Grab Water Sample	4447215
MW-19 Grab Water Sample	4447216
MW-19_Filtered Grab Water Sample	4447217
MW-28 Grab Water Sample	4447218
MW-28_Filtered Grab Water Sample	4447219
QA Water Sample	4447220

1 COPY TO SAIC Attn: Tom Dube

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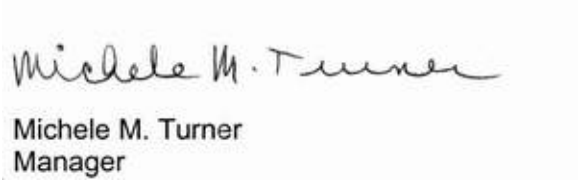
Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,



Michele M. Turner
Manager

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4447210

MW-6 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/12/2005 14:30 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

232-6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	627,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	14,300.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
08344	Ferrous Iron	n.a.	10,500.	200.	ug/l	25
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	1,300.	81.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	180.	0.5	ug/l	1
02164	Toluene	108-88-3	3.5	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	35.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	11.	1.5	ug/l	1
	An elevated surrogate recovery was observed. The analysis was repeated and an elevated surrogate recovery was again observed indicating a significant matrix effect.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,400.	48.	ug/l	1
	An elevated surrogate recovery was observed. The analysis was repeated and an elevated surrogate recovery was again observed indicating a significant matrix effect.					

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	01/17/2005 18:32	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	01/17/2005 18:32	Elaine F Stoltzfus	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447210

MW-6 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/12/2005 14:30 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

232-6

00228	Sulfate	EPA 300.0	1	01/14/2005 15:41	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	01/14/2005 15:41	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	01/16/2005 06:15	Daniel S Smith	25
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/19/2005 11:09	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	01/17/2005 20:56	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	01/17/2005 20:56	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/17/2005 20:56	Martha L Seidel	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/18/2005 01:00	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447211

MW-6_Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/12/2005 14:30 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	7.6	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/20/2005 13:32	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/19/2005 15:00	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447212

MW-37 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/12/2005 16:45 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23237

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	79.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	99.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/19/2005 11:33	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	01/17/2005 21:32	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	01/17/2005 21:32	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/17/2005 21:32	Martha L Seidel	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/18/2005 01:00	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447213

MW-37_Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/12/2005 16:45 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/20/2005 14:03	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/19/2005 15:00	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447214

MW-31 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/12/2005 18:00 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23231

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	78.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	97.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/19/2005 11:56	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	01/17/2005 22:04	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	01/17/2005 22:04	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/17/2005 22:04	Martha L Seidel	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/18/2005 01:00	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447215

MW-31_Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/12/2005 18:00 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/20/2005 14:09	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/19/2005 15:00	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447216

MW-19 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/13/2005 08:45 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

19232

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	130.	77.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	96.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	910.	2.5	ug/l	5
02164	Toluene	108-88-3	16.	2.5	ug/l	5
02166	Ethylbenzene	100-41-4	N.D.	2.5	ug/l	5
02171	Total Xylenes	1330-20-7	N.D.	15.	ug/l	5

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent.
Total Xylenes
Due to the nature of the sample matrix, normal reporting limits were not attained for Ethylbenzene.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	760.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/19/2005 12:19	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	01/17/2005 22:59	Martha L Seidel	5
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	01/18/2005 00:45	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/17/2005 22:59	Martha L Seidel	5
01146	GC VOA Water Prep	SW-846 5030B	2	01/18/2005 00:45	Martha L Seidel	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/18/2005 01:00	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447216

MW-19 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/13/2005 08:45 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

19232

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Analysis Report

Lancaster Laboratories Sample No. WW 4447217

MW-19_Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/13/2005 08:45 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/20/2005 14:14	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/19/2005 15:00	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447218

MW-28 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/13/2005 10:00 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23228

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	369,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	97,100.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	13,600.	800.	ug/l	10
	Matrix QC was performed on this sample for the nitrate-nitrogen analysis. Please see the attached QC Summary report for the parameter showing a matrix bias.					
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	78.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	97.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	2.5	0.5	ug/l	1
02164	Toluene	108-88-3	1.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	50.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	730.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	01/17/2005 18:32	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	01/17/2005 18:32	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	01/15/2005 09:48	Kyle W Eckenroad	10
00368	Nitrate Nitrogen	EPA 300.0	1	01/15/2005 09:48	Kyle W Eckenroad	10
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	01/16/2005 06:15	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447218

MW-28 Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/13/2005 10:00 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23228

02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/19/2005 12:42	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	01/18/2005 00:08	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	01/18/2005 00:08	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/18/2005 00:08	Martha L Seidel	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/18/2005 01:00	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447219

MW-28_Filtered Grab Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/13/2005 10:00 by GC

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/20/2005 14:20	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/19/2005 15:00	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4447220

QA Water Sample
Facility# 96590
232 Woodin Avenue-Chelan, WA
Collected:01/13/2005 08:00

Account Number: 11255

Submitted: 01/14/2005 09:20
Reported: 01/27/2005 at 11:48
Discard: 02/27/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

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Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05879	BTEX	SW-846 8021B	1	01/17/2005 20:24	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	01/17/2005 20:24	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/17/2005 20:24	Martha L Seidel	1

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 928289
Reported: 01/27/05 at 11:48 AM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 05014401301A	Sample number(s): 4447210,4447218							
Sulfate	N.D.	0.30	mg/l	97		89-110		
Nitrate Nitrogen	N.D.	0.080	mg/l	94		90-110		
Batch number: 05014A53B	Sample number(s): 4447210,4447212,4447214,4447216,4447218,4447220							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	95	90	70-130	5	30
Benzene	N.D.	0.5	ug/l	101	99	79-123	2	30
Toluene	N.D.	0.5	ug/l	104	103	82-119	1	30
Ethylbenzene	N.D.	0.5	ug/l	102	101	81-119	2	30
Total Xylenes	N.D.	1.5	ug/l	104	102	82-120	2	30
Batch number: 05016834401A	Sample number(s): 4447210,4447218							
Ferrous Iron	N.D.	0.0080	mg/l	100		95-105		
Batch number: 050170018A	Sample number(s): 4447210,4447212,4447214,4447216,4447218							
Diesel Range Organics	N.D.	0.080	mg/l	94	96	51-113	3	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 05017020201A	Sample number(s): 4447210,4447218							
Alkalinity to pH 4.5				100		98-103		
Batch number: 050195704001	Sample number(s): 4447211,4447213,4447215,4447217,4447219							
Lead (furnace method)	N.D.	0.00099	mg/l	111		80-120		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 05014401301A	Sample number(s): 4447210,4447218								
Sulfate	102		90-110			97.1	100.	3	3
Nitrate Nitrogen	96		90-110			13.6	14.0	3*	2
Batch number: 05014A53B	Sample number(s): 4447210,4447212,4447214,4447216,4447218,4447220								
TPH by NWTPH-Gx waters	94	92	63-154	2	30				
Benzene	103	103	78-131	1	20				
Toluene	106	108	78-129	1	30				
Ethylbenzene	107	109	75-133	1	30				
Total Xylenes	108	110	86-132	1	30				
Batch number: 05016834401A	Sample number(s): 4447210,4447218								
Ferrous Iron	101	96	83-111	3	5	73.5	67.5	8*	6

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 928289
Reported: 01/27/05 at 11:48 AM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 05017020201A	Sample number(s): 4447210,4447218								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	102	99	64-130	1	2	395.	395.	0	4
Batch number: 050195704001	Sample number(s): 4447211,4447213,4447215,4447217,4447219								
Lead (furnace method)	108	108	80-120	0	20	0.0076	0.0078	2 (1)	20

Surrogate Quality Control

Analysis Name: BTEX
Batch number: 05014A53B

	Trifluorotoluene-P	Trifluorotoluene-F
4447210	163*	163*
4447212	99	94
4447214	99	92
4447216	87	119
4447218	103	102
4447220	99	93
Blank	98	91
LCS	98	93
LCSD	98	94
MS	98	93
MSD	98	90
Limits:	72-128	57-146

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 050170018A

	Orthoterphenyl
4447210	89
4447212	65
4447214	88
4447216	96
4447218	93
Blank	97
LCS	119
LCSD	121
Limits:	50-150

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

Acct. #: 11255 — For Lancaster Laboratories use only — Sample #: 444210-20 — Group# 928289 — SCR#:

Facility #: 9-6590 WBS= NWRTB-009690-0-0ML
Site Address: 232 E. Woodin Ave, Chelan WA
Chevron PM: Brett Hunter — Lead Consultant: SAIC
Consultant/Office: SAIC / Bothell
Consultant Prj. Mgr.: Tom Dubé
Consultant Phone #: (425) 422-0480 — Fax #:
Sampler: Gabe C. / Karsten V.
Service Order #: 15001353 — ☐ Non SAR:

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Water (☐ Potable ☐ NPDES)	Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates	NW TPH G BTEX 8021 (H)	NW TPH D (Extended Rng. ☒ Silica Gel Cleanup ☒)	Lead Total ☐ Diss. ☐ Method ____	VPH/EPH	NWTPH H HCID ☐ quantification	Alkalinity 310.1 (—)	Nitrate/Sulfate 300.0 (—)	Ferrous Iron SM 3500-D (H)	Lead (lab-filtered) 7421 (—)
MW-6	1-12	1430	/			/		8				3	1				1	1	1	1
MW-37	1-12	1645	/			/		7				4	2							1
MW-31	1-12	1800	/			/		6				4	1							1
MW-19	1-13	0845	/			/		6				4	1							1
MW-28	1-13	1000	/			/		10				4	2				1	1	1	1
TB-2	1-13	0800	/			/		2				2								

Analyses Requested — **Preservation Codes**

Preservative Codes
H = HCl — T = Thiosulfate
N = HNO_3 — B = NaOH
S = H_2SO_4 — O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
- Iron has been field-filtered
- Lead is to be lab-filtered
- Nitrate & ferrous iron have short holding times

Turnaround Time Requested (TAT) (please circle)
STD. TAT — 72 hour — 48 hour
24 hour — 4 day — 5 day
see note

Data Package Options (please circle if required)
QC Summary — Type I - Full
Type VI (Raw Data) — Disk / EDD
WIP (RWQCB) — Standard Format
Disk — ____ Other.

	Date	Time		Date	Time
Relinquished by:	1-13	1130	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS FedEx Other ____			Received by:	1/14/05	0920

Temperature Upon Receipt 1.6-2.4 C°
Custody Seals Intact? Yes No

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 928090. Samples arrived at the laboratory on Thursday, January 13, 2005. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-30 Grab Water Sample	4446058
MW-30_Filtered Grab Water Sample	4446059
MW-17 Grab Water Sample	4446060
MW-17_Filtered Grab Water Sample	4446061
MW-21 Grab Water Sample	4446062
MW-21_Filtered Grab Water Sample	4446063
011205-D1 Grab Water Sample	4446064
011205-D1_Filtered Grab Water Sample	4446065
MW-23 Grab Water Sample	4446066
TB-1 Water Sample	4446067

1 COPY TO SAIC Attn: Tom Dube

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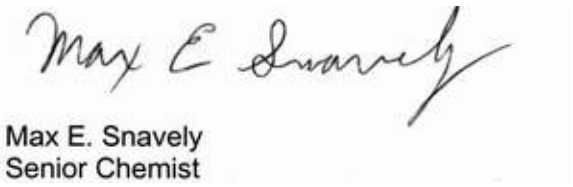
Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,



Max E. Snavely
Senior Chemist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4446058

MW-30 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 09:30 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:07
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23230

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	83.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/18/2005 09:53	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	01/13/2005 19:31	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	01/13/2005 19:31	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/13/2005 19:31	Linda C Pape	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/13/2005 17:15	JoElla L Rice	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4446059

MW-30_Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 09:30 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:07
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/19/2005 08:13	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/17/2005 14:49	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4446060

MW-17 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 11:00 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:07
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23217

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	402,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	63,600.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	1,700.	400.	ug/l	5
08344	Ferrous Iron	n.a.	80.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	190.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	11.	0.5	ug/l	1
02164	Toluene	108-88-3	5.1	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	2.1	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	14.	1.5	ug/l	1
	An elevated surrogate recovery was observed. The analysis was repeated and an elevated surrogate recovery was again observed indicating a significant matrix effect.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,400.	48.	ug/l	1
	An elevated surrogate recovery was observed. The analysis was repeated and an elevated surrogate recovery was again observed indicating a significant matrix effect.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	01/13/2005 18:20	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	01/13/2005 18:20	Elaine F Stoltzfus	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4446060

MW-17 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 11:00 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:07
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23217

00228	Sulfate	EPA 300.0	1	01/13/2005 18:49	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	01/13/2005 18:49	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	01/13/2005 21:00	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/14/2005 12:19	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	01/14/2005 17:21	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	01/14/2005 17:21	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/14/2005 17:21	Linda C Pape	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/13/2005 17:15	JoElla L Rice	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4446061

MW-17_Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 11:00 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:07
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/19/2005 08:23	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/17/2005 14:49	Megersa Deyessa	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4446062

MW-21 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 12:00 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:07
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23221

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	355,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	30,500.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
08344	Ferrous Iron	n.a.	120.	8.0	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	330.	82.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	3,000.	10.	ug/l	20
02164	Toluene	108-88-3	50.	10.	ug/l	20
02166	Ethylbenzene	100-41-4	27.	10.	ug/l	20
02171	Total Xylenes	1330-20-7	120.	30.	ug/l	20
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,500.	960.	ug/l	20

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	01/13/2005 18:20	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	01/13/2005 18:20	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	01/13/2005 19:03	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	01/13/2005 19:03	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	01/13/2005 21:00	Daniel S Smith	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/14/2005 12:42	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	01/14/2005 18:18	Linda C Pape	20
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	01/14/2005 18:18	Linda C Pape	20

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Analysis Report

Lancaster Laboratories Sample No. WW 4446062

MW-21 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 12:00 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:07
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23221

01146	GC VOA Water Prep	SW-846 5030B	1	01/14/2005 18:18	Linda C Pape	20
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/13/2005 17:15	JoElla L Rice	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4446063

MW-21_Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 12:00 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:07
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/19/2005 08:27	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/17/2005 14:49	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4446064

011205-D1 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 09:45 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:07
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

232D1

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	82.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/14/2005 13:06	Matthew E Barton	1
05879	BTEX	SW-846 8021B	1	01/14/2005 18:50	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	01/14/2005 18:50	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/14/2005 18:50	Linda C Pape	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/13/2005 17:15	JoElla L Rice	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4446065

011205-D1_Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 09:45 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:07
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/19/2005 08:30	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/17/2005 14:49	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4446066

MW-23 Grab Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 13:30 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:07
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

23223

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	237,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	19,400.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	5,500.	400.	ug/l	5
	Matrix QC was performed on this sample for the nitrate-nitrogen analysis. Please see the attached QC Summary report for the parameter showing a matrix bias.					
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	01/13/2005 18:20	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	01/13/2005 18:20	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	01/13/2005 19:46	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	01/13/2005 19:46	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	01/13/2005 21:00	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4446067

TB-1 Water Sample
Facility# 96590
232 E. Woodin Ave-Chelan, WA
Collected:01/12/2005 09:00 by GC

Account Number: 11255

Submitted: 01/13/2005 09:20
Reported: 01/20/2005 at 00:08
Discard: 02/20/2005

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05879	BTEX	SW-846 8021B	1	01/14/2005 14:38	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	01/14/2005 14:38	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/14/2005 14:38	Linda C Pape	1

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 928090
Reported: 01/20/05 at 12:08 AM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 05011A51B	Sample number(s): 4446058							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	90	94	70-130	4	30
Benzene	N.D.	0.5	ug/l	109	108	79-123	1	30
Toluene	N.D.	0.5	ug/l	105	104	82-119	1	30
Ethylbenzene	N.D.	0.5	ug/l	104	103	81-119	2	30
Total Xylenes	N.D.	1.5	ug/l	106	104	82-120	2	30
Batch number: 050130012A	Sample number(s): 4446058,4446060,4446062,4446064							
Diesel Range Organics	N.D.	0.080	mg/l	88	93	51-113	6	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 05013020201A	Sample number(s): 4446060,4446062,4446066							
Alkalinity to pH 4.5				100		98-103		
Batch number: 05013209301A	Sample number(s): 4446060,4446062,4446066							
Sulfate	N.D.	0.30	mg/l	98		89-110		
Nitrate Nitrogen	N.D.	0.080	mg/l	98		90-110		
Batch number: 05013834401A	Sample number(s): 4446060,4446062,4446066							
Ferrous Iron	N.D.	0.0080	mg/l	102		95-105		
Batch number: 05014A53A	Sample number(s): 4446060,4446062,4446064,4446067							
TPH by NWTPH-Gx waters	N.D.	48.	ug/l	95	90	70-130	5	30
Benzene	N.D.	0.5	ug/l	101	99	79-123	2	30
Toluene	N.D.	0.5	ug/l	104	103	82-119	1	30
Ethylbenzene	N.D.	0.5	ug/l	102	101	81-119	2	30
Total Xylenes	N.D.	1.5	ug/l	104	102	82-120	2	30
Batch number: 050175704001	Sample number(s): 4446059,4446061,4446063,4446065							
Lead (furnace method)	N.D.	0.00099	mg/l	91		80-120		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 05011A51B	Sample number(s): 4446058								
TPH by NWTPH-Gx waters	99		63-154						
Benzene	114		78-131						
Toluene	103		78-129						
Ethylbenzene	104		75-133						
Total Xylenes	104		86-132						

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 928090
Reported: 01/20/05 at 12:08 AM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 05013020201A	Sample number(s): 4446060,4446062,4446066								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	99	99	64-130	0	2	423.	424.	0	4
Batch number: 05013209301A	Sample number(s): 4446060,4446062,4446066								
Sulfate	103		90-110			19.4	18.2	6* (1)	3
Nitrate Nitrogen	104		90-110			5.5	5.3	4*	2
Batch number: 05013834401A	Sample number(s): 4446060,4446062,4446066								
Ferrous Iron	99	99	83-111	0	5	0.12	0.12	4 (1)	6
Batch number: 05014A53A	Sample number(s): 4446060,4446062,4446064,4446067								
TPH by NWTPH-Gx waters	94	92	63-154	2	30				
Benzene	103	103	78-131	1	20				
Toluene	106	108	78-129	1	30				
Ethylbenzene	107	109	75-133	1	30				
Total Xylenes	108	110	86-132	1	30				
Batch number: 050175704001	Sample number(s): 4446059,4446061,4446063,4446065								
Lead (furnace method)	94	94	80-120	1	20	N.D.	N.D.	0 (1)	20

Surrogate Quality Control

Analysis Name: BTEX
Batch number: 05011A51B

	Trifluorotoluene-P	Trifluorotoluene-F
4446058	98	103
Blank	97	97
LCS	103	103
LCSD	102	105
MS	100	104
Limits:	72-128	57-146

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 050130012A

	Orthoterphenyl
4446058	95
4446060	93
4446062	101
4446064	86
Blank	52
LCS	114
LCSD	112
Limits:	50-150

Analysis Name: BTEX
Batch number: 05014A53A

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 928090
Reported: 01/20/05 at 12:08 AM

Surrogate Quality Control

	Trifluorotoluene-P	Trifluorotoluene-F
4446060	191*	196*
4446062	94	95
4446064	98	92
4446067	97	93
Blank	99	91
LCS	98	93
LCSD	98	94
MS	98	93
MSD	98	90
Limits:	72-128	57-146

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11255 Sample #: 4446058-67 SCR#: ______
Group# 928090

Facility #: 9-6590 WBS=NWRTB-0096590-0-OML
Site Address: 232 E. Woodin Ave, Chelan, WA
Chevron PM: Brett Hunter Lead Consultant: SAIC
Consultant/Office: SAIC / Bothell
Consultant Prj. Mgr.: Tom Dubé
Consultant Phone #: (425) 422-0480 Fax #: ______
Sampler: Gabe Cisneros, Karsten V
Service Order #: 1500 1353 ☐ Non SAR: ______

Preservative Codes: H = HCl, N = HNO_3, S = H_2SO_4, T = Thiosulfate, B = NaOH, O = Other

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water (☐ Potable ☐ NPDES)	Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	___ Oxygenates	NW TPH G & BTEX 8021 (H)	NW TPH D ☒ Extended Rng. ☒ Silica Gel Cleanup	Lead Total ☐ Diss. ☐ Method	VPH/EPH	NWTPH H HCID ☐ quantification	Alkalinity 310.1 (—)	Nitrate & Sulfate 300,0 (—)	Ferrous Iron SM3500-D (H)	Lead (lab-filtered) 7421 (—)
MW-30	1-12-05	0930	✓			✓		6				3	2							1
MW-17	1-12-05	1100	✓			✓		9				4	1				1	1	1	1
MW-21	1-12-05	1200	✓			✓		10				4	2				1	1	1	1
011205-D1	1-12-05	0945	✓			✓		5				3	1				~~1~~	~~1~~	~~1~~	1
MW-23	1-12-05	1330	✓			✓		3									1	1	1	
TB-1	1-12-05	0900	✓			✓		2				2								

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ___ oxy s on highest hit
☐ Run ___ oxy s on all hits

Comments / Remarks
- Iron has been field-filtered
- Lead is to be lab-filtered
- Nitrate and ferrous iron have short holding times
- MW-30 has a 72hr - TAT

Turnaround Time Requested (TAT) (please circle)
(STD. TAT) See NOTES (72 hour) 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk ______ Other.

Relinquished by	Date	Time	Received by	Date	Time
Relinquished by: [signature]	1-12	1415	Received by:		
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS (FedEx) Other ______			Received by: Kathy Binkley	1-13-05	0920
Temperature Upon Receipt 2.9°, 3.4°			Custody Seals Intact? (Yes) No		

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

3460 Rev. 8/0/01

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 916479. Samples arrived at the laboratory on Friday, October 15, 2004. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-6 Grab Water Sample	4378870
MW-6 Filtered Grab Water Sample	4378871
MW-37 Grab Water Sample	4378872
MW-37 Filtered Grab Water Sample	4378873
MW-31 Grab Water Sample	4378874
MW-31 Filtered Grab Water Sample	4378875
MW-17 Grab Water Sample	4378876
MW-17 Filtered Grab Water Sample	4378877
MW-19 Grab Water Sample	4378878
MW-19 Filtered Grab Water Sample	4378879
MW-21 Grab Water Sample	4378880
MW-21 Filtered Grab Water Sample	4378881
MW-30 Grab Water Sample	4378882
MW-30 Filtered Grab Water Sample	4378883
MW-27 Grab Water Sample	4378884
MW-27 Filtered Grab Water Sample	4378885
TB-1-101304 Water Sample	4378886
TB-2-101404 Water Sample	4378887
DS-1-101304 Grab Water Sample	4378888
DS-1-101304 Filtered Grab Water Sample	4378889
MW-28 Grab Water Sample	4378890
MW-28 Filtered Grab Water Sample	4378891

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Analysis Report

1 COPY TO SAIC Attn: Tom Dube

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,

Victoria M. Martell
Chemist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4378870

MW-6 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/13/2004 15:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:40
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

6GRAB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	617,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	2,400.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
08344	Ferrous Iron	n.a.	11,800.	400.	ug/l	50
02159	BTEX, MTBE					
02161	Benzene	71-43-2	160.	0.5	ug/l	1
02164	Toluene	108-88-3	2.2	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	24.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	6.6	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	20.	ug/l	1
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	560.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	660.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	10/18/2004 22:44	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	10/18/2004 22:44	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	10/15/2004 13:41	Michelle A Bolton	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/15/2004 13:41	Michelle A Bolton	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	10/16/2004 07:00	Daniel S Smith	50

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Analysis Report

Lancaster Laboratories Sample No. WW 4378870

MW-6 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/13/2004 15:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:40
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

6GRAB

02159	BTEX, MTBE	SW-846 8021B	1	10/20/2004 16:48	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	10/20/2004 01:07	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	10/20/2004 16:48	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/20/2004 16:48	Linda C Pape	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/18/2004 01:30	Eryn E Landis	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378871

MW-6 Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/13/2004 15:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:40
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	11.1	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/01/2004 19:11	Jennifer L Moyer	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	10/20/2004 21:30	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378872

MW-37 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/13/2004 17:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:40
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

37GRA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00228	Sulfate	14808-79-8	12,800.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	1,400.	400.	ug/l	5
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	10/15/2004 13:55	Michelle A Bolton	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/15/2004 13:55	Michelle A Bolton	5
02159	BTEX, MTBE	SW-846 8021B	1	10/20/2004 17:24	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	10/20/2004 01:33	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	10/20/2004 17:24	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/20/2004 17:24	Linda C Pape	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/18/2004 01:30	Eryn E Landis	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378873

MW-37 Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/13/2004 17:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:40
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/01/2004 19:14	Jennifer L Moyer	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	10/20/2004 21:30	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378874

MW-31 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/13/2004 18:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:40
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

31GRA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00228	Sulfate	14808-79-8	5,300.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	520.	400.	ug/l	5
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	10/15/2004 14:08	Michelle A Bolton	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/15/2004 14:08	Michelle A Bolton	5
02159	BTEX, MTBE	SW-846 8021B	1	10/20/2004 17:59	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	10/20/2004 01:58	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	10/20/2004 17:59	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/20/2004 17:59	Linda C Pape	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/18/2004 01:30	Eryn E Landis	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378875

MW-31 Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/13/2004 18:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:40
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/01/2004 19:18	Jennifer L Moyer	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	10/20/2004 21:30	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378876

MW-17 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 10:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:40
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

17GRA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	421,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	62,300.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	3,100.	400.	ug/l	5
08344	Ferrous Iron	n.a.	100.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	16.	0.5	ug/l	1
02164	Toluene	108-88-3	2.8	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	3.0	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	6.0	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	20.	ug/l	1
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	77.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	97.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	130.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	10/18/2004 22:44	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	10/18/2004 22:44	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	10/15/2004 14:21	Michelle A Bolton	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/15/2004 14:21	Michelle A Bolton	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	10/16/2004 07:00	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378876

MW-17 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 10:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:40
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

17GRA

02159	BTEX, MTBE	SW-846 8021B	1	10/20/2004 18:35	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	10/20/2004 02:24	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	10/20/2004 18:35	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/20/2004 18:35	Linda C Pape	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/18/2004 01:30	Eryn E Landis	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378877

MW-17 Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 10:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:40
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/01/2004 19:21	Jennifer L Moyer	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	10/20/2004 21:30	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378878

MW-19 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 12:15 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:40
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

19GRA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00228	Sulfate	14808-79-8	13,400.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1,200.	2.5	ug/l	5
02164	Toluene	108-88-3	16.	2.5	ug/l	5
02166	Ethylbenzene	100-41-4	N.D.	2.5	ug/l	5
02171	Total Xylenes	1330-20-7	N.D.	7.5	ug/l	5
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	50.	ug/l	5
	Due to the nature of the sample matrix, normal reporting limits were not attained.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	96.	93.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	120.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	510.	250.	ug/l	5

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	10/15/2004 14:35	Michelle A Bolton	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/15/2004 14:35	Michelle A Bolton	5
02159	BTEX, MTBE	SW-846 8021B	1	10/20/2004 19:11	Linda C Pape	5
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	10/20/2004 02:49	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	10/20/2004 19:11	Linda C Pape	5
01146	GC VOA Water Prep	SW-846 5030B	1	10/20/2004 19:11	Linda C Pape	5
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/18/2004 01:30	Eryn E Landis	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378879

MW-19 Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 12:15 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/01/2004 19:25	Jennifer L Moyer	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	10/20/2004 21:30	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378880

MW-21 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 08:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

21GRA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	355,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	20,900.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
08344	Ferrous Iron	n.a.	150.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	3,500.	5.0	ug/l	10
02164	Toluene	108-88-3	47.	5.0	ug/l	10
02166	Ethylbenzene	100-41-4	36.	5.0	ug/l	10
02171	Total Xylenes	1330-20-7	53.	15.	ug/l	10
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	25.	ug/l	10
	The reporting limits were raised because sample dilution was necessary to bring target compounds into the calibration range of the system.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	150.	83.	ug/l	1
02096	Heavy Range Organics	n.a.	160.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,300.	500.	ug/l	10

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	10/18/2004 22:44	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	10/18/2004 22:44	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	10/15/2004 14:48	Michelle A Bolton	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/15/2004 14:48	Michelle A Bolton	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	10/16/2004 07:00	Daniel S Smith	1
02159	BTEX, MTBE	SW-846 8021B	1	10/20/2004 19:46	Linda C Pape	10

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Analysis Report

Lancaster Laboratories Sample No. WW 4378880

MW-21 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 08:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

21GRA

02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	10/20/2004 03:15	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	10/20/2004 19:46	Linda C Pape	10
01146	GC VOA Water Prep	SW-846 5030B	1	10/20/2004 19:46	Linda C Pape	10
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/18/2004 01:30	Eryn E Landis	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378881

MW-21 Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 08:00 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/01/2004 19:28	Jennifer L Moyer	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	10/20/2004 21:30	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378882

MW-30 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 11:30 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

30GRA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00228	Sulfate	14808-79-8	5,900.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	450.	400.	ug/l	5
02159	BTEX, MTBE					
02161	Benzene	71-43-2	0.5	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	10/15/2004 15:02	Michelle A Bolton	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/15/2004 15:02	Michelle A Bolton	5
02159	BTEX, MTBE	SW-846 8021B	1	10/20/2004 22:45	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	10/20/2004 03:40	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	10/20/2004 22:45	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/20/2004 22:45	Linda C Pape	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/18/2004 01:30	Eryn E Landis	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378883

MW-30 Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 11:30 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/01/2004 19:32	Jennifer L Moyer	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	10/20/2004 21:30	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378884

MW-27 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 06:30 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

27GRA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	249,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	34,200.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	6,600.	400.	ug/l	5
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	10/18/2004 22:44	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	10/18/2004 22:44	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	10/15/2004 15:15	Michelle A Bolton	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/15/2004 15:15	Michelle A Bolton	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	10/16/2004 07:00	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378885

MW-27 Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 06:30 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/01/2004 19:35	Jennifer L Moyer	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	10/20/2004 21:30	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378886

TB-1-101304 Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/13/2004

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

TB110

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	10/20/2004 15:36	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	10/20/2004 15:36	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/20/2004 15:36	Linda C Pape	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378887

TB-2-101404 Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

TB233

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	10/20/2004 16:12	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	10/20/2004 16:12	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/20/2004 16:12	Linda C Pape	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378888

DS-1-101304 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/13/2004 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

DSXX-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00228	Sulfate	14808-79-8	12,500.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	1,300.	400.	ug/l	5
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	81.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	10/15/2004 13:28	Michelle A Bolton	5
00368	Nitrate Nitrogen	EPA 300.0	1	10/15/2004 13:28	Michelle A Bolton	5
02159	BTEX, MTBE	SW-846 8021B	1	10/20/2004 23:20	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	10/20/2004 04:06	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	10/20/2004 23:20	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/20/2004 23:20	Linda C Pape	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/18/2004 01:30	Eryn E Landis	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378889

DS-1-101304 Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/13/2004 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/01/2004 19:39	Jennifer L Moyer	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	10/20/2004 21:30	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378890

MW-28 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 14:15 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW28X

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	358,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	88,800.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	16,700.	800.	ug/l	10
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1.4	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	2.0	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	82.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	10/18/2004 22:44	Elaine F Stoltzfus	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	10/18/2004 22:44	Elaine F Stoltzfus	1
00228	Sulfate	EPA 300.0	1	10/16/2004 08:39	Michelle A Bolton	10
00368	Nitrate Nitrogen	EPA 300.0	1	10/16/2004 08:39	Michelle A Bolton	10
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	10/16/2004 07:00	Daniel S Smith	1
02159	BTEX, MTBE	SW-846 8021B	1	10/20/2004 23:56	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	10/20/2004 04:31	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	10/20/2004 23:56	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/20/2004 23:56	Linda C Pape	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378890

MW-28 Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 14:15 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW28X

07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/18/2004 01:30	Eryn E Landis	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4378891

MW-28 Filtered Grab Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:10/14/2004 14:15 by GC

Account Number: 11255

Submitted: 10/15/2004 09:05
Reported: 11/02/2004 at 13:41
Discard: 12/03/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/02/2004 08:00	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	10/20/2004 21:30	James L Mertz	1

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 916479
Reported: 11/02/04 at 01:41 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 04289401301A	Sample number(s): 4378870,4378872,4378874,4378876,4378888							
Sulfate	N.D.	0.30	mg/l	101		89-110		
Nitrate Nitrogen	N.D.	0.080	mg/l	99		90-110		
Batch number: 04289401301B	Sample number(s): 4378878,4378880,4378882,4378884,4378890							
Sulfate	N.D.	0.30	mg/l	101		89-110		
Nitrate Nitrogen	N.D.	0.080	mg/l	99		90-110		
Batch number: 042900010A	Sample number(s): 4378870,4378872,4378874,4378876,4378878,4378880,4378882,4378888,4378890							
Diesel Range Organics	N.D.	0.080	mg/l	80	75	51-113	6	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 04290834401A	Sample number(s): 4378870,4378876,4378880,4378884,4378890							
Ferrous Iron	N.D.	0.0080	mg/l	100		95-105		
Batch number: 04292020202A	Sample number(s): 4378870,4378876,4378880,4378884,4378890							
Alkalinity to pH 4.5				100		98-103		
Batch number: 04293A53A	Sample number(s): 4378870,4378872,4378874,4378876,4378878,4378880,4378882,4378886-4378888,4378890							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	87	83	70-130	5	30
Benzene	N.D.	0.5	ug/l	110	112	79-123	2	30
Toluene	N.D.	0.5	ug/l	99	98	82-119	1	30
Ethylbenzene	N.D.	0.5	ug/l	100	101	81-119	1	30
Total Xylenes	N.D.	1.5	ug/l	98	95	82-120	3	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	102	106	75-125	4	30
Batch number: 042945704007	Sample number(s): 4378871,4378873,4378875,4378877,4378879,4378881,4378883,4378885,4378889,4378891							
Lead (furnace method)	N.D.	0.00099	mg/l	91		80-120		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 04289401301A	Sample number(s): 4378870,4378872,4378874,4378876,4378888								
Sulfate	90		90-110			1,260.	1,220.	3	3
Nitrate Nitrogen	100		90-110			N.D.	N.D.	0 (1)	2

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 916479
Reported: 11/02/04 at 01:41 PM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 04289401301B	Sample number(s): 4378878,4378880,4378882,4378884,4378890								
Sulfate	103		90-110			88.8	82.5	7*	3
Nitrate Nitrogen	99		90-110			16.7	15.5	7*	2
Batch number: 04290834401A	Sample number(s): 4378870,4378876,4378880,4378884,4378890								
Ferrous Iron	97	97	83-111	0	5	14.7	14.9	2 (1)	6
Batch number: 04292020202A	Sample number(s): 4378870,4378876,4378880,4378884,4378890								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	95	98	64-130	2	2	908.	921.	1	4
Batch number: 04293A53A	Sample number(s): 4378870,4378872,4378874,4378876,4378878,4378880,4378882,4378886-4378888,4378890								
TPH by NWTPH-Gx waters	89	95	63-154	6	30				
Benzene	114	109	78-131	5	20				
Toluene	93	104	78-129	11	30				
Ethylbenzene	106	101	75-133	5	30				
Total Xylenes	102	103	86-132	1	30				
Methyl tert-Butyl Ether	104	102	70-134	2	30				
Batch number: 042945704007	Sample number(s): 4378871,4378873,4378875,4378877,4378879,4378881,4378883,4378885,4378889,4378891								
Lead (furnace method)	86	100	80-120	14	20	N.D.	N.D.	0 (1)	20

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 042900010A

	Orthoterphenyl
4378870	95
4378872	83
4378874	76
4378876	80
4378878	84
4378880	94
4378882	76
4378888	79
4378890	88
Blank	83
LCS	107
LCSD	103
Limits:	50-150

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 04293A53A

	Trifluorotoluene-P	Trifluorotoluene-F

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 916479
Reported: 11/02/04 at 01:41 PM

Surrogate Quality Control

4378870	124	113
4378872	100	88
4378874	99	96
4378876	103	92
4378878	85	90
4378880	92	89
4378882	95	90
4378886	98	93
4378887	96	95
4378888	98	87
4378890	92	90
Blank	107	94
LCS	98	91
LCSD	105	92
MS	100	86
MSD	97	90
Limits:	72-128	57-146

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 903900. Samples arrived at the laboratory on Thursday, July 15, 2004. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-30 Grab Water Sample	4311715
MW-30 Filtered Grab Water Sample	4311716
MW-31 Grab Water Sample	4311717
MW-31 Filtered Grab Water Sample	4311718
MW-37 Grab Water Sample	4311719
MW-37 Filtered Grab Water Sample	4311720
071304-DI Grab Water Sample	4311721
071304-DI Filtered Grab Water Sample	4311722
TB071304-2 Water Sample	4311723
MW-19 Grab Water Sample	4311724
MW-19 Filtered Grab Water Sample	4311725

1 COPY TO SAIC Attn: Tom Dube

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,

Jenifer Hess
Group Leader

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4311715

MW-30 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 15:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:53
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

M30--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	400.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	500.	ug/l	1
	Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/19/2004 00:00	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/19/2004 13:16	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/19/2004 00:00	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/19/2004 00:00	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/17/2004 07:15	Claudia M Tabora	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311716

MW-30 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 15:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:53
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/23/2004 12:11	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/21/2004 10:21	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311717

MW-31 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 16:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:53
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

M31--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/19/2004 00:33	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/19/2004 14:33	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/19/2004 00:33	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/19/2004 00:33	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/17/2004 07:15	Claudia M Tabora	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311718

MW-31 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 16:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:53
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/23/2004 12:16	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/21/2004 10:21	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311719

MW-37 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 17:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:53
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

M37--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/19/2004 02:46	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/19/2004 14:59	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/19/2004 02:46	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/19/2004 02:46	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/17/2004 07:15	Claudia M Tabora	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311720

MW-37 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 17:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:53
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/23/2004 12:20	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/21/2004 10:21	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311721

071304-DI Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 12:00 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:53
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

713DI

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/19/2004 03:19	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/19/2004 15:24	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/19/2004 03:19	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/19/2004 03:19	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/17/2004 07:15	Claudia M Tabora	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311722

071304-DI Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 12:00 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:53
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/23/2004 12:25	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/21/2004 10:21	Megersa Deyessa	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4311723

TB071304-2 Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 17:45

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:53
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

TB713

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/18/2004 18:48	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/18/2004 18:48	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/18/2004 18:48	Linda C Pape	n.a.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4311724

MW-19 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/14/2004 09:30 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:53
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW19-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1,500.	5.0	ug/l	10
02164	Toluene	108-88-3	23.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	1.5	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	5.5	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	100.	ug/l	1
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	620.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	900.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/19/2004 03:52	Linda C Pape	10
02159	BTEX, MTBE	SW-846 8021B	1	07/19/2004 10:05	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/22/2004 11:13	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/19/2004 10:05	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/19/2004 10:05	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	2	07/21/2004 02:30	Deborah A Stasiak-Birkenbine	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311725

MW-19 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/14/2004 09:30 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:53
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/23/2004 12:38	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/21/2004 10:21	Megersa Deyessa	1

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 903900
Reported: 07/27/04 at 09:53 AM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 041980007A	Sample number(s): 4311715,4311717,4311719,4311721							
Diesel Range Organics	N.D.	0.080	mg/l	86		51-113		
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 04200A56A	Sample number(s): 4311715,4311717,4311719,4311721,4311723-4311724							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	91	90	70-130	1	30
Benzene	N.D.	0.5	ug/l	103	101	79-123	3	30
Toluene	N.D.	0.5	ug/l	108	104	82-119	3	30
Ethylbenzene	N.D.	0.5	ug/l	107	103	81-119	4	30
Total Xylenes	N.D.	1.5	ug/l	108	104	82-120	3	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	104	104	75-125	1	30
Batch number: 04200A56B	Sample number(s): 4311724							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	91	90	70-130	1	30
Toluene	N.D.	0.5	ug/l	108	104	82-119	3	30
Ethylbenzene	N.D.	0.5	ug/l	107	103	81-119	4	30
Total Xylenes	N.D.	1.5	ug/l	108	104	82-120	3	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	104	104	75-125	1	30
Batch number: 042020012A	Sample number(s): 4311724							
Diesel Range Organics	N.D.	0.080	mg/l	76	75	51-113	2	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 042035704002	Sample number(s): 4311716,4311718,4311720,4311722,4311725							
Lead (furnace method)	N.D.	0.00099	mg/l	100		80-120		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 041980007A	Sample number(s): 4311715,4311717,4311719,4311721								
Diesel Range Organics						N.D.	N.D.	0 (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 04200A56A	Sample number(s): 4311715,4311717,4311719,4311721,4311723-4311724								
TPH by NWTPH-Gx waters	100		63-154						
Benzene	110		67-136						
Toluene	115		78-129						
Ethylbenzene	114		75-133						
Total Xylenes	115		86-132						
Methyl tert-Butyl Ether	103		59-148						

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 903900
Reported: 07/27/04 at 09:53 AM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 04200A56B	Sample number(s): 4311724								
TPH by NWTPH-Gx waters	100		63-154						
Toluene	115		78-129						
Ethylbenzene	114		75-133						
Total Xylenes	115		86-132						
Methyl tert-Butyl Ether	103		59-148						
Batch number: 042035704002	Sample number(s): 4311716,4311718,4311720,4311722,4311725								
Lead (furnace method)	98	99	80-120	1	20	N.D.	N.D.	0 (1)	20

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 041980007A

	Orthoterphenyl
4311715	85
4311717	83
4311719	93
4311721	82
Blank	80
DUP	84
LCS	104
Limits:	50-150

Analysis Name: BTEX, MTBE
Batch number: 04200A56A

	Trifluorotoluene-P	Trifluorotoluene-F
4311715	113	117
4311717	114	111
4311719	116	102
4311721	116	104
4311723	116	107
4311724	104	
Blank	113	107
LCS	114	109
LCSD	115	108
MS	115	105
Limits:	66-136	57-146

Analysis Name: BTEX, MTBE
Batch number: 04200A56B

	Trifluorotoluene-P	Trifluorotoluene-F
4311724	129	134
Blank	113	102
LCS	114	109
LCSD	115	108

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 903900
Reported: 07/27/04 at 09:53 AM

Surrogate Quality Control

MS	115	105
Limits:	66-136	57-146

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 042020012A

	Orthoterphenyl
4311724	91
Blank	83
LCS	94
LCSD	93
Limits:	50-150

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

Acct. #: 11255   For Lancaster Laboratories use only Sample #: 4311715-25   SCR#: 903900

Facility #: 9-6590
Site Address: 232 Wooden Ave
Chevron PM: Brett Hunter   Lead Consultant: SAIC
Consultant/Office: Bequell, WA
Consultant Prj. Mgr.: Tom Dube
Consultant Phone #: 425 482 3325   Fax #: 425 482 6566
Sampler: C. Houck / A. Curry
Service Order #: ☐ Non SAR:

Analyses Requested — Preservation Codes: H (BTEX + MTBE), H (TPH G), H (TPH D)

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water (☐ Potable ☐ NPDES)	Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☒ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates	TPH G	TPH D ☒ Extended Rng. ☒ Silica Gel Cleanup	Lead Total ☐ Diss. ☒ Method 6021/7020	VPH/EPH	NWTPH H HCID ☐ quantification
MW-30	7/13/04	1545				✓		9	✓			✓	✓	✓		
MW-6 ***		1245				✓		1						✓		
MW-31		1645				✓		9	✓			✓	✓	✓		
MW-37		1745				✓		9	✓			✓	✓	✓		
071304-D1		1200				✓		9	✓			✓	✓	✓		
TB071304-2		1745				✓		2	✓			✓				
~~[illegible]~~ MW-23		1915				✓		9	~~✓~~			~~✓~~	~~✓~~	~~✓~~	HOLD	
MW-19	7/14/04	0930				✓		9	✓			✓	✓	✓		

Preservative Codes
H = HCl   T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☒ Confirm MTBE + Naphthalene — * See comments
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
* Confirm MTBE by 8260 at detection by 8021 720 ug/L
** Lead samples are to be filtered by the laboratory
*** Extra bottle from 7/13/04 shipment.

Turnaround Time Requested (TAT) (please circle)
(STD. TAT) (circled)   72 hour   48 hour
24 hour   4 day   5 day

Data Package Options (please circle if required)
QC Summary   Type I - Full
Type VI (Raw Data)   Disk / EDD
WIP (RWQCB)   Standard Format
Disk   ________ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	7/14/04	1009			
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS (FedEx) (circled) Other ______			Received by: [signature] Ross Zook	7/15/04	0925
Temperature Upon Receipt 4.0 C°			Custody Seals Intact? Yes No (N/A) (circled)		

3468 Rev. 8/6/01

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 903903. Samples arrived at the laboratory on Thursday, July 15, 2004. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-6 Grab Water Sample	4311732
MW-6 Lab Filtered Grab Water Sample	4311733
MW-6 Field Filtered Grab Water Sample	4311734
MW-17 Grab Water Sample	4311735
MW-17 Lab Filtered Grab Water Sample	4311736
MW-17 Field Filtered Grab Water Sample	4311737
MW-21 Grab Water Sample	4311738
MW-21 Lab Filtered Grab Water Sample	4311739
MW-21 Field Filtered Grab Water Sample	4311740
MW-28 Grab Water Sample	4311741
MW-28 Lab Filtered Grab Water Sample	4311742
MW-28 Field Filtered Grab Water Sample	4311743
TB07-13-04-1 Water Sample	4311744

1 COPY TO SAIC Attn: Tom Dube

Lancaster Laboratories

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,

Jenifer Hess
Group Leader

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4311732

MW-6 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 12:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

590M6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	621,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	14,200.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
02159	BTEX, MTBE					
02161	Benzene	71-43-2	750.	2.5	ug/l	5
02164	Toluene	108-88-3	12.	2.5	ug/l	5
02166	Ethylbenzene	100-41-4	95.	2.5	ug/l	5
02171	Total Xylenes	1330-20-7	36.	7.5	ug/l	5
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	50.	ug/l	5
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	2,200.	390.	ug/l	5
02096	Heavy Range Organics	n.a.	N.D.	480.	ug/l	5
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,200.	250.	ug/l	5

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	07/17/2004 22:18	Justin M Bowers	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	07/17/2004 22:18	Justin M Bowers	1
00228	Sulfate	EPA 300.0	1	07/15/2004 12:06	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	07/15/2004 12:06	Shannon L Phillips	5
02159	BTEX, MTBE	SW-846 8021B	1	07/19/2004 04:25	Linda C Pape	5
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/19/2004 16:16	Matthew E Barton	5

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Analysis Report

Lancaster Laboratories Sample No. WW 4311732

MW-6 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 12:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

590M6

08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/19/2004 04:25	Linda C Pape	5
01146	GC VOA Water Prep	SW-846 5030B	1	07/19/2004 04:25	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/17/2004 07:15	Claudia M Tabora	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4311733

MW-6 Lab Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 12:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	3.7	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/23/2004 12:43	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/21/2004 10:21	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311734

MW-6 Field Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 12:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08344	Ferrous Iron	n.a.	9,400.	200.	ug/l	25

State of Washington Lab Certification No. C259
This sample was filtered in the field for ferrous iron.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	07/16/2004 18:10	Daniel S Smith	25

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Analysis Report

Lancaster Laboratories Sample No. WW 4311735

MW-17 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 11:30 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

59017

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	399,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	70,400.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	980.	400.	ug/l	5
02159	BTEX, MTBE					
02161	Benzene	71-43-2	16.	0.5	ug/l	1
02164	Toluene	108-88-3	5.8	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	2.6	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	35.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	100.	ug/l	1

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	410.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	96.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,900.	50.	ug/l	1

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	07/17/2004 22:18	Justin M Bowers	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311735

MW-17 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 11:30 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

59017

00202	Alkalinity to pH 4.5	EPA 310.1	1	07/17/2004 22:18	Justin M Bowers	1
00228	Sulfate	EPA 300.0	1	07/15/2004 11:52	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	07/15/2004 11:52	Shannon L Phillips	5
02159	BTEX, MTBE	SW-846 8021B	1	07/19/2004 04:58	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/22/2004 11:38	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/19/2004 04:58	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/19/2004 04:58	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	2	07/21/2004 02:30	Deborah A Stasiak-Birkenbine	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311736

MW-17 Lab Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 11:30 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	1.0	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/23/2004 12:47	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/21/2004 10:21	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311737

MW-17 Field Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 11:30 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08344	Ferrous Iron	n.a.	23.	8.0	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the field for ferrous iron.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	07/16/2004 18:10	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311738

MW-21 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 09:15 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

59021

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	349,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	36,300.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
02159	BTEX, MTBE					
02161	Benzene	71-43-2	3,000.	5.0	ug/l	10
02164	Toluene	108-88-3	51.	5.0	ug/l	10
02166	Ethylbenzene	100-41-4	24.	5.0	ug/l	10
02171	Total Xylenes	1330-20-7	95.	15.	ug/l	10
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	100.	ug/l	10
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	850.	78.	ug/l	1
02096	Heavy Range Organics	n.a.	180.	97.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,000.	500.	ug/l	10

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	07/21/2004 17:18	Justin M Bowers	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	07/21/2004 17:18	Justin M Bowers	1
00228	Sulfate	EPA 300.0	1	07/15/2004 11:38	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	07/15/2004 11:38	Shannon L Phillips	5
02159	BTEX, MTBE	SW-846 8021B	1	07/19/2004 05:31	Linda C Pape	10
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/22/2004 12:03	Matthew E Barton	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311738

MW-21 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 09:15 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

59021

08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/19/2004 05:31	Linda C Pape	10
01146	GC VOA Water Prep	SW-846 5030B	1	07/19/2004 05:31	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	2	07/21/2004 02:30	Deborah A Stasiak-Birkenbine	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311739

MW-21 Lab Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 09:15 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/23/2004 12:52	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/21/2004 10:21	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311740

MW-21 Field Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 09:15 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08344	Ferrous Iron	n.a.	73.	8.0	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the field for ferrous iron.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	07/16/2004 18:10	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311741

MW-28 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 07:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

59028

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	376,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	92,900.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	14,700.	800.	ug/l	10
	This sample was submitted past the 48 hour holding time for nitrate nitrogen.					
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	2.0	ug/l	1
02164	Toluene	108-88-3	0.6	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	69.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	10.	ug/l	1
	Due to the presence of interferents near their retention time, normal reporting limits were not attained for MTBE and benzene. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	130.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	840.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	07/17/2004 22:18	Justin M Bowers	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	07/17/2004 22:18	Justin M Bowers	1
00228	Sulfate	EPA 300.0	1	07/15/2004 12:34	Shannon L Phillips	10
00368	Nitrate Nitrogen	EPA 300.0	1	07/15/2004 12:34	Shannon L Phillips	10
02159	BTEX, MTBE	SW-846 8021B	1	07/19/2004 06:04	Linda C Pape	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311741

MW-28 Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 07:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

59028

02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/19/2004 17:32	Matthew E Barton	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/19/2004 06:04	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/19/2004 06:04	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/17/2004 07:15	Claudia M Tabora	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311742

MW-28 Lab Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 07:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.99	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/23/2004 12:57	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/21/2004 10:21	Megersa Deyessa	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311743

MW-28 Field Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 07:45 by CH

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the field for ferrous iron.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	07/16/2004 18:10	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4311744

TB07-13-04-1 Water Sample
Facility# 96590
232 Woodin Ave - Chelan, WA
Collected:07/13/2004 06:00

Account Number: 11255

Submitted: 07/15/2004 09:25
Reported: 07/27/2004 at 09:55
Discard: 08/27/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

590TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	07/18/2004 19:22	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	07/18/2004 19:22	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/18/2004 19:22	Linda C Pape	n.a.

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 903903
Reported: 07/27/04 at 09:55 AM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 04197401101B	Sample number(s): 4311732,4311735,4311738,4311741							
Sulfate	N.D.	0.30	mg/l	95		89-110		
Nitrate Nitrogen	N.D.	0.080	mg/l	98		90-110		
Batch number: 041980007A	Sample number(s): 4311732,4311741							
Diesel Range Organics	N.D.	0.080	mg/l	86		51-113		
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 04198834401A	Sample number(s): 4311734,4311737,4311740,4311743							
Ferrous Iron	N.D.	0.0080	mg/l	101		95-105		
Batch number: 04199020202A	Sample number(s): 4311732,4311735,4311741							
Alkalinity to pH 4.5				99		98-103		
Batch number: 04200A56A	Sample number(s): 4311732,4311735,4311738,4311741,4311744							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	91	90	70-130	1	30
Benzene	N.D.	0.5	ug/l	103	101	79-123	3	30
Toluene	N.D.	0.5	ug/l	108	104	82-119	3	30
Ethylbenzene	N.D.	0.5	ug/l	107	103	81-119	4	30
Total Xylenes	N.D.	1.5	ug/l	108	104	82-120	3	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	104	104	75-125	1	30
Batch number: 042020012A	Sample number(s): 4311735,4311738							
Diesel Range Organics	N.D.	0.080	mg/l	76	75	51-113	2	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 04203020201A	Sample number(s): 4311738							
Alkalinity to pH 4.5				100		98-103		
Batch number: 042035704002	Sample number(s): 4311733,4311736,4311739,4311742							
Lead (furnace method)	N.D.	0.00099	mg/l	100		80-120		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 04197401101B	Sample number(s): 4311732,4311735,4311738,4311741								
Sulfate	94		90-110			17.2	17.4	1 (1)	3
Nitrate Nitrogen	100		90-110			5.2	5.4	3*	2
Batch number: 041980007A	Sample number(s): 4311732,4311741								

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 903903
Reported: 07/27/04 at 09:55 AM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Diesel Range Organics						N.D.	N.D.	0 (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 04198834401A	Sample number(s): 4311734,4311737,4311740,4311743								
Ferrous Iron	93	93	83-111	0	5	2.9	2.7	7* (1)	6
Batch number: 04199020202A	Sample number(s): 4311732,4311735,4311741								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	88	88	64-130	0	2	32.8	33.1	1	4
Batch number: 04200A56A	Sample number(s): 4311732,4311735,4311738,4311741,4311744								
TPH by NWTPH-Gx waters	100		63-154						
Benzene	110		67-136						
Toluene	115		78-129						
Ethylbenzene	114		75-133						
Total Xylenes	115		86-132						
Methyl tert-Butyl Ether	103		59-148						
Batch number: 04203020201A	Sample number(s): 4311738								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	99	99	64-130	0	2	35.0	34.7	1	4
Batch number: 042035704002	Sample number(s): 4311733,4311736,4311739,4311742								
Lead (furnace method)	98	99	80-120	1	20	N.D.	N.D.	0 (1)	20

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 041980007A

	Orthoterphenyl
4311732	92
4311741	92
Blank	80
DUP	84
LCS	104
Limits:	50-150

Analysis Name: BTEX, MTBE
Batch number: 04200A56A

	Trifluorotoluene-P	Trifluorotoluene-F
4311732	129	118
4311735	213*	230*
4311738	113	111
4311741	127	112
4311744	115	109
Blank	113	107
LCS	114	109
LCSD	115	108
MS	115	105

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 903903
Reported: 07/27/04 at 09:55 AM

Surrogate Quality Control

Limits:	66-136	57-146

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 042020012A

	Orthoterphenyl
4311735	82
4311738	110
Blank	83
LCS	94
LCSD	93
Limits:	50-150

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories — Where quality is a science.

NOTE: 48-Hr Hold Times for Ferrous Iron & Nitrate

Acct. #: 11255 | For Lancaster Laboratories use only Sample #: 4311732-44 | SCR#: 903903

Facility #: 9-6590
Site Address: 232 Wood Ave Clarkston, WA
Chevron PM: Brett Hunter Lead Consultant: SAIC
Consultant/Office: Bothell, WA
Consultant Prj. Mgr.: Tom Duke
Consultant Phone #: 425 482 3325 Fax #: 425 486 5566
Sampler: C. Houck & A. Curry
Service Order #: ____ ☐ Non SAR: ____

Matrix: Soil | Water | Oil | Potable ☐ NPDES ☐ | Air ☐ | Total Number of Containers | Grab | Composite

Analyses Requested / Preservation Codes: BTEX + MTBE 8021 ☒ 8260 ☐ Naphth ☐ | 8260 full scan | Oxygenates ___ | TPH G | TPH D | Extended Rng. ☒ Silica Gel Cleanup ☐ | Lead Total ☒ Diss. ☐ Method 6010/7000 | VPH/EPH | NWTPH H HCID ☐ quantification | Sulfate/Nitrate EPA 300 | Total Alkalinity EPA 310.1 | Ferrous Iron SM-3500-Fe-D

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Oil	Air	Total Number of Containers	BTEX + MTBE 8021	8260 full scan	Oxygenates	TPH G	TPH D	Lead Total	VPH/EPH	NWTPH H HCID	Sulfate/Nitrate EPA 300	Total Alkalinity EPA 310.1	Ferrous Iron SM-3500-Fe-D
MW-6	7/13/04	1245				✓			11	✓			✓	✓	✓			✓	✓	✓
MW-17	7/13/04	1130				✓			12	✓			✓	✓	✓			✓	✓	✓
~~MW-19~~																				
MW-21	7/13/04	0915				✓			12	✓			✓	✓	✓		●	✓	✓	✓
MW-28	7/13/04	0745				✓			12	✓			✓	✓	✓			✓	✓	✓
~~MW-30~~																				
~~MW-31~~																				
~~MW-32~~																				
~~07-04-D1~~																				
TB07-04-1	7/13/04	0600				✓			2	✓			✓							

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☒ Confirm MTBE + ~~Naphthalene~~ SEE COMMENTS
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
* Confirm MTBE by 8260 if detections by 8021 > 20 ug/L
** Ferrous Iron samples have been field filtered. Lead samples need to be lab filtered.

Turnaround Time Requested (TAT) (please circle)
STD. TAT | 72 hour | 48 hour | 24 hour | 4 day | 5 day

Data Package Options (please circle if required)
QC Summary | Type I - Full
Type VI (Raw Data) | Disk / EDD
WIP (RWQCB) | Standard Format
Disk | ____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
	7/13/04	1800			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS (FedEx) Other ____			Received by: Rebecca Shattel	7/16/04	0925
Temperature Upon Receipt 4 C°			Custody Seals Intact? (Yes) No		

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 892534. Samples arrived at the laboratory on Friday, April 16, 2004. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-23 Water Sample	4256360
TB41404-1 Water Sample	4256361

1 COPY TO SAIC Attn: Tom Dube

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,

Victoria M. Martell
Chemist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4256360

MW-23 Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:04/14/2004 14:30 by CH

Account Number: 11255

Submitted: 04/16/2004 09:15
Reported: 04/27/2004 at 12:34
Discard: 05/28/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

M23--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	77.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	96.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	04/22/2004 21:22	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/22/2004 02:37	Devin M Hetrick	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/22/2004 21:22	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/22/2004 21:22	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/19/2004 01:20	Darin P Wagner	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4256361

TB41404-1 Water Sample
Facility# 96590
232 E Woodin Ave - Chelan, WA
Collected:04/14/2004

Account Number: 11255

Submitted: 04/16/2004 09:15
Reported: 04/27/2004 at 12:34
Discard: 05/28/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	48.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	04/22/2004 19:39	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/22/2004 19:39	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/22/2004 19:39	Linda C Pape	n.a.

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 892534
Reported: 04/27/04 at 12:34 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 041080004A	Sample number(s): 4256360							
Diesel Range Organics	N.D.	0.080	mg/l	104	101	51-113	2	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 04112A53A	Sample number(s): 4256361							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	112	104	70-130	8	30
Benzene	N.D.	0.5	ug/l	94	98	79-123	4	30
Toluene	N.D.	0.5	ug/l	98	83	82-119	17	30
Ethylbenzene	N.D.	0.5	ug/l	92	90	81-119	2	30
Total Xylenes	N.D.	1.5	ug/l	97	98	82-120	1	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	95	103	75-125	7	30
Batch number: 04112A55A	Sample number(s): 4256360							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	90	87	70-130	3	30
Benzene	N.D.	0.5	ug/l	98	97	79-123	1	30
Toluene	N.D.	0.5	ug/l	96	96	82-119	0	30
Ethylbenzene	N.D.	0.5	ug/l	90	91	81-119	1	30
Total Xylenes	N.D.	1.5	ug/l	90	91	82-120	1	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	106	105	75-125	1	30

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 04112A53A	Sample number(s): 4256361								
TPH by NWTPH-Gx waters	107		63-154						
Benzene	99		67-136						
Toluene	107		78-129						
Ethylbenzene	102		75-133						
Total Xylenes	105		86-132						
Methyl tert-Butyl Ether	-48*		59-148						
Batch number: 04112A55A	Sample number(s): 4256360								
TPH by NWTPH-Gx waters	88		63-154						
Benzene	106		67-136						
Toluene	105		78-129						
Ethylbenzene	98		75-133						
Total Xylenes	98		86-132						
Methyl tert-Butyl Ether	107		59-148						

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 892534
Reported: 04/27/04 at 12:34 PM

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 041080004A

	Orthoterphenyl
4256360	120
Blank	125
LCS	113
LCSD	110
Limits:	50-150

Analysis Name: BTEX, MTBE
Batch number: 04112A53A

	Trifluorotoluene-P	Trifluorotoluene-F
4256361	102	120
Blank	105	120
LCS	107	119
LCSD	105	118
MS	103	123
Limits:	66-136	57-146

Analysis Name: BTEX, MTBE
Batch number: 04112A55A

	Trifluorotoluene-P	Trifluorotoluene-F
4256360	95	91
Blank	96	92
LCS	96	93
LCSD	94	93
MS	96	92
Limits:	66-136	57-146

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

Acct. #: 11255 — For Lancaster Laboratories use only — Sample #: 425636-61 — SCR#: 892534

Facility #: 9-6590
Site Address: 232 E. Woodin Ave
Chevron PM: Brett Hunter — Lead Consultant: SAIC
Consultant/Office: 18706 N. Creek Pkwy Suite 110 Bothell, WA
Consultant Prj. Mgr.: Tom Dibe
Consultant Phone #: 425 482 3525 — Fax #: 425 485 5566
Sampler: C. Houck / G. Cisneros
Service Order #: _____ ☐ Non SAR: _____

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Water	Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☒ 8260 ☐ Naphth	8260 full scan	Oxygenates	TPH G	TPH D Extended Rng. ☐ Silica Gel Cleanup ☒	Lead Total ☐ Diss. ☐ Method	VPH/EPH	NWTPH H HCID ☐ quantification
MW-23	4/14/04	1430				✓		6	✓			✓	✓			
TB 41404-1	4/14/01	1200				✓		1	✓			✓				

Preservative Codes
H = HCl — T = Thiosulfate
N = HNO_3 — B = NaOH
S = H_2SO_4 — O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☒ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
~~MTBE~~

Turnaround Time Requested (TAT) (please circle)
STD. TAT 10 day / 24 hour — 72 hour — 4 day — 48 hour — 5 day

Data Package Options (please circle if required)
QC Summary — Type I - Full
Type VI (Raw Data) — Disk / EDD
WIP (RWQCB) — Standard Format
Disk — _____ Other.

	Relinquished by:	Date	Time	Received by:	Date	Time
1		4/15/04	1006			
2	~~Relinquished by:~~	Date	Time	Received by:	Date	Time
3	Relinquished by:	Date	Time	Received by:	Date	Time
4	Relinquished by Commercial Carrier: UPS FedEx Other _____			Received by: Rebecca Stotler	Date 4/16/04	Time 0915

Temperature Upon Receipt 3 C°
Custody Seals Intact? Yes No

Lancaster Laboratories

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 892301. Samples arrived at the laboratory on Thursday, April 15, 2004. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-30-041304 Grab Water Sample	4255307
MW-30-041304 Filtered Grab Water Sample	4255308
MW-31-041304 Grab Water Sample	4255309
MW-31-041304 Filtered Grab Water Sample	4255310
MW-8-041304 Grab Water Sample	4255311
MW-19-041304 Grab Water Sample	4255312
MW-19-041304 Filtered Grab Water Sample	4255313
MW-27-041304 Grab Water Sample	4255314
DS-1-041304 Grab Water Sample	4255315
DS-1-041304 Filtered Grab Water Sample	4255316
MW-28-041404 Grab Water Sample	4255317
MW-28-041404 Filtered Grab Water Sample	4255318
MW-21-041404 Grab Water Sample	4255319
MW-21-041404 Filtered Grab Water Sample	4255320
MW-17-041404 Grab Water Sample	4255321
MW-17-041404 Filtered Grab Water Sample	4255322
MW-6-041404 Grab Water Sample	4255323
MW-6-041404 Filtered Grab Water Sample	4255324
TB-1-041304 Grab Water Sample	4255325
TB-2-041404 Grab Water Sample	4255326

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Analysis Report

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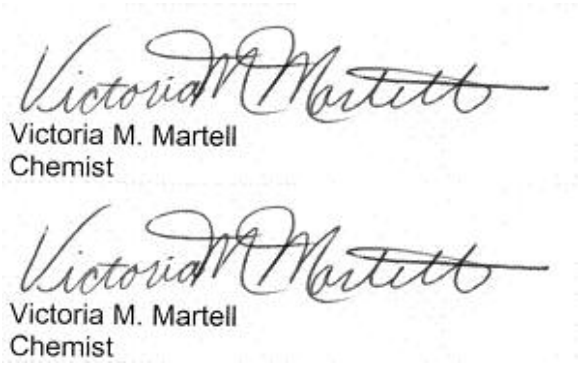
1 COPY TO SAIC Attn: Tom Dube

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,



Victoria M. Martell
Chemist

Victoria M. Martell
Chemist

Lancaster Laboratories

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Analysis Report

MW-30-041304 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 09:15 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:25
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW-30

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	04/17/2004 02:50	Steven A Skiles	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/19/2004 11:59	Tracy A Cole	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/17/2004 02:50	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/17/2004 02:50	Steven A Skiles	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/16/2004 18:00	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255308

MW-30-041304 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 09:15 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:25
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	04/19/2004 08:50	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	04/18/2004 20:45	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255309

MW-31-041304 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 10:50 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:25
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW31-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	04/17/2004 03:26	Steven A Skiles	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/19/2004 12:49	Tracy A Cole	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/17/2004 03:26	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/17/2004 03:26	Steven A Skiles	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/16/2004 18:00	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255310

MW-31-041304 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 10:50 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:25
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	04/19/2004 09:06	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	04/18/2004 20:45	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255311

MW-8-041304 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 15:01 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:25
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1.4	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	75.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	94.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	04/17/2004 04:02	Steven A Skiles	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/19/2004 13:39	Tracy A Cole	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/17/2004 04:02	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/17/2004 04:02	Steven A Skiles	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/16/2004 18:00	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255312

MW-19-041304 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 16:00 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:25
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW19-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1,700.	2.5	ug/l	5
02164	Toluene	108-88-3	25.	2.5	ug/l	5
02166	Ethylbenzene	100-41-4	N.D.	2.5	ug/l	5
02171	Total Xylenes	1330-20-7	N.D.	7.5	ug/l	5
02172	Methyl tert-Butyl Ether	1634-04-4	55.	13.	ug/l	5
	The reporting limits were raised because sample dilution was necessary to bring target compounds into the calibration range of the system.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	680.	75.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	94.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	870.	250.	ug/l	5
02309	MTBE by GC/MS (water)					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	1.	ug/l	2.5
	MTBE was detected on the GC/PID. False positives are possible with this detector and GC/MS analysis did not confirm the presence of MTBE. Therefore, the positive result on the GC/PID is attributed to the presence of a false positive.					
	The reporting limits for the GC/MS volatile compounds were raised due to the level of non-target compounds.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	04/17/2004 04:37	Steven A Skiles	5
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/19/2004 14:04	Tracy A Cole	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255312

MW-19-041304 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 16:00 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:25
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW19-

08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/17/2004 04:37	Steven A Skiles	5
02309	MTBE by GC/MS (water)	SW-846 8260B	1	04/26/2004 14:04	Carrie J McCullough	2.5
01146	GC VOA Water Prep	SW-846 5030B	1	04/17/2004 04:37	Steven A Skiles	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	04/26/2004 14:04	Carrie J McCullough	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/16/2004 18:00	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255313

MW-19-041304 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 16:00 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:25
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	04/19/2004 09:12	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	04/18/2004 20:45	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255314

MW-27-041304 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 17:50 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:25
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW27-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1.9	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	97.	75.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	94.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	04/17/2004 06:11	Steven A Skiles	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/19/2004 14:29	Tracy A Cole	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/17/2004 06:11	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/17/2004 06:11	Steven A Skiles	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/16/2004 18:00	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255315

DS-1-041304 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 08:00 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:25
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

OS-1-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	75.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	94.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	04/17/2004 06:46	Steven A Skiles	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/19/2004 14:54	Tracy A Cole	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/17/2004 06:46	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/17/2004 06:46	Steven A Skiles	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/16/2004 18:00	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255316

DS-1-041304 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 08:00 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	04/19/2004 09:17	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	04/18/2004 20:45	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255317

MW-28-041404 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 08:00 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW-28

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	369,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	106,000.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	15,800.	800.	ug/l	10
08344	Ferrous Iron	n.a.	N.D.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	2.0	ug/l	1
02164	Toluene	108-88-3	0.7	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	49.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	20.	ug/l	1
	Due to the presence of interferents near their retention time, normal reporting limits were not attained for MTBE and benzene. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	78.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	98.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	700.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	04/17/2004 20:02	Justin M Bowers	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	04/17/2004 20:02	Justin M Bowers	1
00228	Sulfate	EPA 300.0	1	04/16/2004 01:10	Shannon L Phillips	10
00368	Nitrate Nitrogen	EPA 300.0	1	04/16/2004 01:10	Shannon L Phillips	10
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	04/15/2004 20:15	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255317

MW-28-041404 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 08:00 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW-28

02159	BTEX, MTBE	SW-846 8021B	1	04/17/2004 07:22	Steven A Skiles	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/19/2004 10:20	Tracy A Cole	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/17/2004 07:22	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/17/2004 07:22	Steven A Skiles	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/16/2004 18:00	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255318

MW-28-041404 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 08:00 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	04/19/2004 09:23	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	04/18/2004 20:45	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255319

MW-21-041404 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 09:15 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW21-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	348,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	37,000.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
08344	Ferrous Iron	n.a.	64.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	3,000.	10.	ug/l	20
02164	Toluene	108-88-3	56.	10.	ug/l	20
02166	Ethylbenzene	100-41-4	22.	10.	ug/l	20
02171	Total Xylenes	1330-20-7	92.	30.	ug/l	20
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	200.	ug/l	20
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	730.	78.	ug/l	1
02096	Heavy Range Organics	n.a.	110.	98.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,300.	1,000.	ug/l	20

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00201	Alkalinity to pH 8.3	EPA 310.1	1	04/17/2004 20:02	Justin M Bowers	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	04/17/2004 20:02	Justin M Bowers	1
00228	Sulfate	EPA 300.0	1	04/15/2004 16:49	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	04/15/2004 16:49	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	04/15/2004 20:15	Daniel S Smith	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255319

MW-21-041404 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 09:15 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW21-						
02159	BTEX, MTBE	SW-846 8021B	1	04/17/2004 08:04	Steven A Skiles	20
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/19/2004 10:45	Tracy A Cole	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/17/2004 08:04	Steven A Skiles	20
01146	GC VOA Water Prep	SW-846 5030B	1	04/17/2004 08:04	Steven A Skiles	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/16/2004 18:00	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255320

MW-21-041404 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 09:15 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	04/19/2004 09:28	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	04/18/2004 20:45	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255321

MW-17-041404 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 10:30 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW17-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	406,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	70,300.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	1,200.	400.	ug/l	5
08344	Ferrous Iron	n.a.	110.	8.0	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	13.	0.5	ug/l	1
02164	Toluene	108-88-3	5.4	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	2.5	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	39.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	100.	ug/l	1

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	540.	82.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,800.	50.	ug/l	1

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

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Analysis Report

Lancaster Laboratories Sample No. WW 4255321

MW-17-041404 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 10:30 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW17-						
00201	Alkalinity to pH 8.3	EPA 310.1	1	04/17/2004 20:02	Justin M Bowers	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	04/17/2004 20:02	Justin M Bowers	1
00228	Sulfate	EPA 300.0	1	04/15/2004 17:02	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	04/15/2004 17:02	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	04/15/2004 20:15	Daniel S Smith	1
02159	BTEX, MTBE	SW-846 8021B	1	04/17/2004 15:51	Steven A Skiles	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/19/2004 11:09	Tracy A Cole	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/17/2004 15:51	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/17/2004 15:51	Steven A Skiles	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/16/2004 18:00	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255322

MW-17-041404 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 10:30 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	04/19/2004 09:34	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	04/18/2004 20:45	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255323

MW-6-041404 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 12:00 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW06-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00201	Alkalinity to pH 8.3	n.a.	N.D.	410.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	619,000.	410.	ug/l as CaCO3	1
00228	Sulfate	14808-79-8	9,200.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	400.	ug/l	5
08344	Ferrous Iron	n.a.	6,400.	160.	ug/l	20
02159	BTEX, MTBE					
02161	Benzene	71-43-2	600.	2.5	ug/l	5
02164	Toluene	108-88-3	4.7	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	47.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	12.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	10.	ug/l	1

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	4,200.	870.	ug/l	10
02096	Heavy Range Organics	n.a.	420.	110.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,700.	50.	ug/l	1

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

Lancaster Laboratories Sample No. WW 4255323

MW-6-041404 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 12:00 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

MW06-

00201	Alkalinity to pH 8.3	EPA 310.1	1	04/17/2004 20:02	Justin M Bowers	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	04/17/2004 20:02	Justin M Bowers	1
00228	Sulfate	EPA 300.0	1	04/15/2004 17:15	Shannon L Phillips	5
00368	Nitrate Nitrogen	EPA 300.0	1	04/15/2004 17:15	Shannon L Phillips	5
08344	Ferrous Iron	SM 18, 3500-Fe D (modified)	1	04/15/2004 20:15	Daniel S Smith	20
02159	BTEX, MTBE	SW-846 8021B	1	04/17/2004 09:15	Steven A Skiles	5
02159	BTEX, MTBE	SW-846 8021B	1	04/17/2004 17:03	Steven A Skiles	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/19/2004 11:34	Tracy A Cole	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/19/2004 12:24	Tracy A Cole	10
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/17/2004 17:03	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/17/2004 17:03	Steven A Skiles	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/16/2004 18:00	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255324

MW-6-041404 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 12:00 by CH

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	8.9	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	04/19/2004 09:39	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	04/18/2004 20:45	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4255325

TB-1-041304 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/13/2004 07:50

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	04/16/2004 20:53	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/16/2004 20:53	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/16/2004 20:53	Steven A Skiles	n.a.

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Analysis Report

Lancaster Laboratories Sample No. WW 4255326

TB-2-041404 Grab Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:04/14/2004 07:50

Account Number: 11255

Submitted: 04/15/2004 09:00
Reported: 04/28/2004 at 16:26
Discard: 05/29/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	04/16/2004 21:28	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/16/2004 21:28	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/16/2004 21:28	Steven A Skiles	n.a.

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 892301
Reported: 04/28/04 at 04:26 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 04106401101A	Sample number(s): 4255317,4255319,4255321,4255323							
Sulfate	N.D.	0.30	mg/l	96		89-110		
Nitrate Nitrogen	N.D.	0.080	mg/l	98		90-110		
Batch number: 04106834401A	Sample number(s): 4255317,4255319,4255321,4255323							
Ferrous Iron	N.D.	0.0080	mg/l	98		92-105		
Batch number: 041070008A	Sample number(s): 4255307,4255309,4255311-4255312,4255314-4255315,4255317,4255319,4255321,4255323							
Diesel Range Organics	N.D.	0.080	mg/l	95	100	53-107	5	20
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 04108020201A	Sample number(s): 4255317,4255319,4255321,4255323							
Alkalinity to pH 4.5				100		98-103		
Batch number: 04108A53A	Sample number(s): 4255307,4255309,4255311-4255312,4255314-4255315,4255317,4255319,4255323,4255325-4255326							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	110	104	70-130	5	30
Benzene	N.D.	0.5	ug/l	90	99	79-123	10	30
Toluene	N.D.	0.5	ug/l	92	97	82-119	6	30
Ethylbenzene	N.D.	0.5	ug/l	90	91	81-119	0	30
Total Xylenes	N.D.	1.5	ug/l	93	96	82-120	3	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	88	95	75-125	7	30
Batch number: 04108A53B	Sample number(s): 4255321,4255323							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	110	104	70-130	5	30
Benzene	N.D.	0.5	ug/l	90	99	79-123	10	30
Toluene	N.D.	0.5	ug/l	92	97	82-119	6	30
Ethylbenzene	N.D.	0.5	ug/l	90	91	81-119	0	30
Total Xylenes	N.D.	1.5	ug/l	93	96	82-120	3	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	88	95	75-125	7	30
Batch number: 041095704001	Sample number(s): 4255308,4255310,4255313,4255316,4255318,4255320,4255322,4255324							
Lead (furnace method)	N.D.	0.0012	mg/l	110		80-120		
Batch number: P041172AA	Sample number(s): 4255312							
Methyl Tertiary Butyl Ether	N.D.	0.5	ug/l	98		77-127		

Sample Matrix Quality Control

MS	MSD	MS/MSD	RPD	BKG	DUP	DUP	Dup RPD

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 892301
Reported: 04/28/04 at 04:26 PM

Analysis Name	%REC	%REC	Limits	RPD	MAX	Conc	Conc	RPD	Max
Batch number: 04106401101A	Sample number(s): 4255317,4255319,4255321,4255323								
Sulfate	93		90-110			106.	105.	1	3
Nitrate Nitrogen	99		90-110			15.8	15.7	1	2
Batch number: 04106834401A	Sample number(s): 4255317,4255319,4255321,4255323								
Ferrous Iron	98	101	76-119	1	5	6.4	6.3	2 (1)	20
Batch number: 04108020201A	Sample number(s): 4255317,4255319,4255321,4255323								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	91	84	64-130	4*	2	203.	205.	1	4
Batch number: 04108A53A	Sample number(s): 4255307,4255309,4255311-4255312,4255314-4255315,4255317,4255319,4255323,4255325-4255326								
TPH by NWTPH-Gx waters	104	115	63-154	9	30				
Benzene	98		67-136						
Toluene	98		78-129						
Ethylbenzene	98		75-133						
Total Xylenes	99		86-132						
Methyl tert-Butyl Ether	91		59-148						
Batch number: 04108A53B	Sample number(s): 4255321,4255323								
TPH by NWTPH-Gx waters	104	115	63-154	9	30				
Benzene	98		67-136						
Toluene	98		78-129						
Ethylbenzene	98		75-133						
Total Xylenes	99		86-132						
Methyl tert-Butyl Ether	91		59-148						
Batch number: 041095704001	Sample number(s): 4255308,4255310,4255313,4255316,4255318,4255320,4255322,4255324								
Lead (furnace method)	91	91	80-120	0	20	N.D.	N.D.	0 (1)	20
Batch number: P041172AA	Sample number(s): 4255312								
Methyl Tertiary Butyl Ether	96	102	69-134	2	30				

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 041070008A

	Orthoterphenyl
4255307	113
4255309	111
4255311	119
4255312	110
4255314	111
4255315	111
4255317	108
4255319	119
4255321	113
4255323	121
Blank	104
LCS	101
LCSD	107

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 892301
Reported: 04/28/04 at 04:26 PM

Surrogate Quality Control

Limits: 50-150

Analysis Name: BTEX, MTBE
Batch number: 04108A53A

	Trifluorotoluene-P	Trifluorotoluene-F
4255307	101	118
4255309	107	111
4255311	98	113
4255312	89	119
4255314	104	115
4255315	113	115
4255317	111	134
4255319	97	126
4255323	107	
4255325	105	124
4255326	101	106
Blank	104	114
LCS	102	127
LCSD	104	126
MS	100	124
MSD		127
Limits:	66-136	57-146

Analysis Name: BTEX, MTBE
Batch number: 04108A53B

	Trifluorotoluene-P	Trifluorotoluene-F
4255321	207*	302*
4255323	150*	204*
Blank	106	126
LCS	102	127
LCSD	104	126
MS	100	124
MSD		127
Limits:	66-136	57-146

Analysis Name: MTBE by GC/MS (water)
Batch number: P041172AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4255312	101	99	105	96
Blank	101	96	96	94
LCS	99	96	96	94
MS	102	96	97	95
MSD	101	95	97	95
Limits:	81-120	82-112	85-112	83-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

892301
For Lancaster Laboratories use only
Acct. #: 11255 Sample #: 425307-26 SCR#: 118 9070

Facility #: 9-6590
Site Address: 232 E. Woodin Ave. Chelan, WA
Chevron PM: Brett Hunter Lead Consultant: SAIC
Consultant/Office: Bothell, WA
Consultant Prj. Mgr.: Tom Dube'
Consultant Phone #: 425 482 3325 Fax #: 425 485 5900
Sampler: C. Hock / G. Cisneros.
Service Order #: ☐ Non SAR:

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Matrix: Water	Matrix: Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☒ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates	TPH G	TPH D	Extended Reg. ☒ Silica Gel Cleanup ☒	Lead Total ☐ Diss. ☒ Method 7421	VPH/EPH	NWTPH H HCID ☐ quantification	NO2, SO4, Alkalinity per T. Dube	ferrous iron	TCHIS
MW-30-041304	4-13	0915	✓			✓		9	✓			✓	✓	✓	✓					
MW-31-041304	4-13	1050	✓			✓		9	✓			✓	✓	✓	✓					
MW-8-041304	4-13	1501	✓			✓		7	✓			✓	✓	✓						
MW-19-041304	4-13	1600	✓			✓		9	✓			✓	✓	✓	✓					
MW-27-041304	4-13	1750	✓			✓		6	✓			✓	✓							
DS-1-041304	4-13	0800	✓			✓		9	✓			✓	✓	✓						
MW-28-041404	4-13-04	0800	✓			✓		12	✓			✓	✓	✓				X	X	
MW-21-041404	4-14-04	0915	✓			✓		12	✓			✓	✓	✓				X	X	
MW-17-041404	4-14-04	1030	✓			✓		12	✓			✓	✓	✓				X	X	
MW-6-041404	4-14-04	1200	✓			✓		4	✓			✓	✓	✓				X	X	
~~MW-23~~	~~4-14-04~~																			
TB-1-041304	4-13	0750	✓			✓		2	✓			✓								
TB-2-041404	4-14	0750	✓			✓		2	✓			✓								

designation updates per T. Dube 4/15

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☒ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
Lead to be Filtered by Lab.
MTBE analyzed only if detection in sample for TPH-GAS
* MW 6, 17, 21, & 28 must be analyzed w/in 48 hrs.
1-Analyze MW-19 MS/MSD with sodium thiosulfate.

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk _____ Other.

	Date	Time		Date	Time
Relinquished by:	4-9-04	0855	Received by:		
Relinquished by:	4-14-04	1330	Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS FedEx Other			Received by:	4-15-04	0900
Temperature Upon Receipt 2-4 C°			Custody Seals Intact? Yes No		

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 881549. Samples arrived at the laboratory on Friday, January 16, 2004. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-30 Grab Water Sample	4200102
MW-30 Filtered Grab Water Sample	4200103
MW-31 Grab Water Sample	4200104
MW-31 Filtered Grab Water Sample	4200105
011304-D1 Grab Water Sample	4200106
011304-D1 Filtered Grab Water Sample	4200107
MW-8 Grab Water Sample	4200108
MW-6 Grab Water Sample	4200109
MW-6 Filtered Grab Water Sample	4200110
MW-29 Grab Water Sample	4200111
MW-29 Filtered Grab Water Sample	4200112
MW-17 Grab Water Sample	4200113
MW-17 Filtered Grab Water Sample	4200114
MW-21 Grab Water Sample	4200115
MW-21 Filtered Grab Water Sample	4200116
MW-19 Grab Water Sample	4200117
MW-19 Filtered Grab Water Sample	4200118
011304-D2 Grab Water Sample	4200119
011304-D2 Filtered Grab Water Sample	4200120
TB011304-1 Trip Blank Water Sample	4200121
MW-27 Grab Water Sample	4200122
MW-23 Grab Water Sample	4200123
MW-28 Grab Water Sample	4200124
MW-28 Filtered Grab Water Sample	4200125
TB011404-1 Trip Blank Water Sample	4200126

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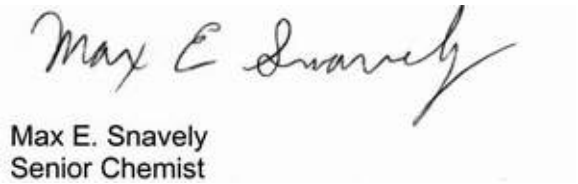
Analysis Report

1 COPY TO SAIC Attn: Tom Dube

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,



Max E. Snavely
Senior Chemist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4200102

MW-30 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 12:45 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:28
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE30

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	0.3	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 04:36	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/22/2004 04:41	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/22/2004 04:41	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/22/2004 04:41	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4200103

MW-30 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 12:45 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:28
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/22/2004 13:37	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/21/2004 09:00	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200104

MW-31 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 12:55 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:28
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE31

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	100.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	130.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	0.3	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 05:01	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/22/2004 05:16	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/22/2004 05:16	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/22/2004 05:16	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200105

MW-31 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 12:55 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:28
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/22/2004 13:48	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/21/2004 09:00	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200106

011304-D1 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 12:00 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:28
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHED1

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	94.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	120.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	0.3	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 05:51	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/21/2004 05:03	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/21/2004 05:03	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/21/2004 05:03	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200107

011304-D1 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 12:00 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:28
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/22/2004 13:58	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/21/2004 09:00	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200108

MW-8 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 09:50 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:28
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHEL8

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	800.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	1,000.	ug/l	1
	Due to interferences from the sample matrix (high sediment content), the reporting limit was increased.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	0.6	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 03:46	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/21/2004 05:37	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/21/2004 05:37	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/21/2004 05:37	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200109

MW-6 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 08:30 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:28
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHEL6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	18,000.	800.	ug/l	2
02096	Heavy Range Organics	n.a.	4,300.	1,000.	ug/l	2
	Due to interferences from the sample matrix (high sediment content), the reporting limit was increased.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	110.	1.0	ug/l	5
00777	Toluene	108-88-3	6.7	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	58.	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	15.	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	5.0	ug/l	5
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	4,500.	250.	ug/l	5

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/24/2004 00:51	Devin M Hetrick	2
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/21/2004 06:12	Linda C Pape	5
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/21/2004 06:12	Linda C Pape	5
01146	GC VOA Water Prep	SW-846 5030B	1	01/21/2004 06:12	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200110

MW-6 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 08:30 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	7.8	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/22/2004 14:09	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/21/2004 09:00	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200111

MW-29 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 07:32 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE29

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	80.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	100.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 06:16	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/21/2004 06:46	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/21/2004 06:46	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/21/2004 06:46	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200112

MW-29 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 07:32 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/22/2004 14:30	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/21/2004 09:00	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200113

MW-17 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 08:40 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	390.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	15.	0.2	ug/l	1
00777	Toluene	108-88-3	5.3	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	1.9	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	27.	0.6	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	10.	ug/l	1
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,200.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 06:41	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/21/2004 07:21	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/21/2004 07:21	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/21/2004 07:21	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200114

MW-17 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 08:40 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/22/2004 14:41	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/21/2004 09:00	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200115

MW-21 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 16:45 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	810.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	180.	94.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	1,900.	1.0	ug/l	5
00777	Toluene	108-88-3	41.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	13.	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	79.	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	20.	ug/l	5
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,300.	250.	ug/l	5

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 07:06	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/21/2004 08:30	Linda C Pape	5
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/21/2004 08:30	Linda C Pape	5
01146	GC VOA Water Prep	SW-846 5030B	1	01/21/2004 08:30	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200116

MW-21 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 16:45 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/22/2004 14:51	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/21/2004 09:00	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200117

MW-19 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 16:30 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE19

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	570.	160.	ug/l	1
02096	Heavy Range Organics	n.a.	310.	200.	ug/l	1
	Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	1,200.	2.0	ug/l	10
00777	Toluene	108-88-3	21.	2.0	ug/l	10
00778	Ethylbenzene	100-41-4	N.D.	2.0	ug/l	10
00779	Total Xylenes	1330-20-7	8.4	6.0	ug/l	10
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	10.	ug/l	10
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,200.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 07:30	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/21/2004 22:15	Martha L Seidel	10
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/22/2004 12:47	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/21/2004 22:15	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200118

MW-19 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 16:30 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/22/2004 15:02	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/21/2004 09:00	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200119

011304-D2 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 16:30 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHED2

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	650.	160.	ug/l	1
02096	Heavy Range Organics	n.a.	280.	200.	ug/l	1
	Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	1,200.	2.0	ug/l	10
00777	Toluene	108-88-3	22.	2.0	ug/l	10
00778	Ethylbenzene	100-41-4	N.D.	2.0	ug/l	10
00779	Total Xylenes	1330-20-7	7.9	6.0	ug/l	10
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	10.	ug/l	10
	Due to the nature of the sample matrix, normal reporting limits were not attained for MTBE and ethylbenzene.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,200.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 07:55	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/21/2004 22:50	Martha L Seidel	10
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/22/2004 13:22	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/21/2004 22:50	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200120

011304-D2 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 16:30 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/22/2004 15:13	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/21/2004 09:00	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200121

TB011304-1 Trip Blank Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/13/2004 00:00

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/21/2004 21:06	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/21/2004 21:06	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/21/2004 21:06	Martha L Seidel	n.a.

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Analysis Report

Lancaster Laboratories Sample No. WW 4200122

MW-27 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/14/2004 08:28 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE27

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	250.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 11:15	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/21/2004 23:59	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/21/2004 23:59	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/21/2004 23:59	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4200123

MW-23 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/14/2004 08:30 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE23

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	400.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	500.	ug/l	1
	Due to interferences from the sample matrix (high sediment content), the reporting limit was increased.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 09:35	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/22/2004 00:34	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/22/2004 00:34	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/22/2004 00:34	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200124

MW-28 Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/14/2004 09:30 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE28

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	280.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	5.0	ug/l	1
00777	Toluene	108-88-3	1.6	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	0.6	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	480.	0.6	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	20.	ug/l	1
	Due to the presence of interferents near their retention time, normal reporting limits were not attained for MTBE and benzene. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	6,700.	250.	ug/l	5

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	01/20/2004 11:40	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/22/2004 02:51	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/22/2004 12:12	Linda C Pape	5
01146	GC VOA Water Prep	SW-846 5030B	1	01/22/2004 02:51	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	01/19/2004 09:15	Danette S Blystone	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200125

MW-28 Filtered Grab Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/14/2004 09:30 by LH

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	01/22/2004 15:34	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	01/21/2004 09:00	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4200126

TB011404-1 Trip Blank Water Sample
Facility# 96590
232 Woodin Ave. - Chelan, WA
Collected:01/14/2004 00:00

Account Number: 11255

Submitted: 01/16/2004 09:15
Reported: 02/11/2004 at 09:29
Discard: 03/13/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.2	ug/l	1
00777	Toluene	108-88-3	N.D.	0.2	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.2	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.6	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08214	BTEX, MTBE (8021)	SW-846 8021B	1	01/21/2004 21:41	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	01/21/2004 21:41	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	01/21/2004 21:41	Martha L Seidel	n.a.

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 881549
Reported: 02/11/04 at 09:29 AM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 040170006A	Sample number(s): 4200102,4200104,4200106,4200108-4200109,4200111,4200113,4200115,4200117,4200119							
Diesel Range Organics	N.D.	0.080	mg/l	81		46-112		
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 040170007A	Sample number(s): 4200122-4200124							
Diesel Range Organics	N.D.	0.080	mg/l	84		46-112		
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 04019A56B	Sample number(s): 4200106,4200108-4200109,4200111,4200113,4200115							
Benzene	N.D.	0.2	ug/l	99	106	75-134	7	30
Toluene	N.D.	0.2	ug/l	104	110	82-119	6	30
Ethylbenzene	N.D.	0.2	ug/l	106	114	81-119	7	30
Total Xylenes	N.D.	0.6	ug/l	107	115	82-120	7	30
Methyl tert-Butyl Ether	N.D.	0.3	ug/l	104	113	59-153	9	30
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	89	93	70-130	5	30
Batch number: 04020A56A	Sample number(s): 4200102,4200104,4200117,4200119,4200121-4200124,4200126							
Benzene	N.D.	0.2	ug/l	91	91	75-134	0	30
Toluene	N.D.	0.2	ug/l	94	95	82-119	1	30
Ethylbenzene	N.D.	0.2	ug/l	96	98	81-119	2	30
Total Xylenes	N.D.	0.6	ug/l	98	99	82-120	2	30
Methyl tert-Butyl Ether	N.D.	0.3	ug/l	94	94	59-153	0	30
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	99	96	70-130	3	30
Batch number: 04020A56B	Sample number(s): 4200117,4200119,4200124							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	99	96	70-130	3	30
Batch number: 040215704002	Sample number(s): 4200103,4200105,4200107,4200110,4200112,4200114,4200116,4200118,4200120,4200125							
Lead (furnace method)	N.D.	0.0012	mg/l	94		80-120		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 040170006A	Sample number(s): 4200102,4200104,4200106,4200108-4200109,4200111,4200113,4200115,4200117,4200119								
Diesel Range Organics						N.D.	N.D.	0 (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 040170007A	Sample number(s): 4200122-4200124								
Diesel Range Organics						N.D.	N.D.	0 (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 04019A56B	Sample number(s): 4200106,4200108-4200109,4200111,4200113,4200115								
Benzene	97	108	67-136	5	30				
Toluene	103	114	78-129	10	30				
Ethylbenzene	106	114	75-133	8	30				
Total Xylenes	106	114	78-130	8	30				
Methyl tert-Butyl Ether	91	102	66-136	4	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 881549
Reported: 02/11/04 at 09:29 AM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
TPH by NWTPH-Gx waters	119	115	63-154	3	30				
Batch number: 04020A56A	Sample number(s): 4200102,4200104,4200117,4200119,4200121-4200124,4200126								
Benzene	107	119	67-136	11	30				
Toluene	108	120	78-129	10	30				
Ethylbenzene	111	122	75-133	10	30				
Total Xylenes	112	123	78-130	10	30				
Methyl tert-Butyl Ether	99	115	66-136	11	30				
TPH by NWTPH-Gx waters	103	102	63-154	1	30				
Batch number: 04020A56B	Sample number(s): 4200117,4200119,4200124								
TPH by NWTPH-Gx waters	103	102	63-154	1	30				
Batch number: 040215704002	Sample number(s): 4200103,4200105,4200107,4200110,4200112,4200114,4200116,4200118,4200120,4200125								
Lead (furnace method)	84	71*	80-120	15	20	0.0021	0.0017	17 (1)	20

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 040170006A

	Orthoterphenyl
4200102	92
4200104	94
4200106	99
4200108	92
4200109	91
4200111	87
4200113	75
4200115	100
4200117	81
4200119	86
Blank	97
LCS	84
Limits:	50-150

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 040170007A

	Orthoterphenyl
4200122	93
4200123	93
4200124	92
Blank	88
LCS	90
Limits:	50-150

Analysis Name: BTEX, MTBE (8021)

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 881549
Reported: 02/11/04 at 09:29 AM

Surrogate Quality Control

Batch number: 04019A56B

	Trifluorotoluene-P	Trifluorotoluene-F
4200106	97	113
4200108	99	114
4200109	112	122
4200111	97	114
4200113	123	144
4200115	88	118
Blank	97	115
LCS	99	113
LCSD	99	116
MS	99	111
MSD	100	113
Limits:	66-136	57-146

Analysis Name: BTEX, MTBE (8021)
Batch number: 04020A56A

	Trifluorotoluene-P	Trifluorotoluene-F
4200102	98	110
4200104	99	111
4200117	94	
4200119	94	
4200121	97	108
4200122	96	110
4200123	96	112
4200124	127	
4200126	96	108
Blank	97	111
LCS	96	112
LCSD	97	112
MS	101	89
MSD	103	102
Limits:	66-136	57-146

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 04020A56B

	Trifluorotoluene-P	Trifluorotoluene-F
4200117		127
4200119		117
4200124		112
Blank	102	110
LCS	96	112
LCSD	97	112
MS	101	89
MSD	103	102
Limits:	66-136	57-146

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 872548. Samples arrived at the laboratory on Tuesday, October 28, 2003. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-8 Grab Water Sample	4152527
MW-5 Grab Water Sample	4152528
MW-6 Grab Water Sample	4152529
MW-6 Filtered Grab Water Sample	4152530
MW-17 Grab Water Sample	4152531
MW-17 Filtered Grab Water Sample	4152532
102303-D1 Grab Water Sample	4152533
102303-D1 Filtered Grab Water Sample	4152534
MW-31 Grab Water Sample	4152535
MW-31 Filtered Grab Water Sample	4152536
MW-30 Grab Water Sample	4152537
MW-30 Filtered Grab Water Sample	4152538
MW-19 Grab Water Sample	4152539
MW-19 Filtered Grab Water Sample	4152540
102403-D2 Grab Water Sample	4152541
102403-D2 Filtered Grab Water Sample	4152542
MW-23 Grab Water Sample	4152543
MW-21 Grab Water Sample	4152544
MW-21 Filtered Grab Water Sample	4152545
MW-27 Grab Water Sample	4152546
MW-28 Grab Water Sample	4152547
MW-28 Filtered Grab Water Sample	4152548
MW-29 Grab Water Sample	4152549
MW-29 Filtered Grab Water Sample	4152550
TB-102303 Water Sample	4152551

Lancaster Laboratories

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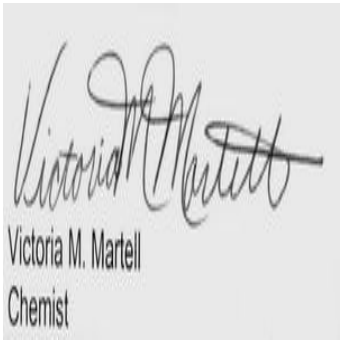
Analysis Report

1 COPY TO SAIC Attn: Tom Dube

Questions? Contact your Client Services Representative
Danette S Blystone at (717) 656-2300.

Respectfully Submitted,



Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4152527

MW-8 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 14:30

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE-8

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	400.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	500.	ug/l	1
	Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.					
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

The bottles submitted for this sample for the NWTPH-Dx analysis were preserved with sodium thiosulfate.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/01/2003 06:14	Devin M Hetrick	1
05879	BTEX	SW-846 8021B	1	10/30/2003 02:56	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 02:56	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 02:56	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 01:30	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152527

MW-8 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 14:30

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE-8

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Analysis Report

Lancaster Laboratories Sample No. WW 4152528

MW-5 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 13:15

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE-5

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	160.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	200.	ug/l	1
	Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.					
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	56.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

The bottles submitted for this sample for the NWTPH-Dx analysis were preserved with sodium thiosulfate.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/01/2003 07:04	Devin M Hetrick	1
05879	BTEX	SW-846 8021B	1	10/30/2003 03:31	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 03:31	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 03:31	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 01:30	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152528

MW-5 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 13:15

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

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CHE-5

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Analysis Report

Lancaster Laboratories Sample No. WW 4152529

MW-6 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 16:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE-6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	3,600.	400.	ug/l	1
02096	Heavy Range Organics	n.a.	1,900.	1,000.	ug/l	2

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

05879	BTEX					
02161	Benzene	71-43-2	160.	0.5	ug/l	1
02164	Toluene	108-88-3	2.3	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	32.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	10.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the presence of interferents near their retention time, normal reporting limits were not attained for total xylenes. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,000.	50.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

State of Washington Lab Certification No. C259

The bottles submitted for this sample for the NWTPH-Dx analysis were preserved with sodium thiosulfate.

Laboratory Chronicle

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Analysis Report

Lancaster Laboratories Sample No. WW 4152529

MW-6 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 16:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE-6

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/01/2003 07:29	Devin M Hetrick	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/04/2003 03:44	Devin M Hetrick	2
05879	BTEX	SW-846 8021B	1	10/30/2003 04:06	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 04:06	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 04:06	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 01:30	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152530

MW-6 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 16:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	4.7	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/07/2003 14:16	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/06/2003 08:30	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152531

MW-17 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 15:07

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	480.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	94.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	13.	0.5	ug/l	1
02164	Toluene	108-88-3	5.3	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	1.6	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	66.	1.5	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	4,600.	50.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

State of Washington Lab Certification No. C259

The bottles submitted for this sample for the NWTPH-Dx analysis were preserved with sodium thiosulfate.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/01/2003 07:54	Devin M Hetrick	1
05879	BTEX	SW-846 8021B	1	10/30/2003 04:42	Linda C Pape	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152531

MW-17 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 15:07

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
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San Ramon CA 94583

CHE17

08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 04:42	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 04:42	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 01:30	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152532

MW-17 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 15:07

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

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6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/07/2003 14:21	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/06/2003 08:30	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152533

102303-D1 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 16:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHED1

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	470.	75.	ug/l	1
02096	Heavy Range Organics	n.a.	100.	94.	ug/l	1
05879	BTEX					
02161	Benzene	71-43-2	12.	0.5	ug/l	1
02164	Toluene	108-88-3	5.3	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	1.5	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	69.	1.5	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	4,800.	50.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

State of Washington Lab Certification No. C259

The bottles submitted for this sample for the NWTPH-Dx analysis were preserved with sodium thiosulfate.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/01/2003 08:19	Devin M Hetrick	1
05879	BTEX	SW-846 8021B	1	10/30/2003 05:17	Linda C Pape	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152533

102303-D1 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 16:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHED1

08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 05:17	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 05:17	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 01:30	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152534

102303-D1 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 16:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/07/2003 14:36	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/06/2003 08:30	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152535

MW-31 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 13:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE31

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	690.	75.	ug/l	1
02096	Heavy Range Organics	n.a.	150.	93.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	10/30/2003 09:55	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/01/2003 08:44	Devin M Hetrick	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 09:55	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 09:55	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 01:30	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152536

MW-31 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 13:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/07/2003 14:41	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/06/2003 08:30	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152537

MW-30 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 12:15

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE30

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	75.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	94.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	10/30/2003 10:30	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/01/2003 09:09	Devin M Hetrick	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 10:30	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 10:30	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 01:30	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152538

MW-30 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 12:15

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/07/2003 14:47	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/06/2003 08:30	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152539

MW-19 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 11:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE19

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1,100.	2.5	ug/l	5
02164	Toluene	108-88-3	17.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	1.0	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	6.3	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	20.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

The analysis for benzene was performed from a previously opened vial and the results are therefore estimated.

02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	100.	75.	ug/l	1
02096	Heavy Range Organics	n.a.	130.	94.	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,500.	50.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

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Analysis Report

Lancaster Laboratories Sample No. WW 4152539

MW-19 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 11:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE19

02159	BTEX, MTBE	SW-846 8021B	1	10/30/2003 13:58	Linda C Pape	1
02159	BTEX, MTBE	SW-846 8021B	1	11/01/2003 13:53	Linda C Pape	5
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/01/2003 09:33	Devin M Hetrick	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 13:58	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 13:58	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 01:30	David V Hershey Jr	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152540

MW-19 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 11:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:42
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	2.8	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/07/2003 14:52	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/06/2003 08:30	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152541

102403-D2 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 12:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHED2

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1,500.	2.5	ug/l	5
02164	Toluene	108-88-3	27.	2.5	ug/l	5
02166	Ethylbenzene	100-41-4	N.D.	2.5	ug/l	5
02171	Total Xylenes	1330-20-7	9.7	7.5	ug/l	5
02172	Methyl tert-Butyl Ether	1634-04-4	70.	13.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	The reporting limits were raised because sample dilution was necessary to bring target compounds into the calibration range of the system.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	750.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	140.	95.	ug/l	1
	DRO was detected in the method blank at a concentration of 340 ug/l. HRO was detected in the method blank at a concentration of 350 ug/l. These blank values were not subtracted from the analytical result. Due to insufficient sample volume, a reextraction could not be performed. Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	910.	250.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
02309	MTBE by GC/MS (water)					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	1.	ug/l	2
	The reporting limits for the GC/MS volatile compounds were raised due to the level of non-target compounds.					

State of Washington Lab Certification No. C259

Lancaster Laboratories Sample No. WW 4152541

102403-D2 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 12:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHED2

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	10/30/2003 11:04	Linda C Pape	5
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/04/2003 00:25	Devin M Hetrick	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 11:04	Linda C Pape	5
02309	MTBE by GC/MS (water)	SW-846 8260B	1	11/05/2003 19:49	Elizabeth M Taylor	2
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 11:04	Linda C Pape	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/05/2003 19:49	Elizabeth M Taylor	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 23:00	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152542

102403-D2 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 12:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
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San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/07/2003 14:57	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/06/2003 08:30	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152543

MW-23 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 11:50

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE23

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	94.	ug/l	1
	DRO was detected in the method blank at a concentration of 340 ug/l. HRO was detected in the method blank at a concentration of 350 ug/l. These blank values were not subtracted from the analytical result. Due to insufficient sample volume, a reextraction could not be performed. Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/04/2003 00:50	Devin M Hetrick	1
05879	BTEX	SW-846 8021B	1	10/30/2003 05:51	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 05:51	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 05:51	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 23:00	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152543

MW-23 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 11:50

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

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CHE23

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Analysis Report

Lancaster Laboratories Sample No. WW 4152544

MW-21 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 10:15

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	1,200.	2.5	ug/l	5
02164	Toluene	108-88-3	28.	2.5	ug/l	5
02166	Ethylbenzene	100-41-4	3.7	2.5	ug/l	5
02171	Total Xylenes	1330-20-7	43.	7.5	ug/l	5
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	50.	ug/l	5

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	790.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	120.	95.	ug/l	1

DRO was detected in the method blank at a concentration of 340 ug/l. HRO was detected in the method blank at a concentration of 350 ug/l. These blank values were not subtracted from the analytical result. Due to insufficient sample volume, a reextraction could not be performed. Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	870.	250.	ug/l	5

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

02309	MTBE by GC/MS (water)					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	ug/l	1

State of Washington Lab Certification No. C259

The bottles submitted for this sample for the NWTPH-Dx analysis were preserved

Lancaster Laboratories Sample No. WW 4152544

MW-21 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 10:15

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
	with sodium thiosulfate.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	10/30/2003 20:12	Martha L Seidel	5
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/04/2003 01:15	Devin M Hetrick	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 20:12	Martha L Seidel	5
02309	MTBE by GC/MS (water)	SW-846 8260B	1	11/06/2003 02:55	Elizabeth M Taylor	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 20:12	Martha L Seidel	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/06/2003 02:55	Elizabeth M Taylor	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 23:00	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152545

MW-21 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 10:15

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	2	11/12/2003 06:31	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/06/2003 08:30	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152546

MW-27 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 09:30

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE27

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	77.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	96.	ug/l	1

DRO was detected in the method blank at a concentration of 340 ug/l. HRO was detected in the method blank at a concentration of 350 ug/l. These blank values were not subtracted from the analytical result. Due to insufficient sample volume, a reextraction could not be performed. Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

State of Washington Lab Certification No. C259

The bottles submitted for this sample for the NWTPH-Dx analysis were preserved with sodium thiosulfate.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/04/2003 01:40	Devin M Hetrick	1
05879	BTEX	SW-846 8021B	1	10/30/2003 06:26	Linda C Pape	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152546

MW-27 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 09:30

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE27

08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 06:26	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 06:26	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 23:00	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152547

MW-28 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 08:50

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE28

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	5.0	ug/l	1
02164	Toluene	108-88-3	2.8	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	0.6	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	170.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	20.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the presence of interferents near their retention time, normal reporting limits were not attained for MTBE and benzene. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	220.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	ug/l	1

DRO was detected in the method blank at a concentration of 340 ug/l. HRO was detected in the method blank at a concentration of 350 ug/l. These blank values were not subtracted from the analytical result. Due to insufficient sample volume, a reextraction could not be performed. Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,400.	50.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

State of Washington Lab Certification No. C259

The bottles submitted for this sample for the NWTPH-Dx analysis were preserved with sodium thiosulfate.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4152547

MW-28 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 08:50

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE28

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	10/30/2003 12:14	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/04/2003 02:05	Devin M Hetrick	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 12:14	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 12:14	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 23:00	Felix C Arroyo	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4152548

MW-28 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 08:50

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/12/2003 06:36	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/06/2003 08:30	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152549

MW-29 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 07:28

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE29

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	76.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	95.	ug/l	1
	DRO was detected in the method blank at a concentration of 340 ug/l. HRO was detected in the method blank at a concentration of 350 ug/l. These blank values were not subtracted from the analytical result. Due to insufficient sample volume, a reextraction could not be performed. Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

The bottles submitted for this sample for the NWTPH-Dx analysis were preserved with sodium thiosulfate.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	10/30/2003 12:49	Linda C Pape	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/04/2003 02:30	Devin M Hetrick	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152549

MW-29 Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 07:28

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHE29

08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 12:49	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 12:49	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	10/30/2003 23:00	Felix C Arroyo	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4152550

MW-29 Filtered Grab Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/24/2003 07:28

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	2	11/12/2003 06:41	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/06/2003 08:30	Denise K Conners	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4152551

TB-102303 Water Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA
Collected:10/23/2003 12:00

Account Number: 11255

Submitted: 10/28/2003 09:10
Reported: 12/11/2003 at 17:43
Discard: 01/11/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CHETB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05879	BTEX					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05879	BTEX	SW-846 8021B	1	10/30/2003 02:21	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	10/30/2003 02:21	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/30/2003 02:21	Linda C Pape	n.a.

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 872548
Reported: 12/11/03 at 05:43 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 03301A56A	Sample number(s): 4152527-4152529,4152531,4152533,4152535,4152537,4152539,4152541,4152543,4152546-4152547,4152549,4152551							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	88	86	70-130	2	30
Benzene	N.D.	0.5	ug/l	109	112	75-134	2	30
Toluene	N.D.	0.5	ug/l	108	114	82-119	5	30
Ethylbenzene	N.D.	0.5	ug/l	106	110	81-119	3	30
Total Xylenes	N.D.	1.5	ug/l	108	113	82-120	5	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	106	101	59-153	5	30
Batch number: 03301A56B	Sample number(s): 4152544							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	88	86	70-130	2	30
Benzene	N.D.	0.5	ug/l	109	112	75-134	2	30
Toluene	N.D.	0.5	ug/l	108	114	82-119	5	30
Ethylbenzene	N.D.	0.5	ug/l	106	110	81-119	3	30
Total Xylenes	N.D.	1.5	ug/l	108	113	82-120	5	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	106	101	59-153	5	30
Batch number: 033020013A	Sample number(s): 4152527-4152529,4152531,4152533,4152535,4152537,4152539							
Diesel Range Organics	N.D.	0.080	mg/l	69		46-112		
Heavy Range Organics	N.D.	0.10	mg/l					
Batch number: 033020014A	Sample number(s): 4152541,4152543-4152544,4152546-4152547,4152549							
Diesel Range Organics	0.34	0.080	mg/l	100	79	46-112	24*	20
Heavy Range Organics	0.35	0.10	mg/l					
Batch number: 03307A51A	Sample number(s): 4152539							
Benzene	N.D.	0.5	ug/l	98	95	75-134	3	30
Batch number: 033105704001	Sample number(s): 4152530,4152532,4152534,4152536,4152538,4152540,4152542,4152545,4152548,415255 0							
Lead (furnace method)	N.D.	0.0012	mg/l	107		80-120		
Batch number: P033092AA	Sample number(s): 4152541,4152544							
Methyl Tertiary Butyl Ether	N.D.	0.5	ug/l	98		77-127		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 03301A56A	Sample number(s): 4152527-4152529,4152531,4152533,4152535,4152537,4152539,4152541,4152543,4152546-4152547,4152549,4152551								
TPH by NWTPH-Gx waters	94		63-154						
Benzene	119		67-136						
Toluene	117		78-129						
Ethylbenzene	115		75-133						
Total Xylenes	118		86-132						
Methyl tert-Butyl Ether	102		66-136						
Batch number: 03301A56B	Sample number(s): 4152544								

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 872548
Reported: 12/11/03 at 05:43 PM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
TPH by NWTPH-Gx waters	94		63-154						
Benzene	119		67-136						
Toluene	117		78-129						
Ethylbenzene	115		75-133						
Total Xylenes	118		86-132						
Methyl tert-Butyl Ether	102		66-136						
Batch number: 033020013A	Sample number(s): 4152527-4152529,4152531,4152533,4152535,4152537,4152539								
Diesel Range Organics						N.D.	N.D.	0 (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 03307A51A	Sample number(s): 4152539								
Benzene	108		67-136						
Batch number: 033105704001	Sample number(s): 4152530,4152532,4152534,4152536,4152538,4152540,4152542,4152545,4152548,4152550								
Lead (furnace method)	110	108	80-120	2	20	N.D.	N.D.	0 (1)	20
Batch number: P033092AA	Sample number(s): 4152541,4152544								
Methyl Tertiary Butyl Ether	96	101	69-134	3	30				

Surrogate Quality Control

Analysis Name: BTEX
Batch number: 03301A56A

	Trifluorotoluene-P	Trifluorotoluene-F
4152527	97	93
4152528	102	89
4152529	145*	138
4152531	184*	150*
4152533	181*	151*
4152535	100	90
4152537	99	88
4152539	86	148*
4152541	107	101
4152543	97	91
4152546	99	91
4152547	151*	120
4152549	99	91
4152551	100	89
Blank	100	94
LCS	102	85
LCSD	100	89
MS	99	94
Limits:	66-136	57-146

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 03301A56B

	Trifluorotoluene-P	Trifluorotoluene-F

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 872548
Reported: 12/11/03 at 05:43 PM

Surrogate Quality Control

4152544	113	92		
Blank	101	92		
LCS	102	85		
LCSD	100	89		
MS	99	94		
Limits:	66-136	57-146		

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 033020013A

	Orthoterphenyl
4152527	92
4152528	96
4152529	93
4152531	99
4152533	97
4152535	99
4152537	93
4152539	95
Blank	99
LCS	80
Limits:	50-150

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 033020014A

	Orthoterphenyl
4152541	97
4152543	80
4152544	100
4152546	87
4152547	84
4152549	82
Blank	81
LCS	123
LCSD	97
Limits:	50-150

Analysis Name: BTEX
Batch number: 03307A51A

	Trifluorotoluene-P	Trifluorotoluene-F
4152539	72	
Blank	84	65
LCS	84	
LCSD	83	
MS	84	63
Limits:	66-136	57-146

Analysis Name: MTBE by GC/MS (water)
Batch number: P033092AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4152541	97	94	98	94

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 872548
Reported: 12/11/03 at 05:43 PM

Surrogate Quality Control

4152544	96	88	96	94
Blank	97	94	95	91
LCS	97	95	96	92
MS	97	93	95	92
MSD	96	93	95	91
Limits:	81-120	82-112	85-112	83-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583
925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 859994. Samples arrived at the laboratory on Thursday, July 17, 2003. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
QA Water Sample	4085039
MW 6 Grab Water Sample	4085040
MW 8 Grab Water Sample	4085041
MW 17 Grab Water Sample	4085043
MW 17 Filtered Grab Water Sample	4085044
MW 19 Grab Water Sample	4085045
MW 19 Filtered Grab Water Sample	4085046
MW 21 Grab Water Sample	4085047
MW 21 Filtered Grab Water Sample	4085048
MW 23 Grab Water Sample	4085049
MW 27 Grab Water Sample	4085051
MW 28 Grab Water Sample	4085053
MW 28 Filtered Grab Water Sample	4085054
MW 29 Grab Water Sample	4085055
MW 30 Grab Water Sample	4085057
MW 31 Grab Water Sample	4085059
DUP 1 Grab Water Sample	4085061

ELECTRONIC COPY TO	Gettler Ryan	Attn: Michael Sharaeff
1 COPY TO	SAIC	Attn: Ms. Deanna Harding

Lancaster Laboratories

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,

Robert E. Mellinger
Senior Chemist, Coordinator

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4085039

Collected:07/15/2003 00:00

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:03
Discard: 09/20/2003
QA Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

Account Number: 11260

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WACQA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/22/2003 18:09	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/22/2003 18:09	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2003 18:09	Martha L Seidel	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4085040

Collected:07/15/2003 05:10 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:03
Discard: 09/20/2003
MW 6 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	73.	0.5	ug/l	1
00777	Toluene	108-88-3	3.5	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	46.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	14.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	5.0	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	3,200.	50.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

06063	5 Oxygenates+EDC+EDB					
05402	1,2-Dichloroethane	107-06-2	N.D.	2.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	2.	ug/l	1

The analysis for GC/MS volatiles was performed outside the method specified holding time due to lab error.

State of Washington Lab Certification No. C259

Laboratory Chronicle

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085040

Collected:07/15/2003 05:10 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:03
Discard: 09/20/2003
MW 6 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC06

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/22/2003 18:46	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/22/2003 18:46	Martha L Seidel	1
06063	5 Oxygenates+EDC+EDB	SW-846 8260B	1	08/14/2003 22:21	Trent S Sprenkle	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2003 18:46	Martha L Seidel	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	08/14/2003 22:21	Trent S Sprenkle	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085041

Collected:07/15/2003 05:35 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:03
Discard: 09/20/2003
MW 8 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	1.9	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/22/2003 21:49	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/22/2003 19:23	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/22/2003 19:23	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2003 19:23	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/21/2003 01:10	David V Hershey Jr	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085043

Collected:07/15/2003 06:05 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:03
Discard: 09/20/2003
MW 17 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	13.9	1.2	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	280.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
05665	WA - VPH waters					
05328	Methyl t-butyl ether	1634-04-4	N.D.	1.0	ug/l	1
05537	Benzene	71-43-2	16.4	1.0	ug/l	1
05539	Toluene	108-88-3	1.2	1.0	ug/l	1
05542	Ethylbenzene	100-41-4	4.1	1.0	ug/l	1
05544	m,p-Xylenes	1330-20-7	10.2	2.0	ug/l	1
05548	o-Xylene	95-47-6	1.3	1.0	ug/l	1
05552	C5-C6 Aliphatic Hydrocarbons	n.a.	62.2	25.0	ug/l	1
05642	C6-C8 Aliphatic Hydrocarbons	n.a.	84.3	25.0	ug/l	1
05644	C8-C10 Aliphatic Hydrocarbons	n.a.	N.D.	25.0	ug/l	1
05645	C8-C10 Aromatic Hydrocarbons	n.a.	75.1	25.0	ug/l	1
	Sample containers were received in satisfactory condition. Sample preservation met requirements (pH </= 2). Samples were received on ice at a temperature of 4 +/- 2C. This sample was analyzed after the 14-day holding time had expired. The analysis was performed from a previously opened vial and the results are therefore estimated.					
05979	WA EPH in Water					
05980	>C10 - C12 Aliphatic	n.a.	110.	50.	ug/l	1
05981	>C12 - C16 Aliphatic	n.a.	N.D.	50.	ug/l	1
05982	>C16 - C21 Aliphatic	n.a.	N.D.	50.	ug/l	1
05983	>C21 - C34 Aliphatic	n.a.	N.D.	50.	ug/l	1
05984	>C10 - C12 Aromatic	n.a.	170.	50.	ug/l	1
05985	>C12 - C16 Aromatic	n.a.	N.D.	50.	ug/l	1
05986	>C16 - C21 Aromatic	n.a.	N.D.	50.	ug/l	1
05987	>C21 - C34 Aromatic	n.a.	N.D.	50.	ug/l	1
	The laboratory control sample (LCS) and laboratory control sample duplicate					

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4085043

Collected:07/15/2003 06:05 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:03
Discard: 09/20/2003
MW 17 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
	(LCSD) recoveries for the >C10-C12 aliphatic range are outside QC limits. The LCSD recovery for the >C10-C12 aromatic range is outside QC limits. The sample was reextracted (trial 2) outside of the method hold time. The LCS and LCSD recoveries for the >C10-C12 aliphatic range were within QC limits in trial 2. The aromatic >C10-C12 recoveries were outside QC limits for the LCS and LCSD in trial 2. The original data is reported. The sample results between the two trials are comparable for most ranges. Below are the trial 2 results for those ranges that differed: >C10-C12 aliphatic = 190 ug/L >C12-C16 aliphatic = 110 ug/L >C16-C21 aliphatic = 110 ug/L >C12-C16 aromatic = 60 ug/L					
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	30.	0.5	ug/l	1
00777	Toluene	108-88-3	2.6	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	11.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	27.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	20.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,300.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
06371	8260 Special Cmpds for Waters					
08195	Naphthalene	91-20-3	62.	1.	ug/l	1
08341	n-Hexane	110-54-3	41.	2.	ug/l	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4085043

Collected:07/15/2003 06:05 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:03
Discard: 09/20/2003
MW 17 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08827	GC/MS UST 8260					
05402	1,2-Dichloroethane	107-06-2	N.D.	2.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	2.	ug/l	1
08829	2-Methylnaphthalene	91-57-6	3.	2.	ug/l	1

State of Washington Lab Certification No. C259
The sample received for the metals analysis was submitted in an unpreserved container.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/31/2003 14:43	Jennifer L Moyer	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/22/2003 22:14	Devin M Hetrick	1
05665	WA - VPH waters	WA State DOE-VPH	1	07/30/2003 13:58	Steven A Skiles	1
05979	WA EPH in Water	WA EPH ECY97-602	1	07/26/2003 00:14	Robert Brown	1
05979	WA EPH in Water	WA EPH ECY97-602	1	07/26/2003 01:00	Robert Brown	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/22/2003 19:59	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/22/2003 19:59	Martha L Seidel	1
06371	8260 Special Cmpds for Waters	SW-846 8260B	1	07/25/2003 23:00	Susan McMahon-Luu	1
08827	GC/MS UST 8260	SW-846 8260B	1	07/25/2003 23:00	Susan McMahon-Luu	1
00497	Silica Gel Fractionation MA HC	SW-846 3630C Mod.	1	07/23/2003 11:45	Amanda W Herr	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2003 19:59	Martha L Seidel	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	07/25/2003 23:00	Susan McMahon-Luu	n.a.
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/23/2003 09:06	Denise K Conners	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/21/2003 01:10	David V Hershey Jr	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085044

Collected:07/15/2003 06:05 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:03
Discard: 09/20/2003
MW 17 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

This sample was filtered in the lab for dissolved metals.
State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/31/2003 14:48	Jennifer L Moyer	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/23/2003 09:06	Denise K Conners	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085045

Collected:07/15/2003 06:30 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 19 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC19

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	910.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	1,600.	1.0	ug/l	5
00777	Toluene	108-88-3	28.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	3.2	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	8.9	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	20.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	990.	250.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
06063	5 Oxygenates+EDC+EDB					
05402	1,2-Dichloroethane	107-06-2	6.	2.	ug/l	2.5
05412	1,2-Dibromoethane	106-93-4	N.D.	2.	ug/l	2.5
	The analysis for GC/MS volatiles was performed outside the method specified holding time at the client request.					
	The reporting limits for the GC/MS volatile compounds were raised due to the level of non-target compounds.					
	State of Washington Lab Certification No. C259					

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4085045

Collected:07/15/2003 06:30 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 19 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC19

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/22/2003 22:38	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/22/2003 20:36	Martha L Seidel	5
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/22/2003 20:36	Martha L Seidel	5
06063	5 Oxygenates+EDC+EDB	SW-846 8260B	1	08/14/2003 22:52	Trent S Sprenkle	2.5
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2003 20:36	Martha L Seidel	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	08/14/2003 22:52	Trent S Sprenkle	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/21/2003 01:10	David V Hershey Jr	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085046

Collected:07/15/2003 06:30 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 19 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

This sample was filtered in the lab for dissolved metals.
State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	08/15/2003 10:01	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	08/14/2003 09:13	Denise K Conners	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085047

Collected:07/15/2003 07:30 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 21 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	2.5	1.2	ug/l	1
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	520.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
05665	WA - VPH waters					
05328	Methyl t-butyl ether	1634-04-4	N.D.	10.0	ug/l	10
05537	Benzene	71-43-2	2,460.	10.0	ug/l	10
05539	Toluene	108-88-3	50.3	10.0	ug/l	10
05542	Ethylbenzene	100-41-4	N.D.	10.0	ug/l	10
05544	m,p-Xylenes	1330-20-7	58.8	20.0	ug/l	10
05548	o-Xylene	95-47-6	N.D.	10.0	ug/l	10
05552	C5-C6 Aliphatic Hydrocarbons	n.a.	3,350.	250.	ug/l	10
05642	C6-C8 Aliphatic Hydrocarbons	n.a.	4,180.	250.	ug/l	10
05644	C8-C10 Aliphatic Hydrocarbons	n.a.	N.D.	250.	ug/l	10
05645	C8-C10 Aromatic Hydrocarbons	n.a.	483.	250.	ug/l	10
	Sample containers were received in satisfactory condition. Sample preservation met requirements (pH </= 2). Samples were received on ice at a temperature of 4 +/- 2C. This sample was analyzed after the 14-day holding time had expired. The reporting limits were raised because sample dilution was necessary to bring target compounds into the calibration range of the system.					
05979	WA EPH in Water					
05980	>C10 - C12 Aliphatic	n.a.	88.	50.	ug/l	1
05981	>C12 - C16 Aliphatic	n.a.	N.D.	50.	ug/l	1
05982	>C16 - C21 Aliphatic	n.a.	N.D.	50.	ug/l	1
05983	>C21 - C34 Aliphatic	n.a.	N.D.	50.	ug/l	1
05984	>C10 - C12 Aromatic	n.a.	90.	50.	ug/l	1
05985	>C12 - C16 Aromatic	n.a.	N.D.	50.	ug/l	1
05986	>C16 - C21 Aromatic	n.a.	N.D.	50.	ug/l	1
05987	>C21 - C34 Aromatic	n.a.	N.D.	50.	ug/l	1
	The laboratory control sample (LCS) and laboratory control sample duplicate					

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4085047

Collected:07/15/2003 07:30 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 21 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
	(LCSD) recoveries for the >C10-C12 aliphatic range are outside QC limits. The LCSD recovery for the >C10-C12 aromatic range is outside QC limits. The sample was reextracted (trial 2) outside of the method hold time. The LCS and LCSD recoveries for the >C10-C12 aliphatic range were within QC limits in trial 2. The aromatic >C10-C12 recoveries were outside QC limits for the LCS and LCSD in trial 2. The original data is reported. The sample results between the two trials are comparable for most ranges. Below are the trial 2 results for those ranges that differed: >C12-C16 aliphatic = 80 ug/L					
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	2,300.	2.0	ug/l	10
00777	Toluene	108-88-3	48.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	N.D. #	10.	ug/l	5
00779	Total Xylenes	1330-20-7	49.	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	50.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the presence of interferents near their retention time, normal reporting limits were not attained for MTBE and ethylbenzene. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,300.	250.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
06371	8260 Special Cmpds for Waters					
08195	Naphthalene	91-20-3	1.	1.	ug/l	1
08341	n-Hexane	110-54-3	26.	2.	ug/l	1
08827	GC/MS UST 8260					

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4085047

Collected:07/15/2003 07:30 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 21 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05402	1,2-Dichloroethane	107-06-2	N.D.	2.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	2.	ug/l	1
08829	2-Methylnaphthalene	91-57-6	N.D.	2.	ug/l	1

State of Washington Lab Certification No. C259
The sample received for the metals analysis was submitted in an unpreserved container.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/31/2003 15:03	Jennifer L Moyer	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/22/2003 23:03	Devin M Hetrick	1
05665	WA - VPH waters	WA State DOE-VPH	1	07/30/2003 14:41	Steven A Skiles	10
05979	WA EPH in Water	WA EPH ECY97-602	1	07/26/2003 01:46	Robert Brown	1
05979	WA EPH in Water	WA EPH ECY97-602	1	07/26/2003 02:32	Robert Brown	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/22/2003 23:01	Martha L Seidel	5
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2003 13:01	Martha L Seidel	10
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/22/2003 23:01	Martha L Seidel	5
06371	8260 Special Cmpds for Waters	SW-846 8260B	1	07/25/2003 23:24	Susan McMahon-Luu	1
08827	GC/MS UST 8260	SW-846 8260B	1	07/25/2003 23:24	Susan McMahon-Luu	1
00497	Silica Gel Fractionation MA HC	SW-846 3630C Mod.	1	07/23/2003 11:45	Amanda W Herr	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2003 23:01	Martha L Seidel	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	07/25/2003 23:24	Susan McMahon-Luu	n.a.
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/23/2003 09:06	Denise K Conners	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/21/2003 01:10	David V Hershey Jr	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085048

Collected: 07/15/2003 07:30 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 21 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

This sample was filtered in the lab for dissolved metals.
State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/31/2003 15:07	Jennifer L Moyer	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/23/2003 09:06	Denise K Conners	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085049

Collected:07/15/2003 07:00 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 23 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC23

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/22/2003 23:28	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/22/2003 23:37	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/22/2003 23:37	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2003 23:37	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/21/2003 01:10	David V Hershey Jr	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085051

Collected:07/15/2003 09:10 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 27 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC27

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/23/2003 07:48	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2003 00:13	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/23/2003 00:13	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/23/2003 00:13	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/21/2003 01:10	David V Hershey Jr	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085053

Collected:07/15/2003 08:35 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 28 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC28

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D. #	10.	ug/l	1
00777	Toluene	108-88-3	5.0	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	0.8	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	260.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.					
	Due to the presence of interferents near their retention time, normal reporting limits were not attained for MTBE and benzene. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	3,800.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.					
06063	5 Oxygenates+EDC+EDB					
05402	1,2-Dichloroethane	107-06-2	N.D.	2.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	2.	ug/l	1
	The analysis for GC/MS volatiles was performed outside the method specified					

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4085053

Collected:07/15/2003 08:35 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 28 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC28

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

holding time at the client request.

The vial submitted for volatile analysis did not have a pH < 2 at the time of analysis. Due to the volatile nature of the analytes, it is not appropriate for the laboratory to adjust the pH at the time of sample receipt. The pH of this sample was pH = 4.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/23/2003 08:12	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2003 00:50	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/23/2003 00:50	Martha L Seidel	1
06063	5 Oxygenates+EDC+EDB	SW-846 8260B	1	08/14/2003 23:23	Trent S Sprenkle	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/23/2003 00:50	Martha L Seidel	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	08/14/2003 23:23	Trent S Sprenkle	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/21/2003 01:10	David V Hershey Jr	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085054

Collected: 07/15/2003 08:35 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 28 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	2.2	1.2	ug/l	1

This sample was filtered in the lab for dissolved metals.
State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	08/15/2003 10:30	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	08/14/2003 09:13	Denise K Conners	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085055

Collected:07/15/2003 08:05 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 29 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC29

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/23/2003 08:37	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2003 01:26	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/23/2003 01:26	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/23/2003 01:26	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/21/2003 01:10	David V Hershey Jr	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085057

Collected:07/15/2003 09:55 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:04
Discard: 09/20/2003
MW 30 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC30

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/23/2003 09:27	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2003 02:02	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/23/2003 02:02	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/23/2003 02:02	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/21/2003 01:10	David V Hershey Jr	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085059

Collected:07/15/2003 10:35 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:05
Discard: 09/20/2003
MW 31 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC31

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/23/2003 09:02	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2003 02:39	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/23/2003 02:39	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/23/2003 02:39	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/21/2003 01:10	David V Hershey Jr	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4085061

Collected:07/15/2003 00:00 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:05
Discard: 09/20/2003
DUP 1 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WACDP

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1

Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D. #	10.	ug/l	1
00777	Toluene	108-88-3	4.4	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	1.0	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	280.	1.5	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for benzene. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	4,300.	50.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

State of Washington Lab Certification No. C259

Laboratory Chronicle

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4085061

Collected:07/15/2003 00:00 by BN

Account Number: 11260

Submitted: 07/17/2003 09:05
Reported: 08/20/2003 at 09:05
Discard: 09/20/2003
DUP 1 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WACDP

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/22/2003 20:09	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2003 03:17	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/23/2003 03:17	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/23/2003 03:17	Martha L Seidel	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	07/21/2003 01:10	David V Hershey Jr	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 859994
Reported: 08/20/03 at 09:05 AM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 03199A53B	Sample number(s): 4085039-4085041,4085043,4085045,4085047,4085049,4085051,4085053,4085055,4085057,4085059,4085061							
Benzene	N.D.	.2	ug/l	100	101	80-118	1	30
Toluene	N.D.	.2	ug/l	105	102	82-119	3	30
Ethylbenzene	N.D.	.2	ug/l	99	99	81-119	0	30
Total Xylenes	N.D.	.6	ug/l	98	97	82-120	0	30
Methyl tert-Butyl Ether	N.D.	.3	ug/l	91	95	79-127	4	30
TPH by NWTPH-Gx waters	N.D.	.05	mg/l	82	117	70-130	35*	30
Batch number: 03199A53C	Sample number(s): 4085047							
Benzene	N.D.	.2	ug/l	100	101	80-118	1	30
Batch number: 032000009A	Sample number(s): 4085041,4085043,4085045,4085047,4085049,4085051,4085053,4085055,4085057,4085059							
Diesel Range Organics	N.D.	.08	mg/l	81	93	55-126	13	20
Heavy Range Organics	N.D.	.1	mg/l					
Batch number: 032000010A	Sample number(s): 4085061							
Diesel Range Organics	N.D.	.08	mg/l	83	94	55-126	13	20
Heavy Range Organics	N.D.	.1	mg/l					
Batch number: 032020040A	Sample number(s): 4085043,4085047							
>C10 - C12 Aliphatic	N.D.	50.	ug/l	59*	67*	70-130	12	30
>C12 - C16 Aliphatic	N.D.	50.	ug/l	80	86	70-130	7	30
>C16 - C21 Aliphatic	N.D.	50.	ug/l	88	90	70-130	3	30
>C21 - C34 Aliphatic	N.D.	50.	ug/l	71	72	70-130	1	30
>C10 - C12 Aromatic	N.D.	50.	ug/l	70	66*	70-130	7	30
>C12 - C16 Aromatic	N.D.	50.	ug/l	82	79	70-130	4	30
>C16 - C21 Aromatic	N.D.	50.	ug/l	88	89	70-130	1	30
>C21 - C34 Aromatic	N.D.	50.	ug/l	87	88	70-130	1	30
Batch number: 032045704001	Sample number(s): 4085043-4085044,4085047-4085048							
Lead (furnace method)	N.D.	.0012	mg/l	101		80-120		
Batch number: 03210A01A	Sample number(s): 4085043,4085047							
Methyl t-butyl ether	N.D.	1.	ug/l	105	101	70-130	4	50
Benzene	N.D.	1.	ug/l	104	97	70-130	7	50
Toluene	N.D.	1.	ug/l	105	98	70-130	7	50
Ethylbenzene	N.D.	1.	ug/l	105	98	70-130	6	50
m,p-Xylenes	N.D.	2.	ug/l	107	100	70-130	6	50
o-Xylene	N.D.	1.	ug/l	103	97	70-130	6	50
C5-C6 Aliphatic Hydrocarbons				112	107	70-130	4	50
C6-C8 Aliphatic Hydrocarbons				98	91	70-130	7	50
C8-C10 Aliphatic Hydrocarbons				103	97	70-130	6	50
C8-C10 Aromatic Hydrocarbons				103	97	70-130	5	50
Batch number: 032265704001	Sample number(s): 4085046,4085054							
Lead (furnace method)	N.D.	.0012	mg/l	113		80-120		
Batch number: P032262AA	Sample number(s): 4085040,4085045,4085053							
1,2-Dichloroethane	N.D.	.5	ug/l	108		77-132		
1,2-Dibromoethane	N.D.	.5	ug/l	102		81-114		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 859994
Reported: 08/20/03 at 09:05 AM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: W032061AA	Sample number(s): 4085043,4085047							
1,2-Dichloroethane	N.D.	.5	ug/l	106		77-132		
1,2-Dibromoethane	N.D.	.5	ug/l	95		81-114		
Naphthalene	N.D.	1.	ug/l	90		64-121		
n-Hexane	N.D.	2.	ug/l	114		72-138		
2-Methylnaphthalene	N.D.	2.	ug/l	73		51-128		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 03199A53B	Sample number(s): 4085039-4085041,4085043,4085045,4085047,4085049,4085051,4085053,4085055,4085057,4085059,4085061								
Benzene	81		67-136						
Toluene	85		78-129						
Ethylbenzene	93		75-133						
Total Xylenes	92		78-130						
Methyl tert-Butyl Ether	117		66-136						
TPH by NWTPH-Gx waters	95		70-130						
Batch number: 03199A53C	Sample number(s): 4085047								
Benzene	81		67-136						
Batch number: 032045704001	Sample number(s): 4085043-4085044,4085047-4085048								
Lead (furnace method)	84	94	80-120	11	20	N.D.	N.D.	0 (1)	20
Batch number: 032265704001	Sample number(s): 4085046,4085054								
Lead (furnace method)	100	108	80-120	8	20	N.D.	N.D.	0 (1)	20
Batch number: P032262AA	Sample number(s): 4085040,4085045,4085053								
1,2-Dichloroethane	119	116	73-136	3	30				
1,2-Dibromoethane	105	102	78-120	2	30				
Batch number: W032061AA	Sample number(s): 4085043,4085047								
1,2-Dichloroethane	109	109	73-136	0	30				
1,2-Dibromoethane	94	95	78-120	1	30				
Naphthalene	90	90	59-124	0	30				
n-Hexane	121	126	74-155	4	30				
2-Methylnaphthalene	72	73	24-157	1	30				

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 03199A53B

	Trifluorotoluene-P	Trifluorotoluene-F
4085039	79	88
4085040	140*	173*

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 859994
Reported: 08/20/03 at 09:05 AM

Surrogate Quality Control

4085041	80	86
4085043	105	115
4085045	67	86
4085047	64*	87
4085049	81	88
4085051	82	89
4085053	167*	198*
4085055	83	84
4085057	86	92
4085059	85	89
4085061	153*	182*
Blank	83	92
LCS	79	88
LCSD	79	93
MS	100	85
Limits:	66-136	57-146

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 03199A53C

	Trifluorotoluene-P	Trifluorotoluene-F
4085047	71	
Blank	80	83
LCS	79	88
LCSD	79	93
MS	100	85
Limits:	66-136	57-146

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 032000009A

	Orthoterphenyl
4085041	94
4085043	100
4085045	113
4085047	113
4085049	87
4085051	97
4085053	87
4085055	98
4085057	100
4085059	105
Blank	99
LCS	102
LCSD	107
Limits:	50-150

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 032000010A

	Orthoterphenyl
4085061	96
Blank	97
LCS	100
LCSD	110

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 859994
Reported: 08/20/03 at 09:05 AM

Surrogate Quality Control

Limits: 50-150

Analysis Name: WA EPH in Water
Batch number: 032020040A

	Orthoterphenyl	Chlorooctane
4085043	86	72
4085047	84	78
Blank	84	73
LCS	84	71
LCSD	85	71
Limits:	60-140	60-140

Analysis Name: WA - VPH waters
Batch number: 03210A01A

	Trifluorotoluene-P	Trifluorotoluene-F
4085043	101	106
4085047	96	103
Blank	92	91
LCS	94	91
LCSD	94	92
Limits:	60-140	60-140

Analysis Name: 5 Oxygenates+EDC+EDB
Batch number: P032262AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4085040	94	92	94	99
4085045	92	89	97	97
4085053	94	94	98	100
Blank	92	90	96	92
LCS	91	92	98	97
MS	93	94	94	97
MSD	92	90	94	94
Limits:	81-120	82-112	85-112	83-113

Analysis Name: 8260 Special Cmpds for Waters
Batch number: W032061AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4085043	88	93	96	93
4085047	89	92	97	93
Blank	91	95	95	91
LCS	91	92	96	92
MS	91	94	95	92
MSD	92	93	95	91
Limits:	81-120	82-112	85-112	83-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583
925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 847520. Samples arrived at the laboratory on Saturday, April 05, 2003. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
TB-LB Water Sample	4023368
40203001 Grab Water Sample	4023369
40203002 Grab Water Sample	4023370
40203003 Grab Water Sample	4023371
40203004 Grab Water Sample	4023372
MW5 Grab Water Sample	4023373
MW6 Grab Water Sample	4023374
MW8 Grab Water Sample	4023375
MW17 Grab Water Sample	4023376
MW28 Grab Water Sample	4023378
MW28 Filtered Grab Water Sample	4023379
MW31 Grab Water Sample	4023380
MW21 Grab Water Sample	4023382
MW21 Filtered Grab Water Sample	4023383
MW23 Grab Water Sample	4023384
MW27 Grab Water Sample	4023386
MW29 Grab Water Sample	4023388
MW30 Grab Water Sample	4023390

ELECTRONIC COPY TO	Gettler Ryan	Attn: Michael Sharaeff
1 COPY TO	SAIC	Attn: Ms. Deanna Harding

Lancaster Laboratories

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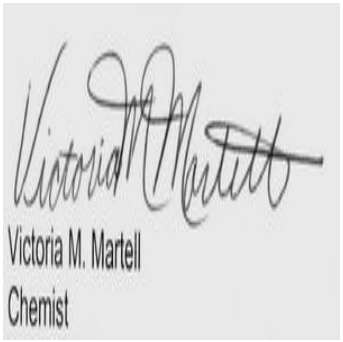
Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,



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Analysis Report

Lancaster Laboratories Sample No. WW 4023368

Collected:04/02/2003 00:00

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:19
Discard: 05/26/2003
TB-LB Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

Account Number: 11260

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

TBLB-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	1.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

The result for toluene was confirmed through the analysis of a second vial.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/07/2003 10:41	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/07/2003 10:41	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/07/2003 10:41	Melissa D Mann	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4023369

Collected:04/02/2003 16:00 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:19
Discard: 05/26/2003
40203001 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

-3001

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 12:37	Devin M Hetrick	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4023370

Collected:04/02/2003 16:10 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
40203002 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

-3002

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/08/2003 01:12	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/08/2003 01:12	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/08/2003 01:12	Melissa D Mann	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023371

Collected:04/02/2003 16:20 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
40203003 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

-3003

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 13:27	Devin M Hetrick	1
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023372

Collected:04/02/2003 16:30 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
40203004 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

-3004

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/08/2003 01:45	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/08/2003 01:45	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/08/2003 01:45	Melissa D Mann	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023373

Collected:04/02/2003 13:10 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW5 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M5---

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 13:52	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/07/2003 11:14	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/07/2003 11:14	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/07/2003 11:14	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023374

Collected:04/02/2003 13:30 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW6 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M6---

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	4,400.	390.	ug/l	5
02096	Heavy Range Organics	n.a.	N.D. #	480.	ug/l	5
	Site-specific MS/MSD samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level. The reporting limits were raised because sample dilution was necessary to bring target compounds into the calibration range of the system.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	1,200.	5.0	ug/l	25
00777	Toluene	108-88-3	10.	0.5	ug/l	2
00778	Ethylbenzene	100-41-4	200.	0.5	ug/l	2
00779	Total Xylenes	1330-20-7	14.	1.5	ug/l	2
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	50.	ug/l	2
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. MTBE					
	Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	5,400.	100.	ug/l	2
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.					
01595	Oxygenates by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	2.	ug/l	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023374

Collected:04/02/2003 13:30 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW6 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M6---

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05402	1,2-Dichloroethane	107-06-2	N.D.	2.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	2.	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/10/2003 16:10	Devin M Hetrick	5
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/07/2003 12:21	Melissa D Mann	25
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/08/2003 03:25	Melissa D Mann	2
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/08/2003 03:25	Melissa D Mann	2
01595	Oxygenates by 8260B	SW-846 8260B	1	04/09/2003 11:03	John B Kiser	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/08/2003 03:25	Melissa D Mann	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	04/09/2003 11:03	John B Kiser	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	2	04/09/2003 16:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023375

Collected:04/02/2003 14:30 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW8 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

-M8--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	3.1	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 14:41	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/07/2003 12:54	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/07/2003 12:54	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/07/2003 12:54	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023376

Collected:04/02/2003 15:05 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW17 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M17--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	580.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	260.	250.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	39.	1.0	ug/l	5
00777	Toluene	108-88-3	8.5	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	45.	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	93.	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	50.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. MTBE					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	3,300.	200.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
01595	Oxygenates by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	2.	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	2.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	2.	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023376

Collected:04/02/2003 15:05 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW17 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M17--

02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 15:06	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/07/2003 17:53	Melissa D Mann	5
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/07/2003 17:53	Melissa D Mann	5
01595	Oxygenates by 8260B	SW-846 8260B	1	04/09/2003 08:15	John B Kiser	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/07/2003 17:53	Melissa D Mann	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	04/09/2003 08:15	John B Kiser	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023378

Collected:04/02/2003 15:35 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW28 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M28--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	330.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D. #	10.	ug/l	5
00777	Toluene	108-88-3	8.5	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	1.4	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	780.	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	50.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the presence of interferents near their retention time, normal reporting limits were not attained for the compounds listed below. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents. MTBE benzene					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	11,000.	200.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08357	Selected SVOAs by 8270 SIM					
08374	Benzo(a)anthracene	56-55-3	N.D.	0.01	ug/l	1
08375	Chrysene	218-01-9	0.01	0.01	ug/l	1
08376	Benzo(b)fluoranthene	205-99-2	0.02	0.01	ug/l	1
08377	Benzo(k)fluoranthene	207-08-9	N.D.	0.01	ug/l	1
08378	Benzo(a)pyrene	50-32-8	N.D.	0.01	ug/l	1
08379	Indeno(1,2,3-cd)pyrene	193-39-5	0.1	0.01	ug/l	1
08380	Dibenz(a,h)anthracene	53-70-3	N.D.	0.01	ug/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4023378

Collected:04/02/2003 15:35 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW28 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M28--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01595	Oxygenates by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	2.	ug/l	2
05402	1,2-Dichloroethane	107-06-2	N.D.	2.	ug/l	2
05412	1,2-Dibromoethane	106-93-4	N.D.	2.	ug/l	2

The reporting limits for the GC/MS volatile compounds were raised due to the level of non-target compounds.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 17:35	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/07/2003 18:27	Melissa D Mann	5
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/07/2003 18:27	Melissa D Mann	5
08357	Selected SVOAs by 8270 SIM	SW-846 8270C (SIM)	1	04/21/2003 22:45	Michele A Jarosick	1
01595	Oxygenates by 8260B	SW-846 8260B	1	04/09/2003 09:16	John B Kiser	2
00813	BNA Water Extraction	SW-846 3510C	1	04/08/2003 08:15	Joseph S Feister	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/07/2003 18:27	Melissa D Mann	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	04/09/2003 09:16	John B Kiser	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023379

Collected: 04/02/2003 15:35 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW28 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	1.7	1.1	ug/l	1

This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	04/09/2003 12:40	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	04/07/2003 11:20	Christine Conlin	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023380

Collected:04/02/2003 14:00 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW31 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M31--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	1,100.	980.	ug/l	10
	The observed sample pattern is not typical of diesel/#2 fuel oil.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08357	Selected SVOAs by 8270 SIM					
08374	Benzo(a)anthracene	56-55-3	N.D.	0.01	ug/l	1
08375	Chrysene	218-01-9	N.D.	0.01	ug/l	1
08376	Benzo(b)fluoranthene	205-99-2	N.D.	0.01	ug/l	1
08377	Benzo(k)fluoranthene	207-08-9	N.D.	0.01	ug/l	1
08378	Benzo(a)pyrene	50-32-8	N.D.	0.01	ug/l	1
08379	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.01	ug/l	1
08380	Dibenz(a,h)anthracene	53-70-3	N.D.	0.01	ug/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4023380

Collected:04/02/2003 14:00 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW31 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M31--

02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 18:25	Devin M Hetrick	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/09/2003 14:39	Devin M Hetrick	10
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/07/2003 19:00	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/07/2003 19:00	Melissa D Mann	1
08357	Selected SVOAs by 8270 SIM	SW-846 8270C (SIM)	1	04/21/2003 23:36	Michele A Jarosick	1
00813	BNA Water Extraction	SW-846 3510C	1	04/08/2003 08:15	Joseph S Feister	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/07/2003 19:00	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023382

Collected:04/03/2003 10:20 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW21 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

-M21-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	1,000.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	290.	250.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	2,300.	2.0	ug/l	10
00777	Toluene	108-88-3	47.	2.0	ug/l	10
00778	Ethylbenzene	100-41-4	20.	2.0	ug/l	10
00779	Total Xylenes	1330-20-7	83.	6.0	ug/l	10
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	50.	ug/l	10
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. MTBE					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	3,300.	500.	ug/l	10
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08357	Selected SVOAs by 8270 SIM					
08374	Benzo(a)anthracene	56-55-3	N.D.	0.01	ug/l	1
08375	Chrysene	218-01-9	N.D.	0.01	ug/l	1
08376	Benzo(b)fluoranthene	205-99-2	N.D.	0.01	ug/l	1
08377	Benzo(k)fluoranthene	207-08-9	N.D.	0.01	ug/l	1
08378	Benzo(a)pyrene	50-32-8	N.D.	0.01	ug/l	1
08379	Indeno(1,2,3-cd)pyrene	193-39-5	0.1	0.01	ug/l	1
08380	Dibenz(a,h)anthracene	53-70-3	N.D.	0.01	ug/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023382

Collected:04/03/2003 10:20 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:20
Discard: 05/26/2003
MW21 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

-M21-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01595	Oxygenates by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	2.	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	2.	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	2.	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 18:50	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/08/2003 03:58	Melissa D Mann	10
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/08/2003 03:58	Melissa D Mann	10
08357	Selected SVOAs by 8270 SIM	SW-846 8270C (SIM)	1	04/22/2003 00:27	Michele A Jarosick	1
01595	Oxygenates by 8260B	SW-846 8260B	1	04/09/2003 11:19	John B Kiser	1
00813	BNA Water Extraction	SW-846 3510C	1	04/08/2003 08:15	Joseph S Feister	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/08/2003 03:58	Melissa D Mann	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	04/09/2003 11:19	John B Kiser	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023383

Collected:04/03/2003 10:20 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:21
Discard: 05/26/2003
MW21 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.1	ug/l	1

This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	04/09/2003 12:50	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	04/07/2003 11:20	Christine Conlin	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023384

Collected:04/03/2003 08:40 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:21
Discard: 05/26/2003
MW23 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M23--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	270.	250.	ug/l	2
	The observed sample pattern is not typical of diesel/#2 fuel oil.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D. #	5.0	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. total xylenes					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08357	Selected SVOAs by 8270 SIM					
08374	Benzo(a)anthracene	56-55-3	N.D.	0.01	ug/l	1
08375	Chrysene	218-01-9	N.D.	0.01	ug/l	1
08376	Benzo(b)fluoranthene	205-99-2	N.D.	0.01	ug/l	1
08377	Benzo(k)fluoranthene	207-08-9	N.D.	0.01	ug/l	1
08378	Benzo(a)pyrene	50-32-8	N.D.	0.01	ug/l	1
08379	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.01	ug/l	1
08380	Dibenz(a,h)anthracene	53-70-3	N.D.	0.01	ug/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4023384

Collected:04/03/2003 08:40 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:21
Discard: 05/26/2003
MW23 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M23--

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 19:15	Devin M Hetrick	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 22:09	Devin M Hetrick	2
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/07/2003 20:06	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/07/2003 20:06	Melissa D Mann	1
08357	Selected SVOAs by 8270 SIM	SW-846 8270C (SIM)	1	04/22/2003 01:17	Michele A Jarosick	1
00813	BNA Water Extraction	SW-846 3510C	1	04/08/2003 08:15	Joseph S Feister	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/07/2003 20:06	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4023386

Collected:04/03/2003 09:50 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:21
Discard: 05/26/2003
MW27 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M27--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 19:40	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/07/2003 20:40	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/07/2003 20:40	Melissa D Mann	1
00813	BNA Water Extraction	SW-846 3510C	1	04/08/2003 08:15	Joseph S Feister	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/07/2003 20:40	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4023388

Collected:04/03/2003 09:15 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:21
Discard: 05/26/2003
MW29 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M29--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 20:04	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/07/2003 21:13	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/07/2003 21:13	Melissa D Mann	1
00813	BNA Water Extraction	SW-846 3510C	1	04/08/2003 08:15	Joseph S Feister	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/07/2003 21:13	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4023390

Collected:04/03/2003 08:15 by BN

Account Number: 11260

Submitted: 04/05/2003 10:10
Reported: 04/25/2003 at 11:21
Discard: 05/26/2003
MW30 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave-Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

M30--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.5	ug/l	1
00777	Toluene	108-88-3	N.D.	0.5	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	04/08/2003 20:29	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	04/08/2003 02:18	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	04/08/2003 02:18	Melissa D Mann	1
00813	BNA Water Extraction	SW-846 3510C	1	04/08/2003 08:15	Joseph S Feister	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/08/2003 02:18	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	04/07/2003 17:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 847520
Reported: 04/25/03 at 11:21 AM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 030970013A	Sample number(s): 4023369,4023371,4023373,4023375-4023376							
Diesel Range Organics	N.D.	.08	mg/l	84		55-126		
Heavy Range Organics	N.D.	.1	mg/l					
Batch number: 030970014A	Sample number(s): 4023378,4023380,4023382,4023384,4023386,4023388,4023390							
Diesel Range Organics	N.D.	.08	mg/l	86		55-126		
Heavy Range Organics	N.D.	.1	mg/l					
Batch number: 030975704001	Sample number(s): 4023379,4023383							
Lead (furnace method)	N.D.	.0012	mg/l	107		80-120		
Batch number: 03097A53A	Sample number(s): 4023368,4023373-4023376,4023378,4023380,4023384,4023386,4023388							
Benzene	N.D.	.2	ug/l	100	97	80-118	4	30
Toluene	N.D.	.2	ug/l	102	100	82-119	2	30
Ethylbenzene	N.D.	.2	ug/l	103	98	81-119	5	30
Total Xylenes	N.D.	.6	ug/l	102	98	82-120	4	30
Methyl tert-Butyl Ether	N.D.	.3	ug/l	100	98	79-127	3	30
TPH by NWTPH-Gx waters	N.D.	.048	mg/l	98	99	70-130	1	30
Batch number: 03097A53B	Sample number(s): 4023370,4023372,4023374,4023382,4023390							
Benzene	N.D.	.2	ug/l	100	97	80-118	4	30
Toluene	N.D.	.2	ug/l	102	100	82-119	2	30
Ethylbenzene	N.D.	.2	ug/l	103	98	81-119	5	30
Total Xylenes	N.D.	.6	ug/l	102	98	82-120	4	30
Methyl tert-Butyl Ether	N.D.	.3	ug/l	100	98	79-127	3	30
TPH by NWTPH-Gx waters	N.D.	.048	mg/l	98	99	70-130	1	30
Batch number: 03097WAH026	Sample number(s): 4023378,4023380,4023382,4023384							
Benzo(a)anthracene	N.D.	.01	ug/l	114	117	58-141	3	30
Chrysene	N.D.	.01	ug/l	116	121	63-139	4	30
Benzo(b)fluoranthene	N.D.	.01	ug/l	116	123	63-140	5	30
Benzo(k)fluoranthene	N.D.	.01	ug/l	117	120	61-142	2	30
Benzo(a)pyrene	N.D.	.01	ug/l	114	116	60-138	2	30
Indeno(1,2,3-cd)pyrene	N.D.	.01	ug/l	105	109	71-131	4	30
Dibenz(a,h)anthracene	N.D.	.01	ug/l	110	110	63-131	0	30
Batch number: 030990017A	Sample number(s): 4023374							
Diesel Range Organics	N.D.	.08	mg/l	86	70	55-126	21*	20
Heavy Range Organics	N.D.	.1	mg/l					
Batch number: P030981AB	Sample number(s): 4023376,4023378,4023382							
Methyl Tertiary Butyl Ether	N.D.	.5	ug/l	95		77-127		
1,2-Dichloroethane	N.D.	.5	ug/l	100		77-132		
1,2-Dibromoethane	N.D.	.5	ug/l	87		81-114		
Batch number: P030982AB	Sample number(s): 4023374							
Methyl Tertiary Butyl Ether	N.D.	.5	ug/l	94		77-127		
1,2-Dichloroethane	N.D.	.5	ug/l	99		77-132		
1,2-Dibromoethane	N.D.	.5	ug/l	95		81-114		

Sample Matrix Quality Control

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 847520
Reported: 04/25/03 at 11:21 AM

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 030970013A	Sample number(s): 4023369,4023371,4023373,4023375-4023376								
Diesel Range Organics						N.D.	N.D.	0 (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 030970014A	Sample number(s): 4023378,4023380,4023382,4023384,4023386,4023388,4023390								
Diesel Range Organics						0.33	0.33	1 (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 030975704001	Sample number(s): 4023379,4023383								
Lead (furnace method)	128*	115	80-120	11	20	N.D.	N.D.	200* (1)	20
Batch number: 03097A53A	Sample number(s): 4023368,4023373-4023376,4023378,4023380,4023384,4023386,4023388								
Benzene	102		67-136						
Toluene	103		78-129						
Ethylbenzene	105		75-133						
Total Xylenes	103		78-130						
Methyl tert-Butyl Ether	102		66-136						
TPH by NWTPH-Gx waters	103		70-130						
Batch number: 03097A53B	Sample number(s): 4023370,4023372,4023374,4023382,4023390								
Benzene	102		67-136						
Toluene	103		78-129						
Ethylbenzene	105		75-133						
Total Xylenes	103		78-130						
Methyl tert-Butyl Ether	102		66-136						
TPH by NWTPH-Gx waters	103		70-130						
Batch number: P030981AB	Sample number(s): 4023376,4023378,4023382								
Methyl Tertiary Butyl Ether	96	97	69-134	1	30				
1,2-Dichloroethane	103	104	73-136	1	30				
1,2-Dibromoethane	95	91	78-120	4	30				
Batch number: P030982AB	Sample number(s): 4023374								
Methyl Tertiary Butyl Ether	(2)	(2)	69-134	3	30				
1,2-Dichloroethane	102	103	73-136	1	30				
1,2-Dibromoethane	96	95	78-120	1	30				

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 030970013A

	Orthoterphenyl
4023369	103
4023371	110
4023373	103
4023375	94
4023376	140
Blank	106
LCS	123
Limits:	50-150

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 847520
Reported: 04/25/03 at 11:21 AM

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 030970014A

	Orthoterphenyl
4023378	112
4023380	84
4023382	134
4023384	97
4023386	104
4023388	99
4023390	104
Blank	106
LCS	125
Limits:	50-150

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 03097A53A

	Trifluorotoluene-P	Trifluorotoluene-F
4023368	94	92
4023373	96	88
4023374	175*	
4023375	93	88
4023376	118	118
4023378	136	120
4023380	91	85
4023384	87	86
4023386	95	92
4023388	94	89
Blank	90	88
LCS	93	92
LCSD	93	89
MS	93	87
Limits:	66-136	57-146

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 03097A53B

	Trifluorotoluene-P	Trifluorotoluene-F
4023370	93	89
4023372	94	89
4023374	175*	168*
4023382	85	91
4023390	93	91
Blank	95	89
LCS	93	92
LCSD	93	89
MS	93	87
Limits:	66-136	57-146

Analysis Name: Selected SVOAs by 8270 SIM
Batch number: 03097WAH026

	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
4023378	102	101	118
4023380	103	101	96

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 847520
Reported: 04/25/03 at 11:21 AM

Surrogate Quality Control

4023382	119	101	110
4023384	108	101	105
Blank	96	100	119
LCS	97	103	109
LCSD	98	105	113
Limits:	49-157	30-164	24-185

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 030990017A

	Orthoterphenyl
4023374	146
Blank	111
LCS	135
LCSD	110
Limits:	50-150

Analysis Name: Oxygenates by 8260B
Batch number: P030981AB

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4023376	97	97	91	93
4023378	99	99	91	93
4023382	102	103	98	98
Blank	99	97	90	87
LCS	99	99	88	88
MS	99	96	89	89
MSD	98	98	88	87
Limits:	81-120	82-112	85-112	83-113

Analysis Name: Oxygenates by 8260B
Batch number: P030982AB

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4023374	98	97	101	102
Blank	101	103	99	92
LCS	100	102	100	95
MS	101	100	99	95
MSD	102	102	99	94
Limits:	81-120	82-112	85-112	83-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583
925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 842864. Samples arrived at the laboratory on Thursday, February 27, 2003. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
TB-LB Water Sample	4002324
MW 5 Grab Water Sample	4002325
MW 6 Grab Water Sample	4002326
MW 17 Grab Water Sample	4002327
MW 17 Filtered Grab Water Sample	4002328
MW 18 Grab Water Sample	4002329
MW 18 Filtered Grab Water Sample	4002330

1 COPY TO SAIC Attn: Ms. Deanna Harding

Lancaster Laboratories

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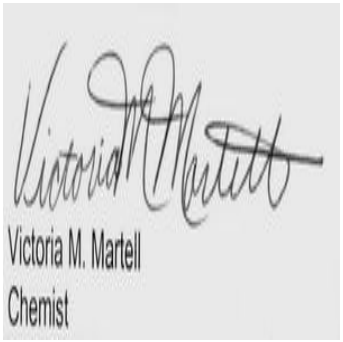
Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,



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Analysis Report

Lancaster Laboratories Sample No. WW 4002324

Collected:02/24/2003 00:00

Submitted: 02/27/2003 09:25
Reported: 03/19/2003 at 10:05
Discard: 04/19/2003
TB-LB Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

Account Number: 11260

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.50	ug/l	1
00777	Toluene	108-88-3	N.D.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08214	BTEX, MTBE (8021)	SW-846 8021B	1	02/28/2003 09:42	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	02/28/2003 09:42	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	02/28/2003 09:42	Melissa D Mann	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4002325

Collected:02/24/2003 10:55 by BN

Account Number: 11260

Submitted: 02/27/2003 09:25
Reported: 03/19/2003 at 10:05
Discard: 04/19/2003
MW 5 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC-5

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.50	ug/l	1
00777	Toluene	108-88-3	N.D.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/03/2003 17:16	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	02/28/2003 13:01	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	02/28/2003 13:01	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	02/28/2003 13:01	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	02/28/2003 16:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4002326

Collected:02/24/2003 11:15 by BN

Account Number: 11260

Submitted: 02/27/2003 09:25
Reported: 03/19/2003 at 10:05
Discard: 04/19/2003
MW 6 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC-6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	4,600.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	480.	250.	ug/l	1
	Due to insufficient sample size, we were unable to report our usual reporting limits. The values reported represent the lowest reporting limits obtainable. The surrogate data is outside the QC limits. This sample was used as the batch duplicate. The surrogate data in the duplicate analysis is also outside the QC limits, indicating a possible matrix effect.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	1,100.	1.0	ug/l	5
00777	Toluene	108-88-3	12.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	280.	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	14.	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	10.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level. Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	4,000.	250.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/11/2003 19:32	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	02/28/2003 13:37	Melissa D Mann	5

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4002326

Collected:02/24/2003 11:15 by BN

Account Number: 11260

Submitted: 02/27/2003 09:25
Reported: 03/19/2003 at 10:05
Discard: 04/19/2003
MW 6 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC-6

08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	02/28/2003 13:37	Melissa D Mann	5
01146	GC VOA Water Prep	SW-846 5030B	1	02/28/2003 13:37	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	2	03/07/2003 18:00	JoElla L Rice	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4002327

Collected: 02/24/2003 11:50 by BN

Account Number: 11260

Submitted: 02/27/2003 09:25
Reported: 03/19/2003 at 10:06
Discard: 04/19/2003
MW 17 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	380.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1

Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	58.	0.50	ug/l	1
00777	Toluene	108-88-3	7.1	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	64.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	110.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	10.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,100.	50.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4002327

Collected:02/24/2003 11:50 by BN

Account Number: 11260

Submitted: 02/27/2003 09:25
Reported: 03/19/2003 at 10:06
Discard: 04/19/2003
MW 17 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC17

02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/03/2003 18:06	Devin M Hetrick	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	02/28/2003 14:12	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	02/28/2003 14:12	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	02/28/2003 14:12	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	02/28/2003 16:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4002328

Collected:02/24/2003 11:50 by BN

Account Number: 11260

Submitted: 02/27/2003 09:25
Reported: 03/19/2003 at 10:06
Discard: 04/19/2003
MW 17 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.1	ug/l	1

This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	03/06/2003 13:28	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	03/05/2003 09:08	Denise K Conners	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4002329

Collected:02/24/2003 12:20 by BN

Account Number: 11260

Submitted: 02/27/2003 09:25
Reported: 03/19/2003 at 10:06
Discard: 04/19/2003
MW 18 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC18

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	15,000.	2,100.	ug/l	25
02096	Heavy Range Organics	n.a.	330.	250.	ug/l	1

Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.
Due to a coeluting peak near its retention time, accurate o-Terphenyl surrogate recovery could not be determined.

08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	36.	1.0	ug/l	5
00777	Toluene	108-88-3	25.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	11.	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	2,800.	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	20.	ug/l	5

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the nature of the sample matrix, the surrogate standard recovery is above the range of specifications.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	25,000.	250.	ug/l	5

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 4002329

Collected:02/24/2003 12:20 by BN

Account Number: 11260

Submitted: 02/27/2003 09:25
Reported: 03/19/2003 at 10:06
Discard: 04/19/2003
MW 18 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

WAC18

02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/03/2003 18:31	Devin M Hetrick	1
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/04/2003 18:19	Devin M Hetrick	25
08214	BTEX, MTBE (8021)	SW-846 8021B	1	02/28/2003 14:48	Melissa D Mann	5
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	02/28/2003 14:48	Melissa D Mann	5
01146	GC VOA Water Prep	SW-846 5030B	1	02/28/2003 14:48	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	02/28/2003 16:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4002330

Collected: 02/24/2003 12:20 by BN

Account Number: 11260

Submitted: 02/27/2003 09:25
Reported: 03/19/2003 at 10:06
Discard: 04/19/2003
MW 18 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	5.9	1.1	ug/l	1

This sample was filtered in the lab for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	03/06/2003 13:38	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	03/05/2003 09:08	Denise K Conners	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 842864
Reported: 03/19/03 at 10:06 AM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 03058A56A	Sample number(s): 4002324-4002327,4002329							
Benzene	N.D.	.2	ug/l	103	116	80-118	11	30
Toluene	N.D.	.2	ug/l	103	115	82-119	11	30
Ethylbenzene	N.D.	.2	ug/l	104	116	81-119	10	30
Total Xylenes	N.D.	.6	ug/l	105	116	82-120	10	30
Methyl tert-Butyl Ether	N.D.	.3	ug/l	102	113	79-127	10	30
TPH by NWTPH-Gx waters	N.D.	.048	mg/l	89	90	70-130	1	30
Batch number: 030590006A	Sample number(s): 4002325,4002327,4002329							
Diesel Range Organics	N.D.	.08	mg/l	74	71	55-126	3	20
Heavy Range Organics	N.D.	.1	mg/l					
Batch number: 030645704001	Sample number(s): 4002328,4002330							
Lead (furnace method)	N.D.	.0012	mg/l	106		80-120		
Batch number: 030660016A	Sample number(s): 4002326							
Diesel Range Organics	N.D.	.08	mg/l	81		55-126		
Heavy Range Organics	N.D.	.1	mg/l					

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 03058A56A	Sample number(s): 4002324-4002327,4002329								
Benzene	115		67-136						
Toluene	114		78-129						
Ethylbenzene	116		75-133						
Total Xylenes	117		78-130						
Methyl tert-Butyl Ether	100		66-136						
TPH by NWTPH-Gx waters	93		70-130						
Batch number: 030645704001	Sample number(s): 4002328,4002330								
Lead (furnace method)	120	109	80-120	9	20	N.D.	N.D.	42* (1)	20
Batch number: 030660016A	Sample number(s): 4002326								
Diesel Range Organics						4.6	5.2	12	20
Heavy Range Organics						0.48	0.52	8 (1)	20

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 03058A56A

	Trifluorotoluene-P	Trifluorotoluene-F
4002324	98	84
4002325	98	86
4002326	135	102
4002327	235*	186*

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Quality Control Summary

Client Name: ChevronTexaco Group Number: 842864
Reported: 03/19/03 at 10:06 AM

Surrogate Quality Control

4002329	175*	139
Blank	97	97
LCS	99	77
LCSD	97	89
MS	97	81
Limits:	66-136	57-146

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 030590006A

	Orthoterphenyl
4002325	90
4002327	99
4002329	157*
Blank	89
LCS	107
LCSD	103
Limits:	27-135

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 030660016A

	Orthoterphenyl
4002326	149*
Blank	110
LCS	124
Limits:	27-135

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 830786. Samples arrived at the laboratory on Thursday, November 14, 2002. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
TB LB Water Sample	3940004
MW5 Grab Water Sample	3940005
MW6 Grab Water Sample	3940006
MW8 Grab Water Sample	3940007
MW17 Grab Water Sample	3940008
MW17 Filtered Grab Water Sample	3940009
MW18 Grab Water Sample	3940010
MW18 Filtered Grab Water Sample	3940011
MW19 Grab Water Sample	3940012
MW19 Filtered Grab Water Sample	3940013

1 COPY TO Delta C/O Gettler-Ryan Attn: Deanna L. Harding

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Analysis Report

Questions? Contact your Client Services Representative
Teresa M Lis at (717) 656-2300.

Respectfully Submitted,

Steven Skiles
Senior Chemist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 3940004

Collected:11/11/2002 00:00

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:01
Discard: 01/02/2003
TB LB Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

LBWAC

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.50	ug/l	1
00777	Toluene	108-88-3	N.D.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08214	BTEX, MTBE (8021)	SW-846 8021B	1	11/15/2002 23:02	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	11/15/2002 23:02	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/15/2002 23:02	Melissa D Mann	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 3940005

Collected:11/11/2002 12:45 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:01
Discard: 01/02/2003
MW5 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5WOOA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.50	ug/l	1
00777	Toluene	108-88-3	N.D.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/19/2002 01:16	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	11/18/2002 02:47	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	11/18/2002 02:47	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/18/2002 02:47	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	11/15/2002 16:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 3940006

Collected:11/11/2002 13:10 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:01
Discard: 01/02/2003
MW6 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

6WOOA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	6,700.	790.	ug/l	10
02096	Heavy Range Organics	n.a.	N.D. #	990.	ug/l	10

Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	1,100.	1.0	ug/l	5
00777	Toluene	108-88-3	15.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	340.	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	18.	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	50.	ug/l	5

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent.
Methyl t-butyl ether

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	5,300.	240.	ug/l	5

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3940006

Collected:11/11/2002 13:10 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:01
Discard: 01/02/2003
MW6 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

6WOOA

02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/29/2002 10:13	Devin M Lahr	10
08214	BTEX, MTBE (8021)	SW-846 8021B	1	11/18/2002 03:23	Linda C Pape	5
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	11/18/2002 03:23	Linda C Pape	5
01146	GC VOA Water Prep	SW-846 5030B	1	11/18/2002 03:23	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	2	11/20/2002 16:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 3940007

Collected:11/11/2002 13:40 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:01
Discard: 01/02/2003
MW8 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

8WOOA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	4.0	0.50	ug/l	1
00777	Toluene	108-88-3	N.D.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/19/2002 01:41	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	11/15/2002 20:39	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	11/15/2002 20:39	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/15/2002 20:39	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	11/15/2002 16:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 3940008

Collected:11/11/2002 14:15 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:02
Discard: 01/02/2003
MW17 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

17WOA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	600.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	48.	0.50	ug/l	1
00777	Toluene	108-88-3	7.7	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	43.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	99.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	20.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	An elevated surrogate recovery was observed. The analysis was repeated and an elevated surrogate recovery was again observed indicating a significant matrix effect.					
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. Methyl t-butyl ether					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	2,100.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	An elevated surrogate recovery was observed. The analysis was repeated and an elevated surrogate recovery was again observed indicating a significant matrix effect.					

State of Washington Lab Certification No. C259

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3940008

Collected:11/11/2002 14:15 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:02
Discard: 01/02/2003
MW17 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

17WOA

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/19/2002 02:06	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	11/18/2002 03:58	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	11/18/2002 03:58	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/18/2002 03:58	Linda C Pape	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	11/15/2002 16:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 3940009

Collected:11/11/2002 14:15 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:02
Discard: 01/02/2003
MW17 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

This sample was filtered in the lab for dissolved lead.
State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/19/2002 12:20	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/18/2002 21:00	James L Mertz	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 3940010

Collected:11/11/2002 14:55 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:02
Discard: 01/02/2003
MW18 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

18WOA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	510.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	24.	1.0	ug/l	5
00777	Toluene	108-88-3	22.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	7.5	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	2,700.	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	50.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	An elevated surrogate recovery was observed. The analysis was repeated and an elevated surrogate recovery was again observed indicating a significant matrix effect.					
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. Methyl t-butyl ether					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	17,000.	240.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 3940010

Collected:11/11/2002 14:55 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:02
Discard: 01/02/2003
MW18 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

18WOA

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/18/2002 23:37	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	11/16/2002 03:10	Melissa D Mann	5
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	11/16/2002 03:10	Melissa D Mann	5
01146	GC VOA Water Prep	SW-846 5030B	1	11/16/2002 03:10	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	11/15/2002 16:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 3940011

Collected:11/11/2002 14:55 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:02
Discard: 01/02/2003
MW18 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

This sample was filtered in the lab for dissolved lead.
State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/19/2002 12:25	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/18/2002 21:00	James L Mertz	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 3940012

Collected:11/11/2002 12:20 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:03
Discard: 01/02/2003
MW19 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

19WOA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	910.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	250.	ug/l	1
	Site-specific QC samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	1,000.	1.0	ug/l	5
00777	Toluene	108-88-3	23.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	1.9	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	14.	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	20.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. Methyl t-butyl ether					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,600.	240.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	11/19/2002 00:01	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	11/16/2002 03:46	Melissa D Mann	5

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 3940012

Collected:11/11/2002 12:20 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:03
Discard: 01/02/2003
MW19 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

19WOA

08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	11/16/2002 03:46	Melissa D Mann	5
01146	GC VOA Water Prep	SW-846 5030B	1	11/16/2002 03:46	Melissa D Mann	n.a.
07003	Extraction - DRO (Waters)	NWTPH-Dx, ECY 97-602, 6/97	1	11/15/2002 16:00	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 3940013

Collected:11/11/2002 12:20 by BN

Account Number: 10905

Submitted: 11/14/2002 09:15
Reported: 12/02/2002 at 15:03
Discard: 01/02/2003
MW19 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	1.2	ug/l	1

This sample was filtered in the lab for dissolved lead.
State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	11/19/2002 12:29	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	11/18/2002 21:00	James L Mertz	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 830786
Reported: 12/02/02 at 03:03 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 023190006A	Sample number(s): 3940005,3940007-3940008,3940010,3940012							
Diesel Range Organics	N.D.	.08	mg/l	91	83	55-126	10	20
Heavy Range Organics	N.D.	.1	mg/l					
Batch number: 02319A56A	Sample number(s): 3940004,3940007,3940010,3940012							
Benzene	N.D.	.2	ug/l	104	95	80-118	10	30
Toluene	N.D.	.2	ug/l	113	101	82-119	10	30
Ethylbenzene	N.D.	.2	ug/l	117	105	81-119	11	30
Total Xylenes	N.D.	.6	ug/l	118	106	82-120	11	30
Methyl tert-Butyl Ether	N.D.	.3	ug/l	106	102	79-127	4	30
TPH by NWTPH-Gx waters	N.D.	.048	mg/l	88	90	74-116	3	30
Batch number: 02319A56B	Sample number(s): 3940005-3940006,3940008							
Benzene	N.D.	.2	ug/l	104	95	80-118	10	30
Toluene	N.D.	.2	ug/l	113	101	82-119	10	30
Ethylbenzene	N.D.	.2	ug/l	117	105	81-119	11	30
Total Xylenes	N.D.	.6	ug/l	118	106	82-120	11	30
Methyl tert-Butyl Ether	N.D.	.3	ug/l	106	102	79-127	4	30
TPH by NWTPH-Gx waters	N.D.	.048	mg/l	88	90	74-116	3	30
Batch number: 023225704003	Sample number(s): 3940009,3940011,3940013							
Lead (furnace method)	N.D.	.0012	mg/l	97		80-120		
Batch number: 023240011A	Sample number(s): 3940006							
Diesel Range Organics	N.D.	.08	mg/l	86	86	55-126	0	20
Heavy Range Organics	N.D.	.1	mg/l					

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 02319A56A	Sample number(s): 3940004,3940007,3940010,3940012								
Benzene	89		83-130						
Toluene	93		87-129						
Ethylbenzene	96		86-133						
Total Xylenes	95		86-132						
Methyl tert-Butyl Ether	93		66-140						
TPH by NWTPH-Gx waters	85		74-132						
Batch number: 02319A56B	Sample number(s): 3940005-3940006,3940008								
Benzene	89		83-130						
Toluene	93		87-129						
Ethylbenzene	96		86-133						
Total Xylenes	95		86-132						
Methyl tert-Butyl Ether	93		66-140						
TPH by NWTPH-Gx waters	85		74-132						
Batch number: 023225704003	Sample number(s): 3940009,3940011,3940013								
Lead (furnace method)	95	96	80-120	1	20	N.D.	N.D.	0 (1)	20

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 830786
Reported: 12/02/02 at 03:03 PM

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 023190006A

	Orthoterphenyl
3940005	93
3940007	87
3940008	108
3940010	111
3940012	115
Blank	84
LCS	107
LCSD	102
Limits:	27-135

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 02319A56A

	Trifluorotoluene-P	Trifluorotoluene-F
3940004	95	90
3940007	95	83
3940010	141*	116
3940012	82	96
Blank	93	83
LCS	99	76
LCSD	94	84
MS	94	85
Limits:	71-130	57-146

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 02319A56B

	Trifluorotoluene-P	Trifluorotoluene-F
3940005	96	83
3940006	128	115
3940008	198*	182*
Blank	98	82
LCS	99	76
LCSD	94	84
MS	94	85
Limits:	71-130	57-146

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 023240011A

	Orthoterphenyl
3940006	161*
Blank	89
LCS	116
LCSD	117
Limits:	27-135

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 830786
Reported: 12/02/02 at 03:03 PM

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 815600. Samples arrived at the laboratory on Friday, July 19, 2002. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
QA Water Sample	3857474
MW5 Grab Water Sample	3857475
MW6 Grab Water Sample	3857476
MW8 Grab Water Sample	3857477
MW17 Grab Water Sample	3857478
MW17 Filtered Grab Water Sample	3857479
MW18 Grab Water Sample	3857480
MW18 Filtered Grab Water Sample	3857481
MW19 Grab Water Sample	3857482
MW19 Filtered Grab Water Sample	3857483

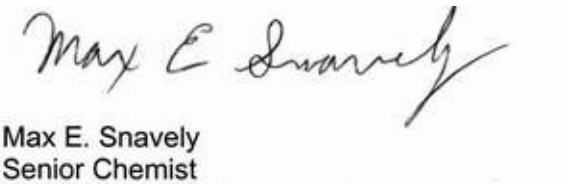
METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO Delta C/O Gettler-Ryan Attn: Deanna L. Harding

Questions? Contact your Client Services Representative
Teresa M Lis at (717) 656-2300.

Respectfully Submitted,



Max E. Snavely
Senior Chemist

Lancaster Laboratories Sample No. WW 3857474

Collected:07/16/2002 00:00

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:37
Discard: 09/01/2002
QA Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

Account Number: 10905

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.50	ug/l	1
00777	Toluene	108-88-3	N.D.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2002 09:21	K. Robert James	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/23/2002 09:21	K. Robert James	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/23/2002 09:21	K. Robert James	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857475

Collected:07/16/2002 07:15 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:38
Discard: 09/01/2002
MW5 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

590M5

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	750.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.50	ug/l	1
00777	Toluene	108-88-3	N.D.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/24/2002 19:27	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/22/2002 20:11	K. Robert James	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/22/2002 20:11	K. Robert James	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2002 20:11	K. Robert James	n.a.
07003	Extraction - DRO (Waters)	NWTPH-HCID, ECY 97-602, 6/97	1	07/22/2002 16:30	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857476

Collected:07/16/2002 07:40 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:38
Discard: 09/01/2002
MW6 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

590M6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	20,000.	3,200.	ug/l	20
02096	Heavy Range Organics	n.a.	N.D. #	8,000.	ug/l	20
	The reporting limits were raised because sample dilution was necessary to bring target compounds into the calibration range of the system.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	1,300.	1.0	ug/l	5
00777	Toluene	108-88-3	23.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	440.	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	N.D. #	15.	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the presence of interferents near their retention time, normal reporting limits were not attained for total xylenes. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	6,000.	240.	ug/l	5
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/25/2002 16:41	Devin M Lahr	20

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857476

Collected:07/16/2002 07:40 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:38
Discard: 09/01/2002
MW6 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

590M6

08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/22/2002 21:47	K. Robert James	5
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2002 10:24	K. Robert James	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/22/2002 21:47	K. Robert James	5
01146	GC VOA Water Prep	SW-846 5030B	1	07/23/2002 10:24	K. Robert James	n.a.
07003	Extraction - DRO (Waters)	NWTPH-HCID, ECY 97-602, 6/97	1	07/22/2002 16:30	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857477

Collected:07/16/2002 08:10 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:38
Discard: 09/01/2002
MW8 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

590M8

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	750.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.50	ug/l	1
00777	Toluene	108-88-3	N.D.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/24/2002 20:17	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/22/2002 20:43	K. Robert James	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/22/2002 20:43	K. Robert James	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2002 20:43	K. Robert James	n.a.
07003	Extraction - DRO (Waters)	NWTPH-HCID, ECY 97-602, 6/97	1	07/22/2002 16:30	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857478

Collected:07/16/2002 09:10 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:38
Discard: 09/01/2002
MW17 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

-9017

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	500.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	750.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	32.	0.50	ug/l	1
00777	Toluene	108-88-3	14.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	8.1	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	130.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	5.0	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	3,400.	50.	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

State of Washington Lab Certification No. C259

The sample received for the TPH analysis was submitted in an unpreserved container.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857478

Collected:07/16/2002 09:10 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:38
Discard: 09/01/2002
MW17 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

-9017

02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/24/2002 20:41	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/22/2002 21:15	K. Robert James	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/22/2002 21:15	K. Robert James	1
01146	GC VOA Water Prep	SW-846 5030B	1	07/22/2002 21:15	K. Robert James	n.a.
07003	Extraction - DRO (Waters)	NWTPH-HCID, ECY 97-602, 6/97	1	07/22/2002 16:30	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857479

Collected:07/16/2002 09:10 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:38
Discard: 09/01/2002
MW17 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

D9017

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	29.6	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was field filtered for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/24/2002 20:31	Shannon L Strausser	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/23/2002 20:30	James L Mertz	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857480

Collected:07/16/2002 09:40 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:38
Discard: 09/01/2002
MW18 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

59018

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	600.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	750.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D. #	20.	ug/l	5
00777	Toluene	108-88-3	29.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	5.1	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	3,300.	3.0	ug/l	5
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	10.	ug/l	5

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the presence of interferents near their retention time, normal reporting limits were not attained for MTBE and benzene. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	20,000.	240.	ug/l	5

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/24/2002 21:06	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2002 00:32	K. Robert James	5
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/23/2002 00:32	K. Robert James	5

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857480

Collected:07/16/2002 09:40 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:38
Discard: 09/01/2002
MW18 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

59018

01146	GC VOA Water Prep	SW-846 5030B	1	07/23/2002 00:32	K. Robert James	n.a.
07003	Extraction - DRO (Waters)	NWTPH-HCID, ECY 97-602, 6/97	1	07/22/2002 16:30	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857481

Collected:07/16/2002 09:40 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:38
Discard: 09/01/2002
MW18 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

D9018

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	1.8	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was field filtered for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/25/2002 10:50	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/23/2002 20:30	James L Mertz	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857482

Collected:07/16/2002 08:35 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:39
Discard: 09/01/2002
MW19 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

59019

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	960.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	750.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	1,500.	1.0	ug/l	5
00777	Toluene	108-88-3	25.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	3.1	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	31.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	5.0	ug/l	1

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.

08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	1,200.	240.	ug/l	5

A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	07/24/2002 21:31	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2002 01:05	K. Robert James	5
08214	BTEX, MTBE (8021)	SW-846 8021B	1	07/23/2002 09:52	K. Robert James	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857482

Collected:07/16/2002 08:35 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:39
Discard: 09/01/2002
MW19 Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

59019

08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	07/23/2002 01:05	K. Robert James	5
01146	GC VOA Water Prep	SW-846 5030B	1	07/23/2002 09:52	K. Robert James	n.a.
07003	Extraction - DRO (Waters)	NWTPH-HCID, ECY 97-602, 6/97	1	07/22/2002 16:30	Elia R Botrous	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3857483

Collected:07/16/2002 08:35 by BN

Account Number: 10905

Submitted: 07/19/2002 09:00
Reported: 08/01/2002 at 17:39
Discard: 09/01/2002
MW19 Filtered Grab Water Sample
Facility# 96590 Job# 386610
232 Woodin Ave; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

D9019

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	1.7	1.2	ug/l	1

State of Washington Lab Certification No. C259
This sample was field filtered for dissolved metals.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	SW-846 7421	1	07/25/2002 11:11	Jessica L Boyd	1
05704	WW/TL SW 846 GFAA Digest tot	SW-846 3020A	1	07/23/2002 20:30	James L Mertz	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Quality Control Summary

Client Name: ChevronTexaco Group Number: 815600
Reported: 08/01/02 at 05:39 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 022030005A	Sample number(s): 3857475-3857478,3857480,3857482							
Diesel Range Organics	N.D.	250.	ug/l	86	86	55-126	0	20
Heavy Range Organics	N.D.	750.	ug/l					
Batch number: 02203A02A	Sample number(s): 3857475-3857478,3857480,3857482							
Benzene	N.D.	.5	ug/l	96	102	80-118	6	30
Toluene	N.D.	.5	ug/l	98	105	82-119	7	30
Ethylbenzene	N.D.	.5	ug/l	102	109	81-119	7	30
Total Xylenes	N.D.	1.5	ug/l	105	110	82-120	5	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	106	112	79-127	5	30
TPH by NWTPH-Gx waters	N.D.	50.	ug/l	102	106	76-126	3	30
Batch number: 02203A02B	Sample number(s): 3857474,3857476,3857482							
Benzene	N.D.	.5	ug/l	96	102	80-118	6	30
Toluene	N.D.	.5	ug/l	98	105	82-119	7	30
Ethylbenzene	N.D.	.5	ug/l	102	109	81-119	7	30
Total Xylenes	N.D.	1.5	ug/l	105	110	82-120	5	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	106	112	79-127	5	30
TPH by NWTPH-Gx waters	N.D.	50.	ug/l	102	106	76-126	3	30
Batch number: 022045704002	Sample number(s): 3857479,3857481,3857483							
Lead (furnace method)	N.D.	.0012	mg/l	98		80-117		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 02203A02A	Sample number(s): 3857475-3857478,3857480,3857482								
Benzene	77		77-131						
Toluene	81		80-128						
Ethylbenzene	83		76-132						
Total Xylenes	82		76-132						
Methyl tert-Butyl Ether	80		61-144						
TPH by NWTPH-Gx waters	105		74-132						
Batch number: 02203A02B	Sample number(s): 3857474,3857476,3857482								
Benzene	77		77-131						
Toluene	81		80-128						
Ethylbenzene	83		76-132						
Total Xylenes	82		76-132						
Methyl tert-Butyl Ether	80		61-144						
TPH by NWTPH-Gx waters	105		74-132						
Batch number: 022045704002	Sample number(s): 3857479,3857481,3857483								
Lead (furnace method)	119	73*	80-120	19	20	0.0296	0.0223	28*	20

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 022030005A
Orthoterphenyl

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 815600
Reported: 08/01/02 at 05:39 PM

Surrogate Quality Control

3857475	76
3857476	112
3857477	80
3857478	100
3857480	87
3857482	114
Blank	74
LCS	89
LCSD	89
Limits:	50-150

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 02203A02A

	Trifluorotoluene-P	Trifluorotoluene-F
3857475	91	82
3857476		95
3857477	94	83
3857478	107	101
3857480	94	96
3857482		93
Blank	92	83
LCS	92	96
LCSD	92	96
MS	93	83
Limits:	71-130	67-135

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 02203A02B

	Trifluorotoluene-P	Trifluorotoluene-F
3857474	92	81
3857476	92	
3857482	82	
Blank	92	81
LCS	92	96
LCSD	92	96
MS	93	83
Limits:	71-130	67-135

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 808461. Samples arrived at the laboratory on Wednesday, May 22, 2002. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
TB LB Water Sample	3824047
MW-5 Water Sample	3824048
MW-6 Water Sample	3824049
MW-8 Water Sample	3824050

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO Delta C/O Gettler-Ryan Attn: Deanna L. Harding

Questions? Contact your Client Services Representative
Teresa M Lis at (717) 656-2300.

Respectfully Submitted,

Christine Dulaney
Senior Chemist

Lancaster Laboratories Sample No. WW 3824047

Collected:05/19/2002 00:00

Account Number: 10905

Submitted: 05/22/2002 09:15
Reported: 06/04/2002 at 20:25
Discard: 07/05/2002
TB LB Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.50	ug/l	1
00777	Toluene	108-88-3	N.D.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08214	BTEX, MTBE (8021)	SW-846 8021B	1	05/24/2002 07:07	Darvin L Martin	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	05/24/2002 07:07	Darvin L Martin	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/24/2002 07:07	Darvin L Martin	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3824048

Collected:05/19/2002 13:25 by BN

Account Number: 10905

Submitted: 05/22/2002 09:15
Reported: 06/04/2002 at 20:25
Discard: 07/05/2002
MW-5 Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

M5232

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D.	250.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D.	750.	ug/l	1
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.50	ug/l	1
00777	Toluene	108-88-3	N.D.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/24/2002 20:27	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	05/24/2002 22:07	K. Robert James	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	05/24/2002 22:07	K. Robert James	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/24/2002 22:07	K. Robert James	n.a.
02176	Silica Quick Gel Cleanup	NWTPH-Dx, ECY 97-602, 6/97	1	05/24/2002 12:15	Joseph S Feister	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3824049

Collected:05/19/2002 13:45 by BN

Account Number: 10905

Submitted: 05/22/2002 09:15
Reported: 06/04/2002 at 20:25
Discard: 07/05/2002
MW-6 Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

M6232

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	12,000.	2,000.	ug/l	25
02096	Heavy Range Organics	n.a.	N.D. #	5,000.	ug/l	25
	The reporting limits were raised because sample dilution was necessary to bring target compounds into the calibration range of the system.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	720.	2.0	ug/l	10
00777	Toluene	108-88-3	8.7	2.0	ug/l	10
00778	Ethylbenzene	100-41-4	200.	2.0	ug/l	10
00779	Total Xylenes	1330-20-7	16.	6.0	ug/l	10
00780	Methyl tert-Butyl Ether	1634-04-4	N.D. #	10.	ug/l	10
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for MTBE. The presence or concentration of this compound cannot be determined due to the presence of this interferent.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	6,600.	480.	ug/l	10

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/29/2002 15:11	Devin M Lahr	25
08214	BTEX, MTBE (8021)	SW-846 8021B	1	05/24/2002 17:23	K. Robert James	10
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	05/24/2002 17:23	K. Robert James	10
01146	GC VOA Water Prep	SW-846 5030B	1	05/24/2002 17:23	K. Robert James	n.a.
02176	Silica Quick Gel Cleanup	NWTPH-Dx, ECY 97-602, 6/97	1	05/24/2002 12:15	Joseph S Feister	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3824049

Collected:05/19/2002 13:45 by BN

Submitted: 05/22/2002 09:15
Reported: 06/04/2002 at 20:25
Discard: 07/05/2002
MW-6 Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

M6232

Account Number: 10905

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories Sample No. WW 3824050

Collected:05/19/2002 14:20 by BN

Account Number: 10905

Submitted: 05/22/2002 09:15
Reported: 06/04/2002 at 20:25
Discard: 07/05/2002
MW-8 Water Sample
Facility# 96590 Job# 386610
232 Woodin Avenue; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

M8232

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel					
02095	Diesel Range Organics	n.a.	N.D. #	400.	ug/l	1
02096	Heavy Range Organics	n.a.	N.D. #	1,000.	ug/l	1
	Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.					
08214	BTEX, MTBE (8021)					
00776	Benzene	71-43-2	N.D.	0.50	ug/l	1
00777	Toluene	108-88-3	N.D.	0.50	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
00780	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02211	TPH by NWTPH-Dx(water) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/24/2002 17:32	Devin M Lahr	1
08214	BTEX, MTBE (8021)	SW-846 8021B	1	05/24/2002 13:02	Darvin L Martin	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	05/24/2002 13:02	Darvin L Martin	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/24/2002 13:02	Darvin L Martin	n.a.
02176	Silica Quick Gel Cleanup	NWTPH-Dx, ECY 97-602, 6/97	1	05/24/2002 12:15	Joseph S Feister	1

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Quality Control Summary

Client Name: ChevronTexaco Group Number: 808461
Reported: 06/04/02 at 08:25 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 021430014A	Sample number(s): 3824048-3824050							
Diesel Range Organics	N.D.	250.	ug/l	94		55-126		
Heavy Range Organics	N.D.	750.	ug/l					
Batch number: 02143A02A	Sample number(s): 3824047,3824049-3824050							
Benzene	N.D.	.5	ug/l	105		80-118		
Toluene	N.D.	.5	ug/l	110		82-119		
Ethylbenzene	N.D.	.5	ug/l	109		81-119		
Total Xylenes	N.D.	1.5	ug/l	112		82-120		
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	110		79-127		
TPH by NWTPH-Gx waters	N.D.	50.	ug/l	99		76-126		
Batch number: 02143A02B	Sample number(s): 3824048							
Benzene	N.D.	.5	ug/l	105		80-118		
Toluene	N.D.	.5	ug/l	110		82-119		
Ethylbenzene	N.D.	.5	ug/l	109		81-119		
Total Xylenes	N.D.	1.5	ug/l	112		82-120		
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	110		79-127		
TPH by NWTPH-Gx waters	N.D.	50.	ug/l	99		76-126		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 02143A02A	Sample number(s): 3824047,3824049-3824050								
Benzene	107	106	77-131	1	30				
Toluene	110	111	80-128	1	30				
Ethylbenzene	113	113	76-132	0	30				
Total Xylenes	114	113	76-132	1	30				
Methyl tert-Butyl Ether	109	106	61-144	3	30				
TPH by NWTPH-Gx waters	98	102	74-132	2	30				
Batch number: 02143A02B	Sample number(s): 3824048								
Benzene	107	106	77-131	1	30				
Toluene	110	111	80-128	1	30				
Ethylbenzene	113	113	76-132	0	30				
Total Xylenes	114	113	76-132	1	30				
Methyl tert-Butyl Ether	109	106	61-144	3	30				
TPH by NWTPH-Gx waters	98	102	74-132	2	30				

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Dx(water) w/SiGel
Batch number: 021430014A

	Orthoterphenyl
3824048	91
3824049	96
3824050	86
Blank	76
LCS	92

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 808461
Reported: 06/04/02 at 08:25 PM

Surrogate Quality Control

Limits: 50-150

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 02143A02A

	Trifluorotoluene-P	Trifluorotoluene-F
3824047	101	85
3824049	101	91
3824050	103	87
Blank	103	85
LCS	103	98
MS	98	95
MSD	94	99
Limits:	71-130	67-135

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 02143A02B

	Trifluorotoluene-P	Trifluorotoluene-F
3824048	106	88
Blank	104	85
LCS	103	98
MS	98	95
MSD	94	99
Limits:	71-130	67-135

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

APPENDIX D: MISCELLANEOUS FIELD AND ANALYTICAL INFORMATION

Monitoring Well Surveying Data

CVX 9-6590
Chelan, WA Survey Elevations

	Top of Casing Elevation *(ft MSL)*	**Ground surface Elevation** *(ft MSL)*
BM	1126.86	1127.16
MW-2	1123.89	1124.19
MW-3	1124.86	1125.16
MW-4	1123.30	1123.60
MW-5	1123.27	1123.57
MW-6	1124.71	1125.01
MW-7	1124.84	1125.14
MW-8	1123.92	1124.22
MW-9	1122.39	1122.69
MW-10	1123.69	1123.99
MW-12	1122.29	1122.59
MW-15	1122.33	1122.63
MW-16	1121.72	1122.02
MW-17	1123.36	1123.66
MW-18	1122.31	1122.61
MW-19	1120.44	1120.74
MW-20	1116.49	1116.79
MW-21	1121.13	1121.43
MW-22	1120.21	1120.51
MW-23	1118.69	1118.99
MW-24	1120.61	1120.91
MW-25	1121.43	1121.73
MW-26	1119.58	1119.88
MW-27	1125.40	1125.70
MW-28	1124.71	1125.01
MW-30	1121.75	1122.05
MW-31	1120.36	1120.66
MW-32	1121.38	1121.68
MW-33	1122.35	1122.65
MW-34	1120.85	1121.15
MW-35	1119.76	1120.06
MW-36	1121.19	1121.49
MW-37	1122.30	1122.60

Wells surveyed by SAIC in June 2005.

MONITORING WELL SURVEY FORM

CHEVRON STATION NO. 9-6590 DELTA PROJECT NO. CW96-590

ADDRESS 232 Woodin Ave FIELD PERSONNEL SM & AS

Chelan WA DATE 6-4-1

**********ATTACH SITE PLAN TO THIS SHEET**********

LOCATION	ELEVATION	TOP	MIDDLE	BOTTOM	CHECK
MW-5 (BM)	93.88	5.400	4.750	4.100	.650 / .650
MW-9	93.03	5.760	5.60	5.44	.16 .16
MW-10	94.40	4.880	4.230	3.680	.65 .65

MONITORING WELL SURVEY FORM

CHEVRON STATION NO. 9-6590 DELTA PROJECT NO. CW96-590

ADDRESS 232 Woodin Ave FIELD PERSONNEL Matt Miller

Chelan Wa DATE 9/20/01

**********ATTACH SITE PLAN TO THIS SHEET**********

LOCATION	ELEVATION	TOP	MIDDLE	BOTTOM	CHECK
MW-9*	93.03	5.88	5.645	5.41	
MW-11	93.06	5.905	5.615	~~5.905~~ 5.33	
MW-13	93.13	6.01	5.545	5.075	
MW-14	92.64	6.455	6.035	5.615	
9/21/01					
MW-10*	94.40	5.57	5.305	5.04	
MW-12	93.28	6.92	6.43	5.94	
MW-8	94.62	5.71	5.085	4.46	
MW-2	94.59	5.67	5.12	4.56	
MW-7	95.57	4.11	3.74	3.45	
MW-3	95.52	4.155	3.83	3.50	
MW-6	95.38	4.135	3.97	3.81	
MW-5	93.87	5.74	5.4165	5.23	
MW-4	93.91	5.465	5.44	5.42	
MW-9*	93.03	6.665	6.32	5.97	

*MW-9 used as benchmark 9/20 + 9/21

*MW-10 " " 9/21

MONITORING WELL SURVEY FORM

CHEVRON STATION NO. 9-6590 DELTA PROJECT NO. CW96-590

ADDRESS 232 Woodin Ave FIELD PERSONNEL Matt Miller

Chelan Wa DATE 11/15/01

**********ATTACH SITE PLAN TO THIS SHEET**********

LOCATION	ELEVATION	TOP	MIDDLE	BOTTOM	CHECK
TBM-G5*	1124.21	4.13	3.70	3.27	
MW-15	1122.33	5.79	5.56	5.37	
MW-12	1122.53	6.00	5.68	5.365	
MW-15	1122.33	6.14	5.88	5.62	
MW-15	1122.33	6.01	5.79	5.57	
MW-16	1121.67	6.02	6.45	6.88	
MW-11	1122.31	5.65	5.46	5.27	
MW-11D	1122.15	5.78	5.62	5.46	

* Bench Mark - East bolt of fire hydrant @ SW corner of Emerson Street and Woodin Ave

MONITORING WELL SURVEY FORM

CHEVRON STATION NO. 9-6590 DELTA PROJECT NO. CU96-590-A.4U01

ADDRESS 232 Woodin Ave, Chelan FIELD PERSONNEL Matt Miller

DATE 6/12-14/02

**********ATTACH SITE PLAN TO THIS SHEET**********

LOCATION	ELEVATION	TOP	MIDDLE	BOTTOM	CHECK
MW-17	1,123.41	5.40	5.94	5.27	6/12/02
MW-18	1,122.38	7.21	6.87	6.53	
MW-19					
MW-20					
MW-21					
MW-12	1,122.53	7.24	6.72	6.26	
MW-15	1,122.33	6.15	5.35	4.55	6/13/02
MW-14	1,120.40	7.90	7.24	6.66	
MW-16	1,121.67	5.21	4.32	3.43	6/14/02
MW-20	1,116.43	10.66	9.56	9.46	

MONITORING WELL SURVEY FORM

CHEVRON STATION NO. 9-6590 DELTA PROJECT NO. CW96-590

ADDRESS 232 Woodin Ave FIELD PERSONNEL Matt Miller

Chelan, WA DATE 11/15/01

**********ATTACH SITE PLAN TO THIS SHEET**********

LOCATION	ELEVATION	TOP	MIDDLE	BOTTOM	CHECK
MW-2	1123.564				
MW-3	1124.77				
MW-4	1123.16				
MW-5	1123.12				
MW-6	1124.63				
MW-7	1124.82				
MW-8	1123.87				
MW-9	1122.28				
MW-10	1123.65				
MW-11	1122.31				
MW-11D	1122.15				
MW-12	1122.53				
MW-13	1122.38				
MW-14	1121.89				
MW-15	1122.33				
MW-16	1121.67				
TBM-C5*	1124.21				

* Bench Mark - East bolt of fire hydrant @ SW corner of Emerson Street and Woodin Ave

MONITORING WELL SURVEY FORM

CHEVRON STATION NO. ?-6590 DELTA PROJECT NO. CW96-590-A

ADDRESS 232 Woodin Ave FIELD PERSONNEL Matt Miller

Chelan WA DATE 3/5

*****************ATTACH SITE PLAN TO THIS SHEET*********************

LOCATION	ELEVATION	TOP	MIDDLE	BOTTOM	CHECK
MW-17		6.67	6.20	5.725	1123.41
MW-29		5.055	4.57	4.64	1124.74

MONITORING WELL SURVEY FORM

CHEVRON STATION NO. 9-6590 DELTA PROJECT NO. CW96-590-A

ADDRESS 232 Woodin Ave FIELD PERSONNEL [illegible]

Chelan WA DATE 3/17/3

**********ATTACH SITE PLAN TO THIS SHEET**********

LOCATION	ELEVATION	TOP	MIDDLE	BOTTOM	CHECK
MW-21		5.75	4.94	4.55	1,121.22
MW-22		7.96	7.46	7.105	1,118.71
MW-23		8.21	7.23	6.46	1,119.97
MW-19		5.95	5.90	5.65	BM 1,120.40
MW-25		6.34	6.10	5.865	1,121.38
MW-24		7.23	6.94	6.645	1,120.54
MW-6		6.175	5.981	5.44	BM 1,121.67
MW-26		4.21	3.98	3.33	1119.52
MW-20		7.095	6.91	6.73	BM 1,116.43
MW-30		5.845	5.35	4.85	1,121.66
MW-31		7.31	6.745	6.185	1,120.27
MW-11		5.12	4.70	4.29	BM 1122.31
MW-27		9.31	8.465	7.65	BM 1,121.22
MW-17		5.56	4.45	3.35	1,125.26
Point 4		5.595	5.265	4.945	1,124.42
Point 7		5.845	5.48	5.115	1,124.42
MW-28		5.496	5.255	5.03	1,124.65

FIELD ELEVATION SURVEYING DATA

GC \ TD Backsite (BS)	GC \ TD Foresite (FS)	Height Instru. (HI)	Elevation (EL)	Description or Comments
5.39' 5.40' \ 5.39		✓	1,122.28	MW-9 GC known elev.
	4.02' \ 4.02	✓	1123.65	MW-10 GC known elev.
	5.445 \ 5.45	✓	1122.22	MW-33 GC new elev.
4.38 / 4.38		✓	1,119.52	MW-26 GC known elev.
	4.20 \ 4.20	✓	1119.70	MW-35 TO new elev.
	7.47 \ 7.47	✓	1,116.43	MW-20 TO known elev
6.51 \ 6.51		✓	1,121.72	MW-21 TO known elev.
	6.275 \ 6.28	✓	1121.46	MW-36 TO ~~unknown~~ new elev.
	6.37 \ 6.37	✓	1,121.38	MW-25 TO known elev.
	6.97 \ 6.97	✓	1120.77	MW-34 TO ~~unknown~~ new elev.
	6.435 \ 6.44	✓	1121.30	MW-32 TO ~~unknown~~ new elev.
				TWO pre-surveyed wells
				were checked for each
				set of new wells (3 sets).
				For the last set of wells,
				MW-21 and MW-25
				were off by 0.02 ft;
				this error was averaged.

Job No. Chelan 9-6590 Date June 26, 2003 Page 1 of 1

Recorded by Gabriel Cisneros Assistant Thomas Dubé

CITY OF CHELAN
VERTICAL GROUND CONTROL
LEVEL LOOP FROM S NAVARRE TO N MARKESON

APRIL 3, 2000
STEVE L.
MAX B.

Set TBM'S0				**08/23/00**	**Steve L. - Max B.**
TBM-C3	3.67	**1128.73**		**1125.06**	**W. BOLT F.H./NW CORNER WAPATO/SAUNDERS**
TBM-C10			1.87	**1126.86**	**E .BOLT F.H./SW CORNER WOODIN/SAUNDERS**
	3.67	**1130.53**			
TBM-C11			0.95	**1129.58**	**S. BOLT F.H./NW CORNER SAUNDERS/JOHNSON**
	4.78	**1134.36**			
TP#1			5.47	**1128.89**	
	4.93	**1133.82**			
TP#2			3.74	**1130.08**	
	3.44	**1133.52**			
[redacted]		**0.00**	2.74	[redacted]	**E. BOLT F.H./SW CORNER EMERSON/CHELAN**
	2.30	**1133.08**			
TBM-C6			5.67	**1127.41**	**N. BOLT F.H./SW CORNER EMERSON/JOHNSON**

Position 10 - directly N of Chevron entrance
MW-17 = 6.36
MW-8 = 5.90
E. Bolt of Hydrant (BM) = 3.96

61904-1
62004-1

LEVELLOOP3

July 1:94
May 292

Chelan Survey Data - May, 2005

Station # 1	Survey Reading	Elevation Difference	Normalization to BM	Well Head Elevation (MSL)
Benchmark	2.70	0.00	0.00	1126.86
MW-8	5.62	-2.92	-2.92	1123.94
MW-17	6.20	-3.50	-3.50	1123.36
MW-12	7.27	-4.57	-4.57	1122.29
MW-15	7.24	-4.54	-4.54	1122.32

Station # 2	Survey Reading	Elevation Difference	Normalization to BM	Well Head Elevation (MSL)
Reference Well = MW-12	6.63	0.00	-4.57	1122.29
MW-18	6.60	0.03	-4.54	1122.32

Station # 3	Survey Reading	Elevation Difference	Normalization to BM	Well Head Elevation (MSL)
Reference Well = MW-15	5.91	0.00	-4.54	1122.32
MW-36	7.07	-1.16	-5.70	1121.16
MW-21	7.12	-1.21	-5.75	1121.11
MW-22	10.87	-4.96	-9.50	1117.36
MW-19	10.65	-4.74	-9.28	1117.58
MW-23	12.38	-6.47	-11.01	1115.85

APPENDIX D: MISCELLANEOUS FIELD AND ANALYTICAL INFORMATION

RI Vapor Well Sampling Methods

APPENDIX D
METHODS USED FOR VAPOR WELL SAMPLING

All 13 soil vapor wells at the site were sampled using Tedlar bags on June 30 or July 1, 2003. In addition, well MW-33 was sampled as a deep well in the vicinity of VW-2. The 13 vapor wells were constructed of ¾-inch diameter PVC with 2.5-foot long screens and bottom caps. The top of each well was fitted with a dedicated petcock valve. MW-33 is a 2-inch diameter groundwater well that is currently dry; it was fitted with a 2-inch cap (using Teflon tape to seal) that was fitted with a graduated outlet port.

Before sampling took place, a brief test was conducted at VW-3A to determine which tubing type absorbed and later released vapors the least significantly, by monitoring with a calibrated PID. Soil vapors were pumped through the tubing, which was then disconnected and evacuated and attached to the PID to evaluate remnant volatiles. It was determined that silicon tubing was by far the worst; vapors were released to the PID yielding values that were significantly elevated above background for a long period of time. Much lower values were recorded with Tygon tubing, and the lowest values were recorded using common vinyl tubing, which gave virtually no readings above background. Consequently, vinyl tubing appeared to absorb/release the least amount of these vapors, and thus it was used to collect samples. The analytical laboratory also approved the use of vinyl tubing.

The sampling was accomplished by thorough purging of the well casing until the PID readings on the exhaust vapors had stabilized. Some deep well vapors exceeded the maximum level on the PID (>2000 ppm); in these cases, purging continued for several minutes beyond that point. The final stable PID readings are recorded on Table 4-4. The petcock valve was always closed except while the pump was turned on for purging and sampling, so that ambient air would not enter the well casing and tubing. Vapors were drawn from the well through a short length of disposable vinyl tubing into a Tedlar bag. The bag was inflated by placing it inside a vapor-sampling vacuum box, with a small vacuum pump attached to the box through a different port. This method allows the vapors to move directly from the well through the short tubing and into the bag, without contacting the vacuum pump. The bag was pre-purged and thoroughly emptied by the specific sample vapors at least three times prior to sampling. Final filling of the Tedlar bag (about 75% full) took place over a period of about one minute.

Filled Tedlar bag samples were placed inside large Ziploc bags, and then shipped in a cooler chest within a few hours of sample collection (however, one shipment was delayed one day by the shipper). Samples from the first half of the wells were analyzed within 72 hours of sampling, which is the laboratory's recommended holding time (there are no regulations on Tedlar bag analytical holding times). However, samples from the second batch of samples were delayed in shipment and analysis (over a weekend for some analyses), resulting in analyses 2 to 7 days after sampling. Tedlar bags have been shown to lose concentrations of volatile constituents if analyzed after approximately 24 hours following sampling. However, according to Lancaster Laboratories, this is the case for high concentration samples, such as found in the deeper vapor wells onsite (the VW-A wells). Low concentration samples, such as those from the shallow vapor wells onsite (VW-B wells), do not have the same concerns. Only the shallow vapor well analyses were used in the vapor intrusion modeling for onsite buildings.

APPENDIX D: MISCELLANEOUS FIELD AND ANALYTICAL INFORMATION

Unit B Grain Size Distribution Results

Chelan Chevron Facility No. 9-6590
Unit B Grain Size Distribution Results

Analysis Name	Units	4287566 MW-37-30		4287567 MW-37-45		4287568 MW-37-55		4287569 MW-37-60		4287570 MW-37-65		4287571 MW-37-75		4287572 MW-37-85	
		Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
75 mm	% Passing	100.	0.50	100.	0.50	100.	0.50	100.	0.50	100.	0.50	100.	0.50	100.	0.50
37.5 mm	% Passing	100.	0.50	100.	0.50	100.	0.50	100.	0.50	83.7	0.50	100.	0.50	100.	0.50
19 mm	% Passing	100.	0.50	100.	0.50	100.	0.50	100.	0.50	72.3	0.50	97.9	0.50	98.4	0.50
4.75 mm	% Passing	100.	0.50	100.	0.50	78.6	0.50	93.1	0.50	50.8	0.50	84.4	0.50	97.0	0.50
3.35 mm	% Passing	100.	0.50	100.	0.50	75.2	0.50	89.4	0.50	45.6	0.50	78.6	0.50	96.7	0.50
2.36 mm	% Passing	100.	0.50	99.9	0.50	66.2	0.50	82.1	0.50	41.3	0.50	67.7	0.50	96.0	0.50
1.18 mm	% Passing	99.9	0.50	99.9	0.50	60.5	0.50	77.3	0.50	34.7	0.50	63.7	0.50	95.4	0.50
0.6 mm	% Passing	99.9	0.50	99.9	0.50	52.0	0.50	72.7	0.50	24.2	0.50	56.9	0.50	94.1	0.50
0.3 mm	% Passing	99.9	0.50	99.9	0.50	41.6	0.50	66.2	0.50	14.6	0.50	47.4	0.50	88.7	0.50
0.15 mm	% Passing	99.9	0.50	99.9	0.50	31.4	0.50	50.2	0.50	9.3	0.50	38.2	0.50	48.5	0.50
0.075 mm	% Passing	99.9	0.50	99.2	0.50	23.1	0.50	34.7	0.50	6.8	0.50	30.2	0.50	17.9	0.50
0.064 mm	% Passing	98.0	0.50	95.5	0.50	21.5	0.50	31.0	0.50	6.5	0.50	28.5	0.50	15.0	0.50
0.05 mm	% Passing	95.0	0.50	87.0	0.50	17.0	0.50	24.0	0.50	6.0	0.50	24.5	0.50	10.5	0.50
0.02 mm	% Passing	83.0	0.50	48.0	0.50	9.0	0.50	10.0	0.50	3.5	0.50	15.5	0.50	3.5	0.50
0.005 mm	% Passing	50.0	0.50	11.0	0.50	4.0	0.50	3.0	0.50	2.0	0.50	6.0	0.50	N.D.	0.50
0.002 mm	% Passing	28.0	0.50	5.0	0.50	2.0	0.50	2.0	0.50	1.0	0.50	3.0	0.50	N.D.	0.50
0.001 mm	% Passing	11.0	0.50	2.5	0.50	1.0	0.50	1.5	0.50	1.0	0.50	2.0	0.50	N.D.	0.50

APPENDIX D: MISCELLANEOUS FIELD AND ANALYTICAL INFORMATION

Pumping Test and Hydrogeologic Information

APPENDIX D
PUMPING TEST AND HYDROGEOLOGIC INFORMATION

In August 2003, pumping tests were performed on three monitoring wells (MW-17, MW-21, MW-28) in an attempt to determine the approximate sustainable groundwater yield of the perched aquifer. Because no water wells are present in this aquifer, existing monitoring wells were utilized. After encountering difficulties in utilizing a very low pumping rate, tests were repeated on two wells (MW-17, MW-21) in September 2003. Wells were selected that did not contain NAPL, but did have a significant amount of groundwater at the time, and together were located in a widely distributed area across the site.

Methodology

Pumping tests were completed using a 2-inch Grundfos RediFlow2 submersible pump (1.75-inch diameter) and 0.5-inch ID Tygon tubing. Changes in the water level during the pumping test were monitored with a water-level meter, and in September a miniTroll datalogger was also used. The submersible pump was placed approximately one foot above the bottom of the well to keep it free of silt, and the datalogger and water level probes were placed above the pump.

After placing all downhole equipment, including submersible pump, tubing, electrical pump lead, and datalogger into the well, the water level was allowed to stabilize for at least 10 minutes before the start of the pumping test. During the test, the datalogger recorded the water depth at 1-second intervals. In addition, manual water-level measurements were made every 15 to 30 seconds.

Due to the low yield of the aquifer, a very low flow rate was necessary (0.05 to 0.23 gpm). The submersible pump encountered difficulty maintaining such a low pumping rate, and this resulted in involuntary variable pumping rates, and occasionally caused the pump to shut off. For these reasons, the pumping tests needed to be repeated on the September date with another pump, although the problem continued to a lesser extent. Some of the measurements made on August 29, 2003, were usable to show sustainable rates of flow to the wells, while the measurements on September 22, 2003, were usable to show non-sustainable rates of flow to the wells. In addition, in the September pumping tests, data during the recovery phase were measured in an attempt to calculate hydraulic conductivity of the perched aquifer.

During the pumping tests, the well was considered to be pumped dry when the water level in the well was drawn down to the point that the submersible pump was no longer able to pump water through the tubing. After wells were pumped dry at the original position of the pump (one foot from the bottom of the well), the pump was temporarily lowered to the bottom of the well to pump out as much water as possible prior to allowing the groundwater to recover. In the case of the slower recovering well, MW-21, the pump was rapidly removed from the well before water-level measurements were made during recovery. The submersible pump and datalogger were left inside well MW-17 during recovery because of relatively rapid initial recovery.

Manual water-level measurements were recorded in each well every 15 seconds for the first 10 minutes of recovery. For well MW-17, readings were then collected every 30 seconds until 20 minutes of elapsed time, at 1-minute intervals from 20 to 30 minutes of elapsed time, and then at less frequent intervals to the completion of recovery. For well MW-21, readings were collected at 1-minute intervals from 10 to 20 minutes of elapsed time, at 5-minute intervals from 20 to 40 minutes of elapsed time, and then at less frequent intervals to the completion of recovery.

Pumping Test Results

Data collected from pumping tests in September 2003 provided an estimated maximum sustainable yield for MW-17 and MW-21. A 45-minute pumping test was conducted on MW-21 at a weighted-average pumping rate of approximately 0.13 gpm, until the well went dry (Figure D-1). As explained above, the pumping rate was variable during the test, ranging from 0.05 to 0.37 gpm.

Two separate pumping test trials were conducted on MW-17 in September (Figure D-2). The first trial was conducted at an average pumping rate of 0.23 gpm, and lasted only 3 minutes before the well went dry. After allowing the groundwater to recover, a second trial was performed at an average pumping rate of 0.19 gpm for approximately 7 minutes until the well went dry. During the second trial, the pumping rate varied from 0.15 to 0.26 gpm. Figure D-2 shows the significant difference that a small change in average pumping rate makes for the two trials (0.23 vs. 0.19 gpm) for this well. If a pumping rate of approximately 0.5 gpm were applied, this well would likely go dry in a matter of seconds.

A low-flow sustainable yield rate was determined for the wells based on data collected in August 2003. Data from these pumping tests indicate that MW-17 can sustain a rate of 0.05 to 0.07 gpm without causing the well to go dry, while MW-21 can sustain a rate of 0.04 gpm (Figure D-3). Similarly, MW-28 can sustain a rate of 0.06 gpm without causing the well to go dry. By comparing the two trials for MW-17, it is apparent that even a minor change from 0.05 to 0.07 gpm makes a significant difference in drawdown, about 3 feet deeper in the well.

Based on the combination of data collected in August and September 2003, MW-17 can sustain an average pumping rate somewhere between 0.07 and 0.19 gpm. MW-21 can sustain an average pumping rate somewhere between 0.04 and 0.13 gpm. Overall, the aquifer likely can sustain a groundwater yield to the monitoring wells at between approximately 0.1 and 0.2 gpm.

During pumping tests for both wells, it was difficult to maintain a consistent low pumping rate with the submersible Grundfos pump, especially when the well was nearly dry. This was potentially due to the rapidly withdrawn groundwater and changing head in the well, combined with the pump depth below ground surface (nearly 40 feet). Silt accumulated in the bottom of the well may have also contributed to pump difficulties.

Manual water-level measurements recorded during the recovery of MW-21 and MW-17 are shown in Figures D-4 and D-5. Recovery took a significant amount of time for both wells, although MW-17 was more rapid than MW-21. Well MW-21 took 280 minutes to recover to 97 percent of the original water-column height. MW-17 took 160 minutes to recover to 96 percent

of the original water-column height. An attempt was made to calculate hydraulic conductivity of this perched aquifer, although the rapid drawdown and resultant short pumping time did not lend itself to meeting the initial assumptions in the hydrogeologic analysis. In addition, the wells are not screened over 100 percent of the aquifer thickness, and thus the assumption of fully penetrating wells is not applicable (although thin clay-rich layers may effectively break up this aquifer into smaller domains). If these assumptions are ignored, the resultant hydraulic conductivity values are $9x10^{-7}$ and $2x10^{-6}$ cm/sec. Based on standard hydrogeology reference documents, the silt and clay lithology is expected to yield hydraulic conductivity values in the general range of 10^{-6} cm/sec. The measured slow recovery rates following the two pump tests are consistent with these very low conductivity values (and the lab results below) and consistent with the low sustainable pumping rate of approximately 0.1 to 0.2 gpm.

Perched Aquifer Hydrogeologic Characteristics

Laboratory hydraulic conductivity was also directly measured in September 2001 on two silty soil samples from unit B southwest of the station (MW-13 at 31.5 ft bgs, and MW-14 at 36.5 ft bgs). Results show that the measured hydraulic conductivity values are quite low, $1.0x10^{-6}$ and $1.3x10^{-6}$ cm/sec (Delta 2002a), which are very similar to the pumping test results listed above. The porosity measured on these two lab samples was 0.55 and 0.53, respectively. The horizontal hydraulic gradient in the vicinity of the station (from the USTs to MW-9) ranges approximately from 0.025 to 0.11 ft/ft. These values together yield a calculated horizontal flow rate for the perched groundwater that ranges from approximately 1.5 to 9 cm/year (0.05 to 0.3 ft/year).

Pumping Test Conclusions

The monitoring wells that exist onsite were used to determine the sustainable yield of this localized perched aquifer. The groundwater yield to these wells is so slow that maintaining a stable low pumping rate was the main problem encountered. From tests made in monitoring wells on two different days, the sustainable yield to these wells is in the range of approximately 0.1 to 0.2 gpm. This range is lower than the definition of a potable aquifer (0.5 gpm) as defined by MTCA [WAC 173-340-720(2)]. Attempting to pump at a rate of 0.5 gpm in this silt/clay aquifer would certainly draw down the water in the wells very rapidly, leading to dry conditions down to the level of the pump, even if the wells were screened 100 percent through the aquifer. The length of time for the groundwater to recover to about 97 percent of original water column height after cessation of pumping in these monitoring wells is 160 to 280 minutes. Based on this combined information, it is highly unlikely that a water well would potentially be installed in this silt/clay perched aquifer.

Figure D-1
Non-sustainable Pumping Rate
MW-21 (September 22, 2003)

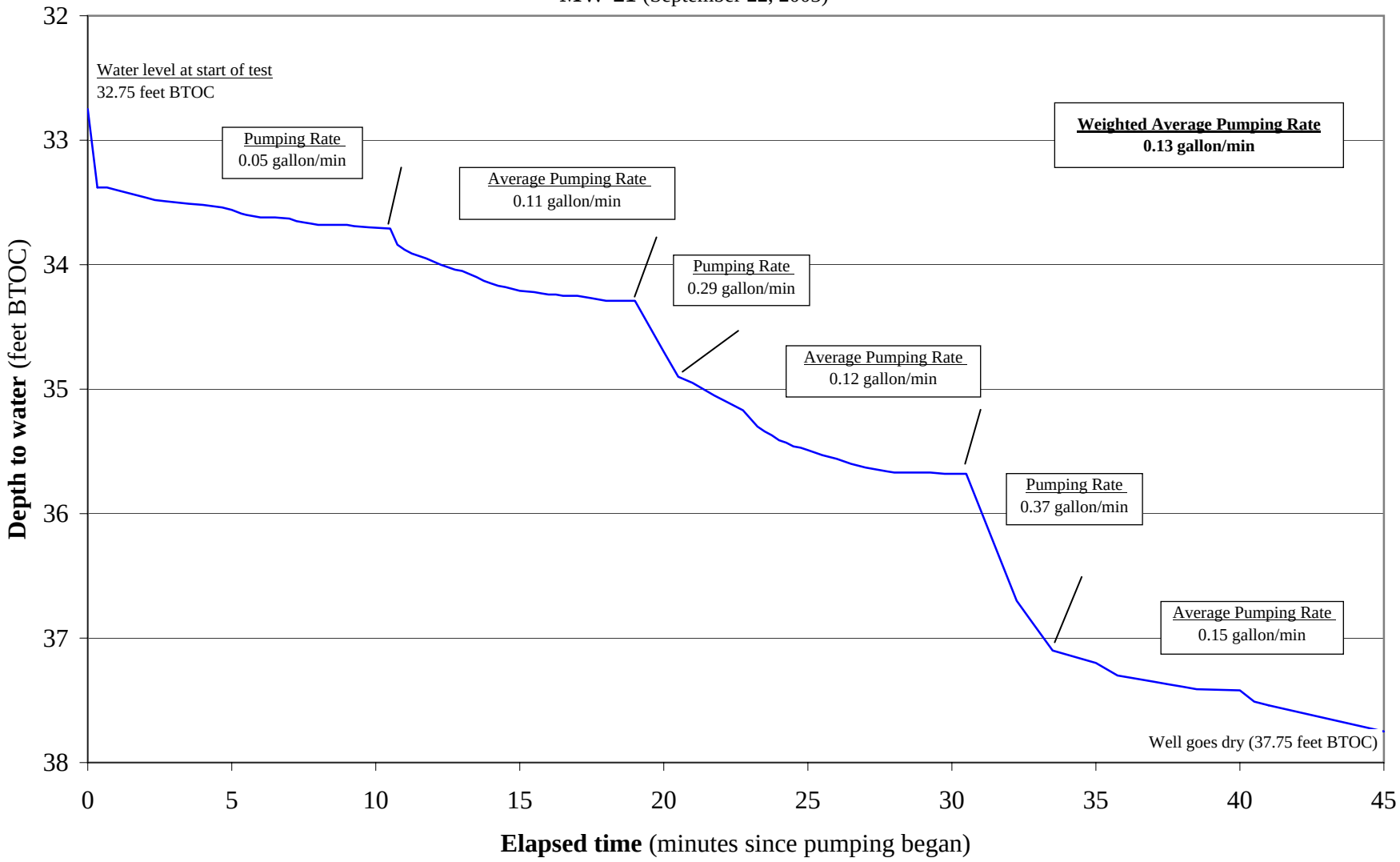


Figure D-2
Non-sustainable Pumping Rates
MW-17 (September 22, 2003)

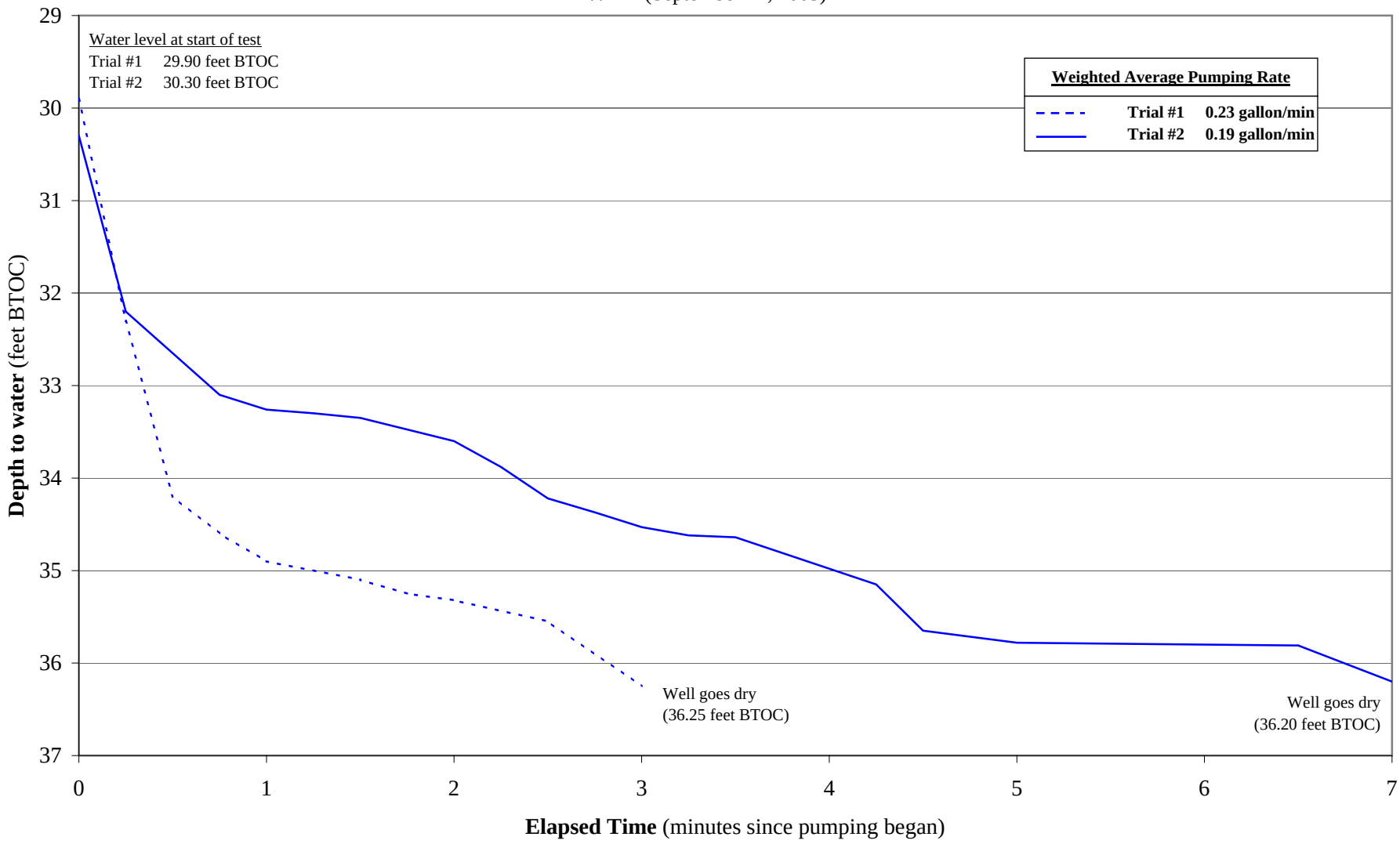


Figure D-3

Sustainable Pumping Rates

MW-17, MW-21, MW-28 (August 29, 2003)

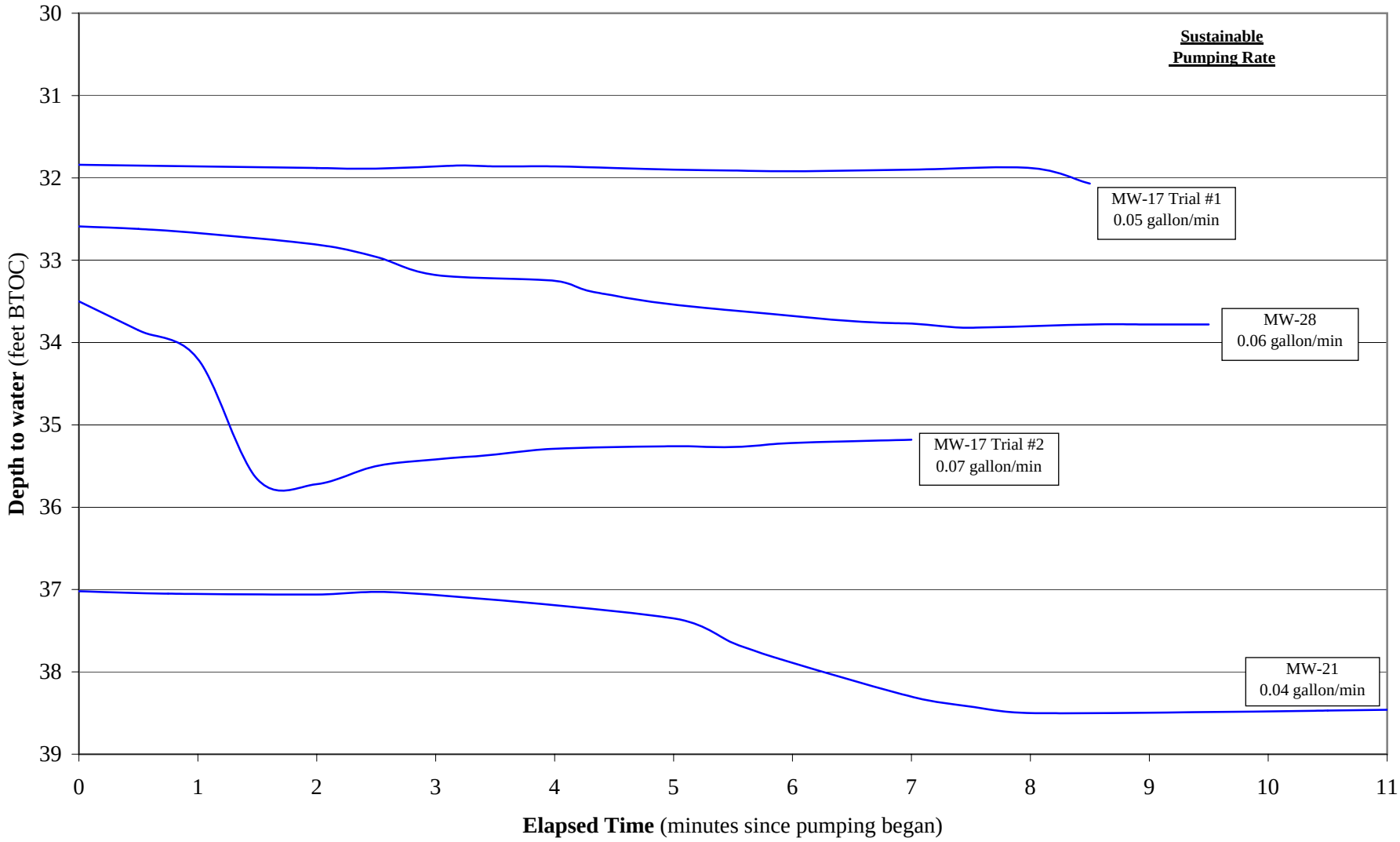


Figure D-4
MW-21 Recovery
(September 22, 2003)

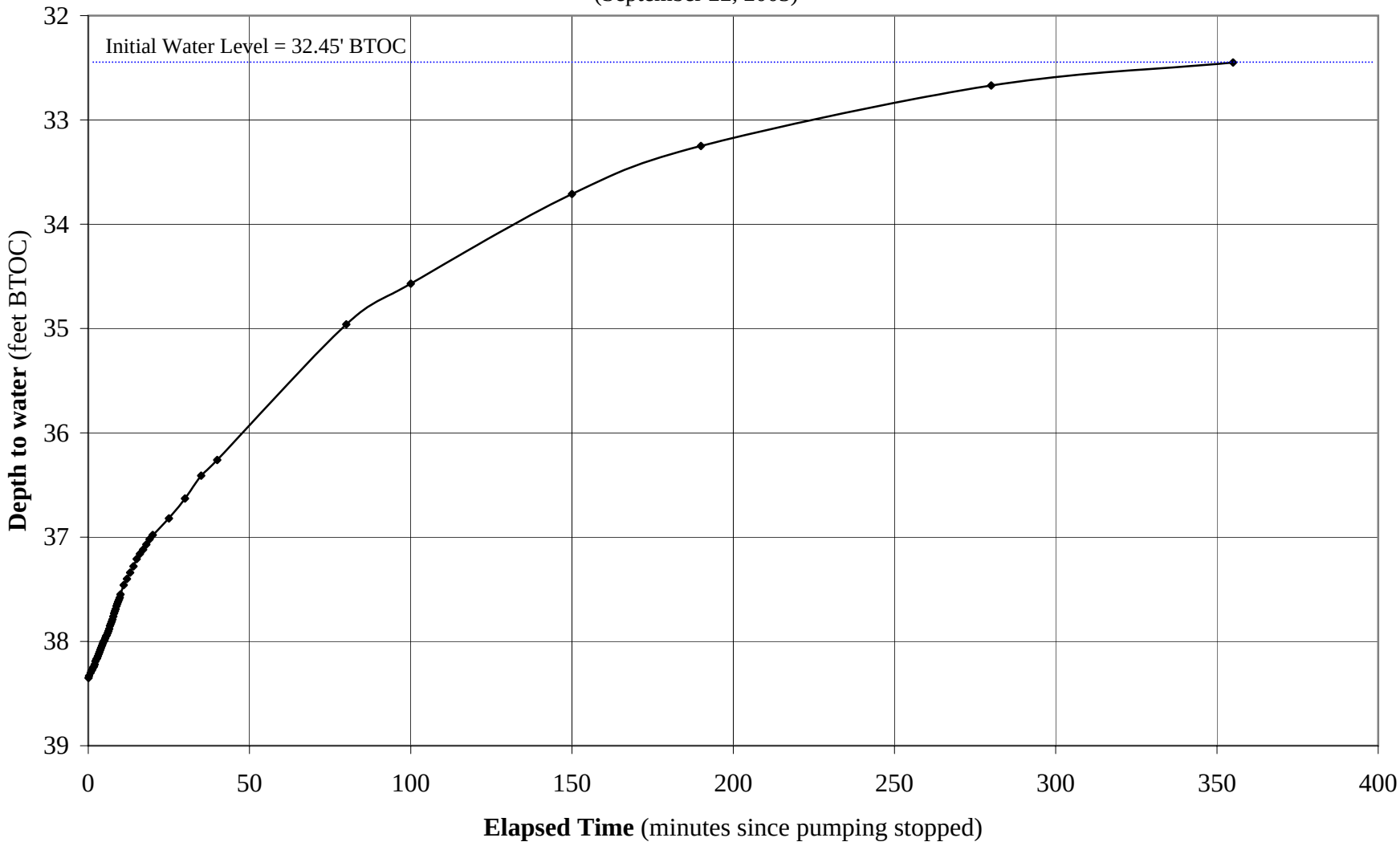
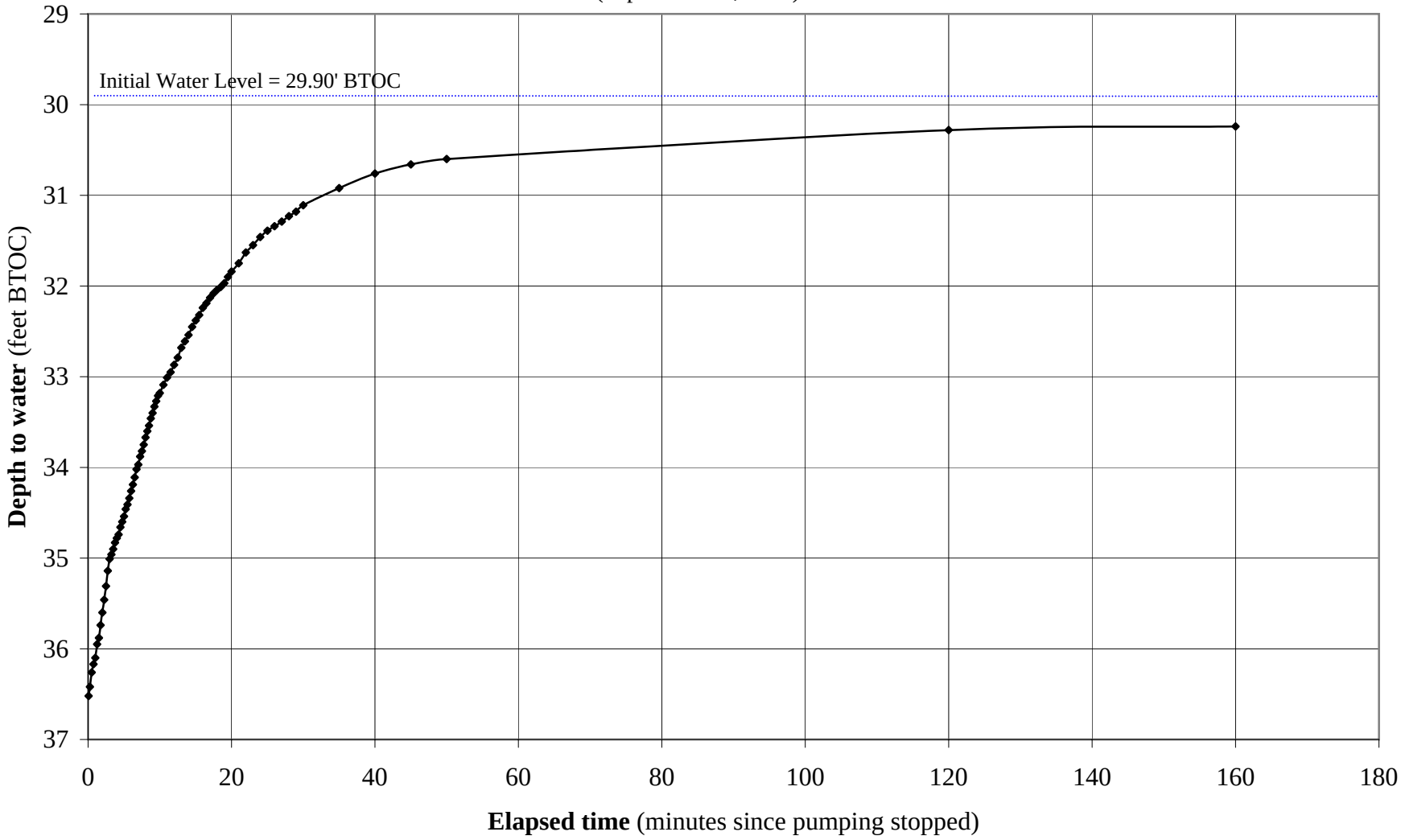


Figure D-5
MW-17 Recovery
(September 22, 2003)



APPENDIX D: MISCELLANEOUS FIELD AND ANALYTICAL INFORMATION

Laboratory Measurements of Hydraulic Conductivity in Soil (Wells MW-13 and MW-14)

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

October 16, 2001

Matt Miller
Delta Environmental
Bellevue, WA 98004

Project: Chevron #9-6590

Matt,
Here is a cross reference of the sample identification for the samples that were subbed out to Rosa Environmental & Geotechnical Lab (REG) for Total Porosity, Air Permeability and Hydraulic Conductivity.

Delta Project #	REG Lab Project #	NCA LABS #
DB2-16.5	B1I0507-08	B1I0507-08
DB3-16.5	B1I0507-13	B1I0507-13
B13-31.5	B1I0507-35	B1I0507-35
B14-36.5	B1I0507-42	B1I0507-42

Thank you,

Jeanne Garthwaite,
Project Manager

REG Lab WMBE
Rosa Environmental & Geotechnical Laboratory, LLC

1001 SW Klickitat Way, Suite 107
Seattle, WA 98134
(206) 287-9122

October 10, 2001

Ms. Jeanne Garthwaite
North Creek Analytical
11720 North Creek Parkway North, Suite 400
Bothell, WA 98011-8223

Re: B1I0507, REGL Project, No. 1052-414

Dear Ms. Garthwaite,

Four samples from the referenced project were received for testing on September 26, 2001 accompanied by a test request/chain of custody. The results of the analyses are reported on the following pages.

Please call me to discuss any questions, or comments you may have on the data or its presentation. Thank you for selecting REG Lab to perform this analysis for you.

Best Regards,
Rosa Environmental & Geotechnical Laboratory, LLC.

Harold Benny
Laboratory Manager

REG Lab WMBE
Rosa Environmental & Geotechnical Laboratory, LLC

1001 SW Klickitat Way, Suite 107
Seattle, WA 98134
(206) 287-9122

Client: North Creek Analytical	REGL Project No.: 1052-414
Client Project No.: B1I0507	Sample Batch No.: N/A

Case Narrative

1. Four samples were received on September 26, 2001 for hydraulic conductivity, air permeability and total porosity.
2. Air permeability was tested in general accordance with ASTM D4525 and SSSA Chapter 46.
3. Sample B1I0507-13 was saturated, and thus impermeable to flowing air. A "less than" value is reported, as this is the limit of detection.
4. Hydraulic conductivity was tested in accordance with ASTM D-5084.
5. The specific gravity was measured according to ASTM D-854.
6. The moisture Content was measured according to ASTM D-2216.
7. The porosity was calculated from the bulk density and specific gravity values.
8. There were no other anomalies noted in the samples or test method.

Released by: Sharon Davis Date: 10/10/01
Title: Laboratory Lead

Approved by: Harold Barry Date: 10/10/01
Title: Laboratory Manager

Air Permeability and Porosity

Sample ID	Wet Density (lbs/ft^3)	Initial Moisture Content (%)	Dry Density (lbs/ft^3)	Saturation	Total Porosity	Air Permeability (cm^2)
B1I0507-08	136.2	8.1	125.9	0.622	0.263	5.31E-08
B1I0507-13	119.2	31.8	90.4	0.997	.462	<1E-10

Air permeability was measured according to a combination of ASTM D-4525 and Soil Science Society of America Chapter 46.
Density was calculated from the sample dimensions and weight.
Moisture Content was measured according to ASTM D-2216.
Specific Gravity was measured according to ASTM D-854.
Saturation and Total Porosity were calculated from the specific gravity, moisture content and density values.

ROSA ENVIRONMENTAL AND GEOTECHNICAL LABORATORY

North Creek Analytical
B1I0507

Test Results for Flexible Wall Hydraulic Conductivity Testing

Sample ID	Specific Gravity	As Received Sample Parameters				After Test Sample Parameters				Gradient (h/l)	Hydraulic Conductivity (cm/s)
		Wet Density (lbs/ft^3)	Total Porosity	Saturation	Moisture Content (%)	Wet Density (lbs/ft^3)	Total Porosity	Saturation	Moisture Content (%)		
B1I0507-35	2.81	113	0.546	0.97	41.3	118	0.513	1.00	37.5	1.90	1.00E-06
B1I0507-42	2.81	115	0.525	0.98	38.5	118	0.501	0.97	34.7	1.69	1.32E-06

B13-21.5
B14-36.5

Notes:

1. The samples were tested in accordance with ASTM D-5084.
2. The tests were performed using tap water for the permeant.
3. The porosity and the saturation were calculated using a measured specific gravity.

Sample Description and Dimensions

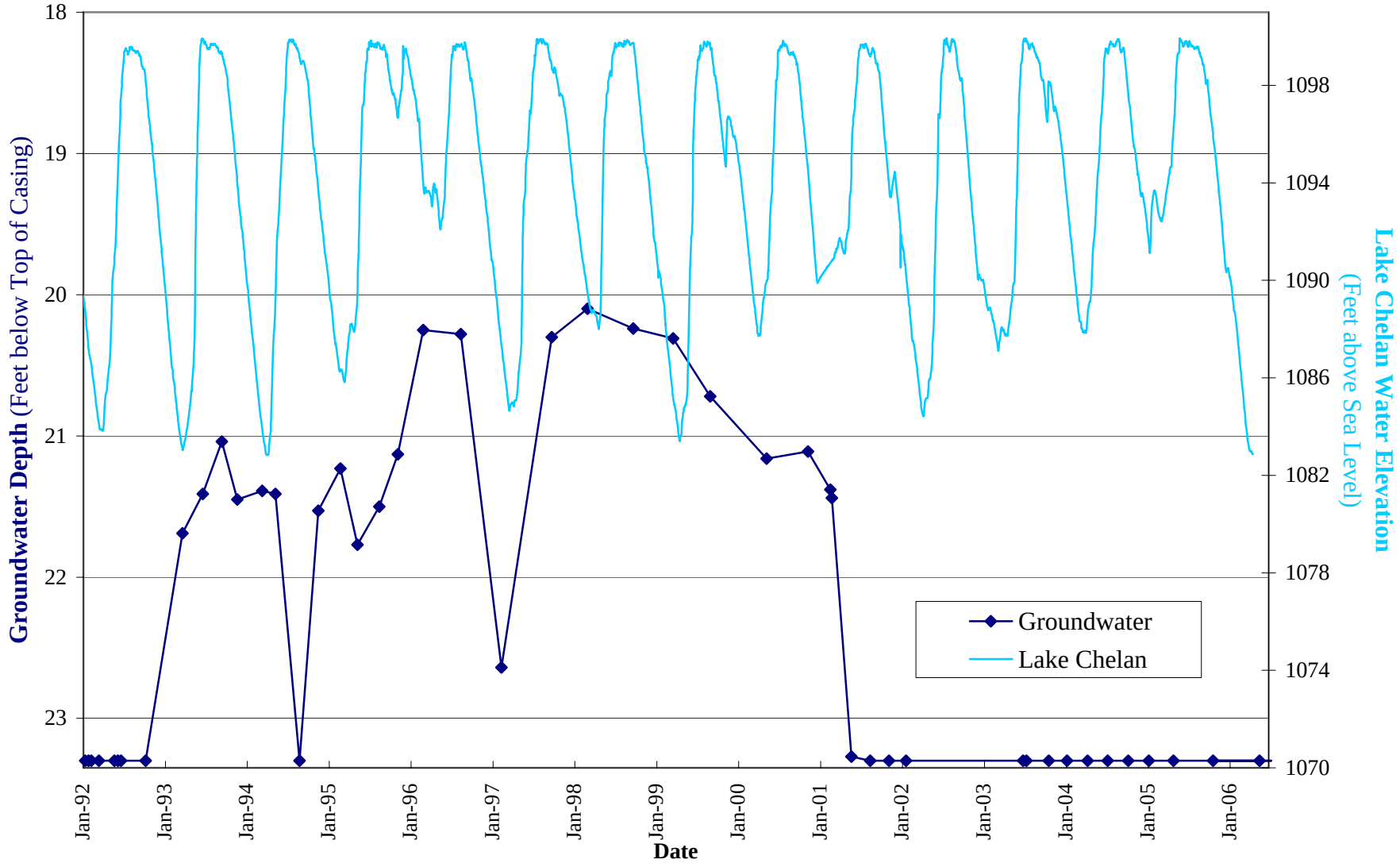
Sample ID	Specific Gravity	Visual Description	Confining Pressure (psi)	Initial Average Length (cm)	Initial Average Diameter (cm)	Final Average Length (cm)	Final Average Diameter (cm)
B1I0507-35	2.81	Clay	5.0	12.85	6.18	12.10	6.15
B1I0507-42	2.81	Clay	5.0	12.82	6.16	11.78	6.27

1052-414

APPENDIX D: MISCELLANEOUS FIELD AND ANALYTICAL INFORMATION

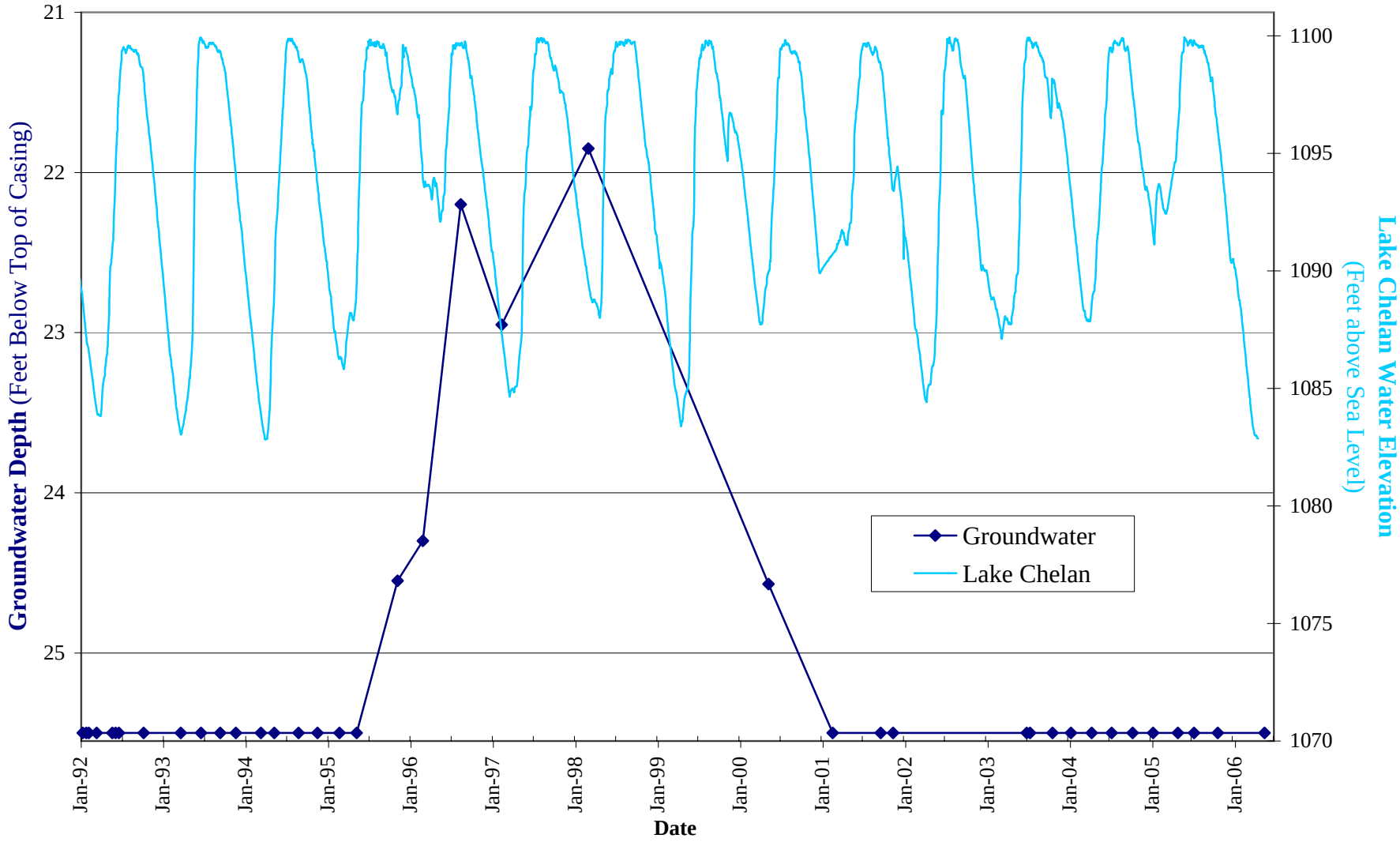
Charts of Groundwater and NAPL Levels Since 1992

MW-2: Groundwater Depth



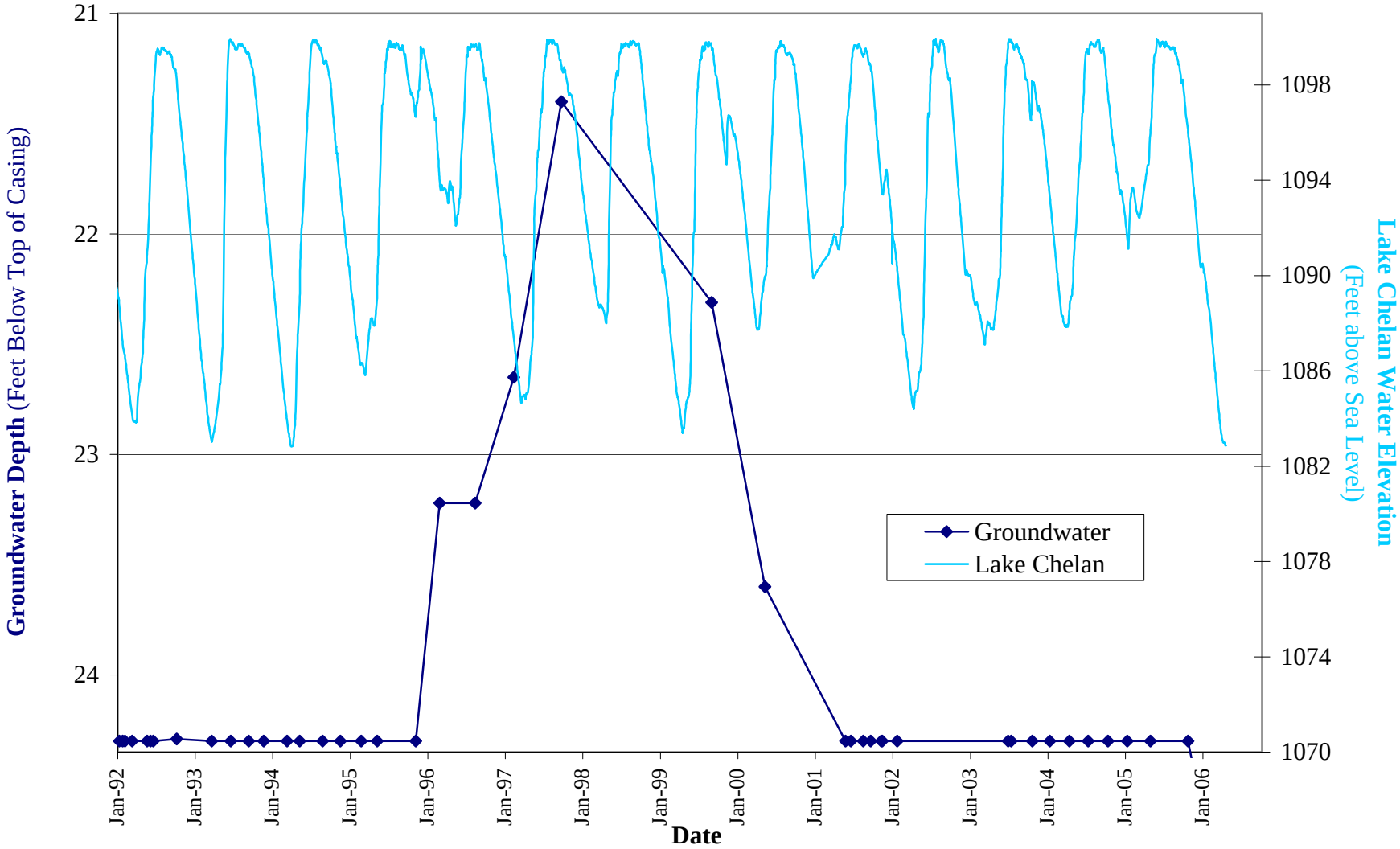
**Bottom of graph is aproximate base of well - points near bottom indicate a dry well.*

MW-3: Groundwater Depth



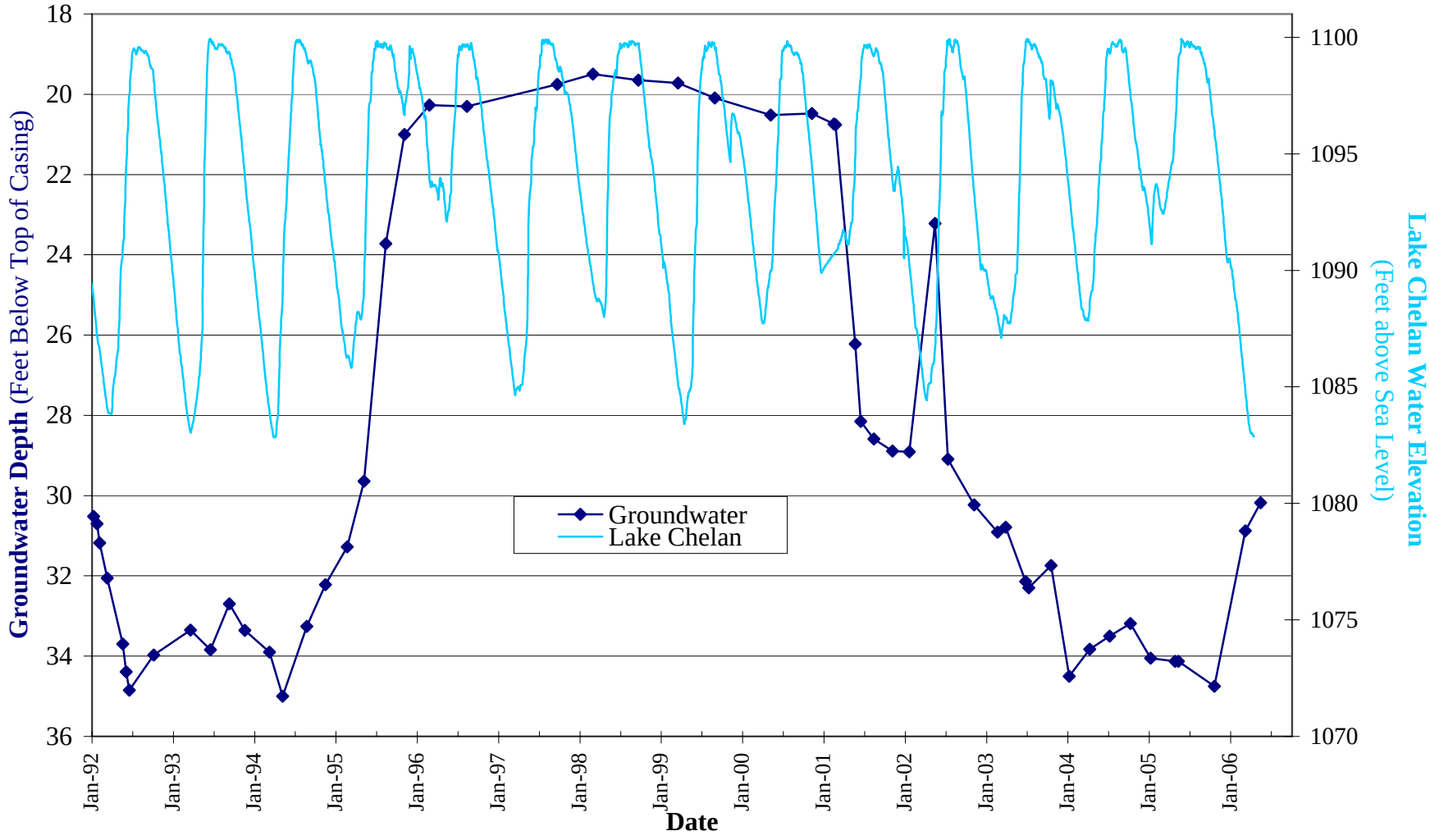
**Bottom of graph is approximate base of well -- points near bottom indicate a dry well.*

MW-4: Groundwater Depth

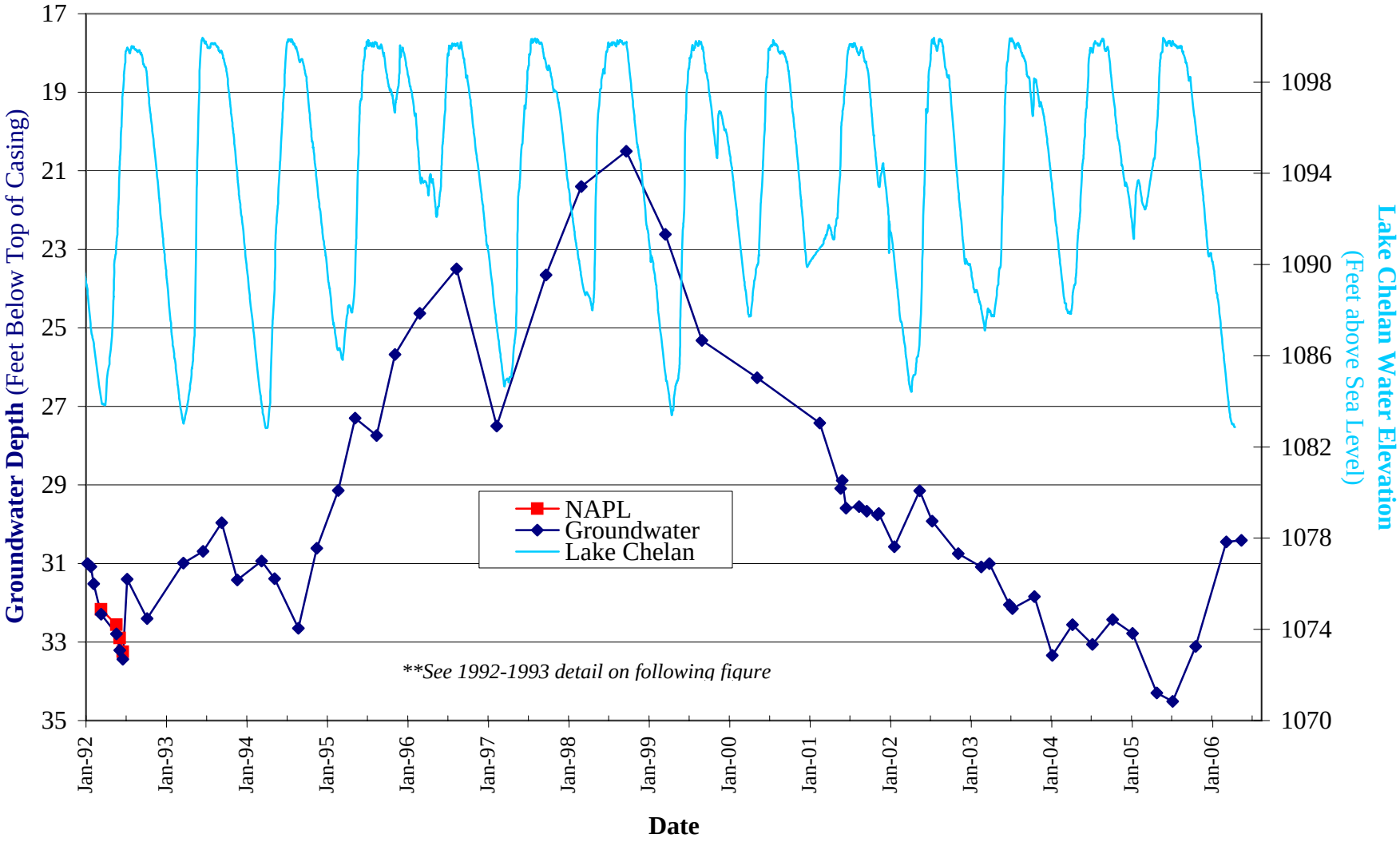


**Bottom of graph is approximate base of well - points near bottom indicate a dry well.*

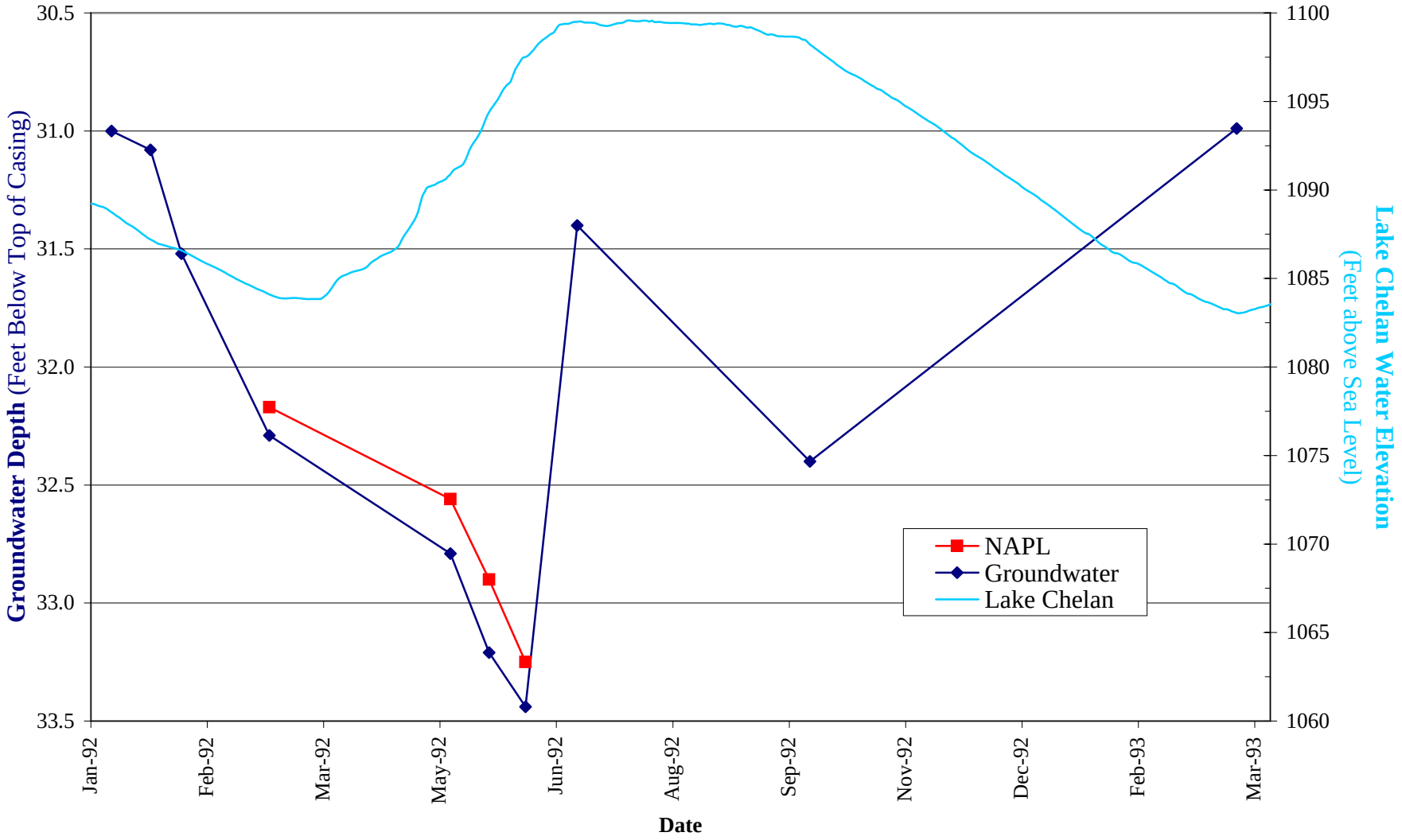
MW-5: Groundwater Depth



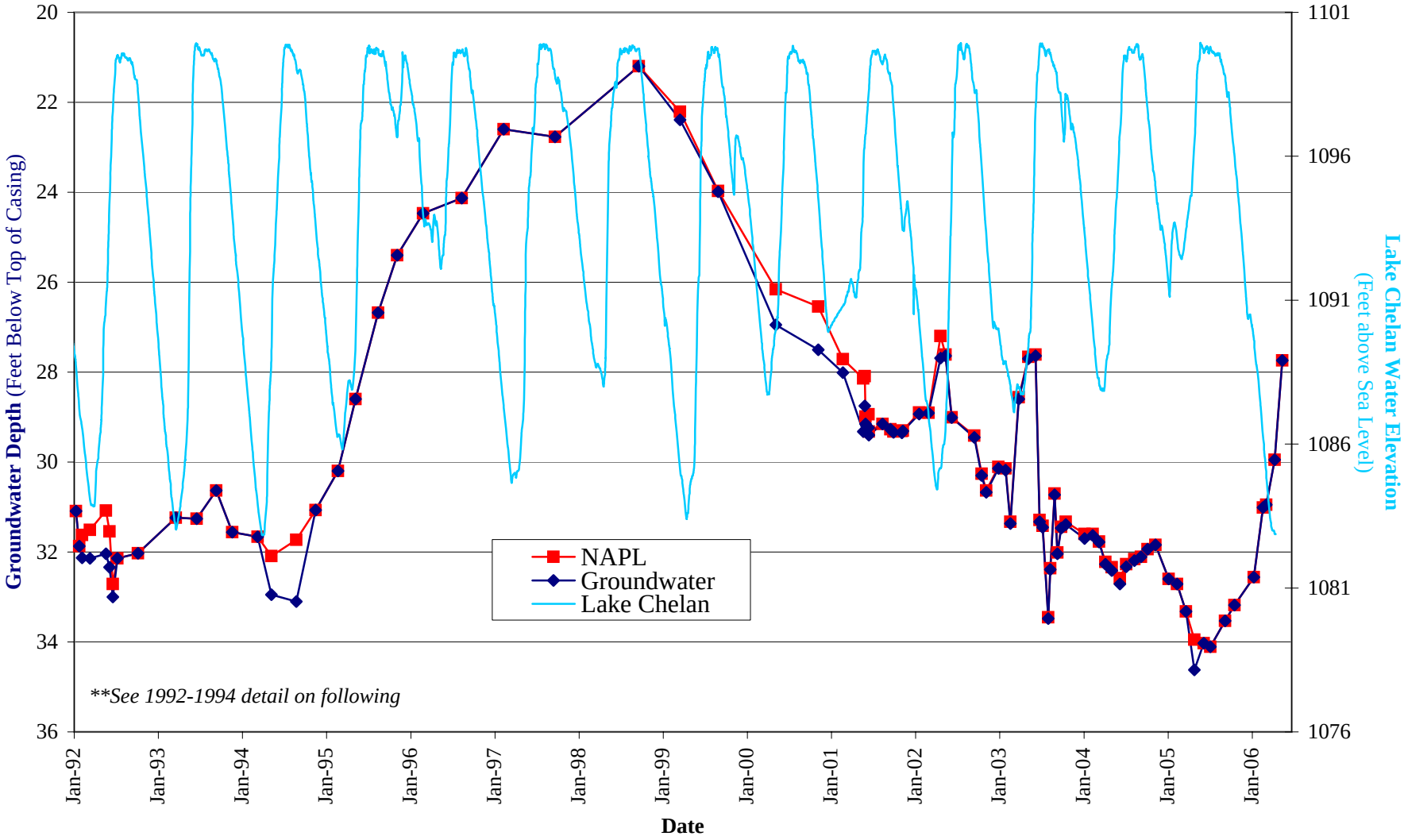
MW-6: Groundwater and NAPL Depth



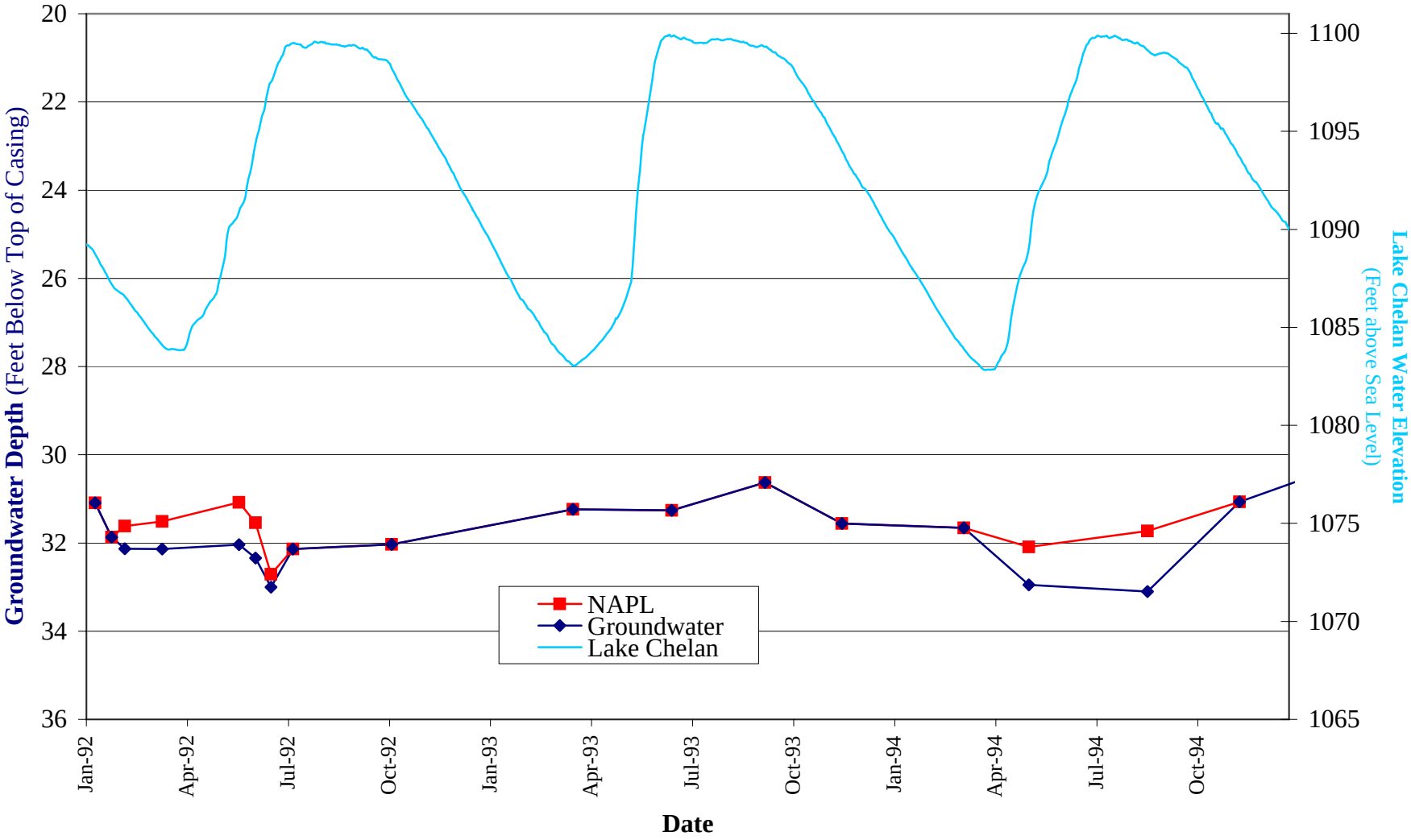
MW-6: Groundwater, NAPL Depth from Jan-92 to Mar-93



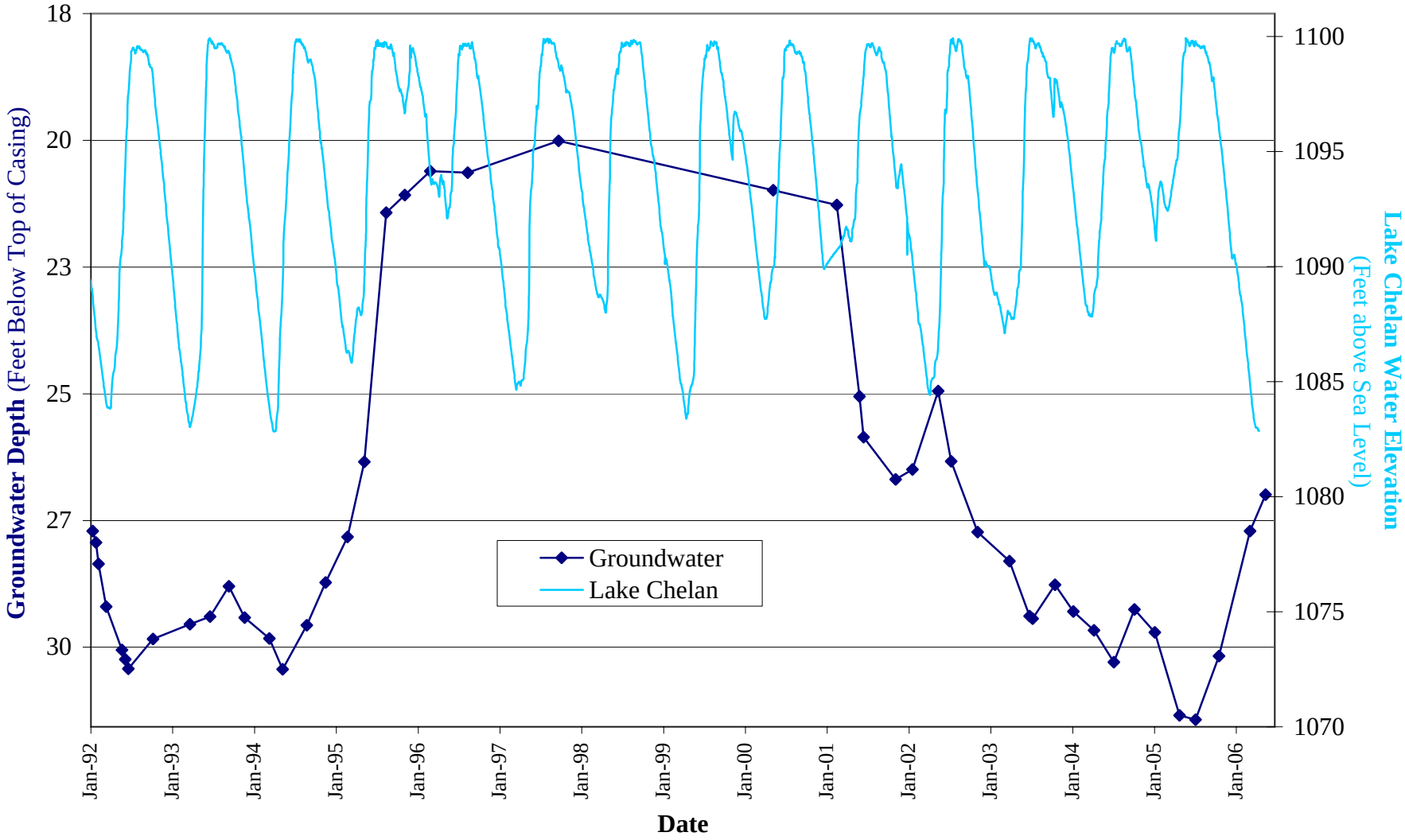
MW-7: Groundwater, NAPL Depth



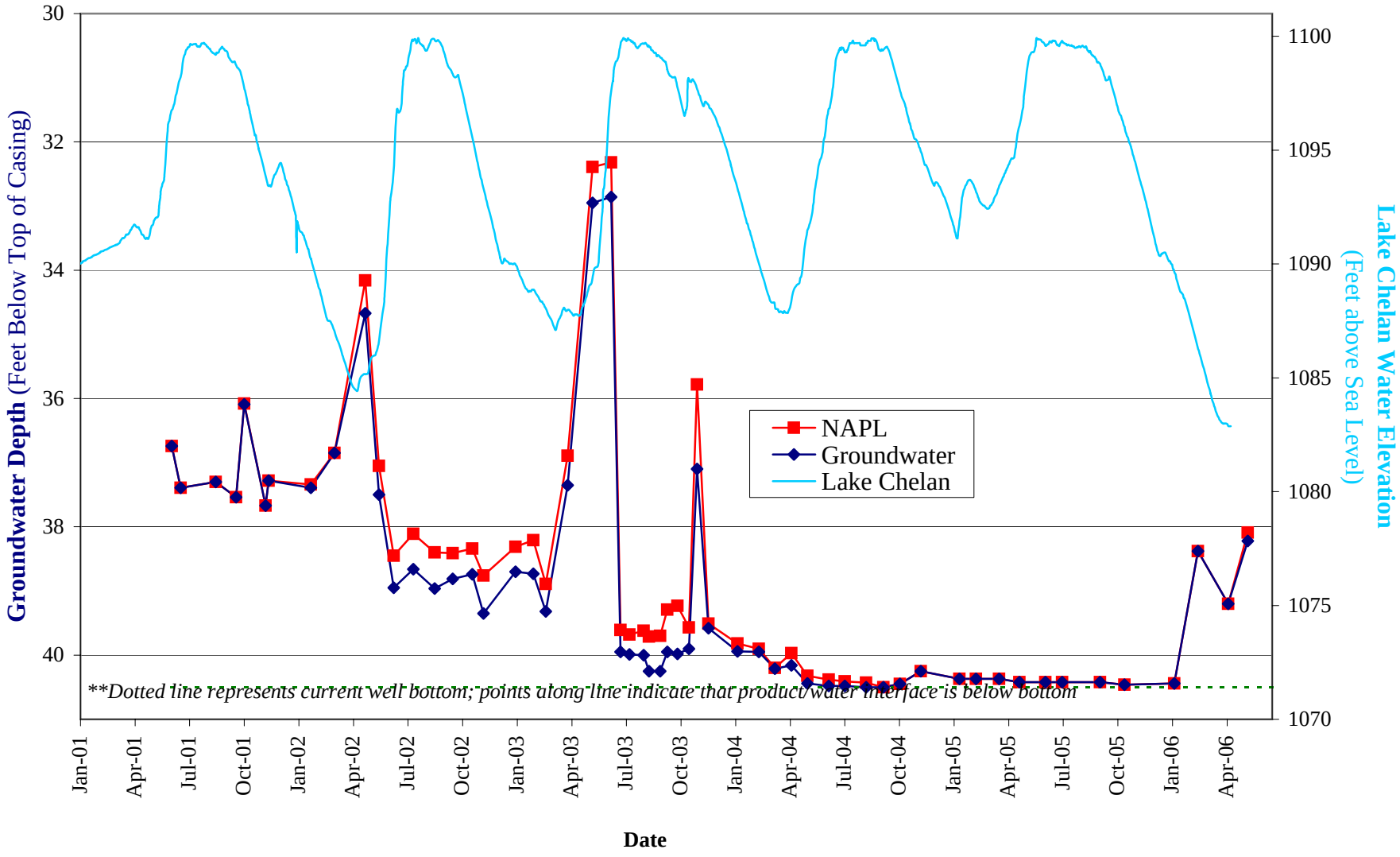
MW-7: Groundwater, NAPL Depth 1992-1994



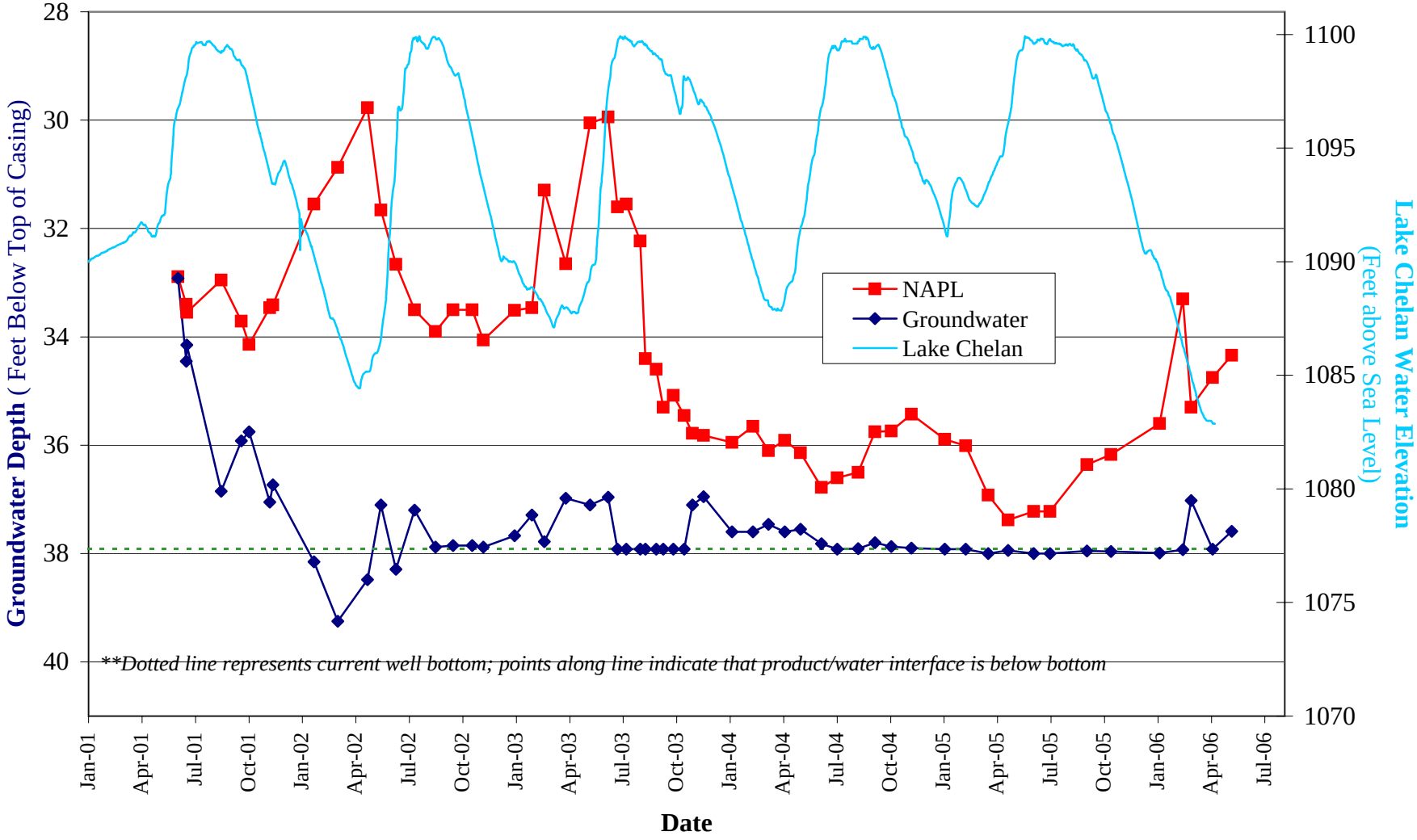
MW-8: Groundwater Depth



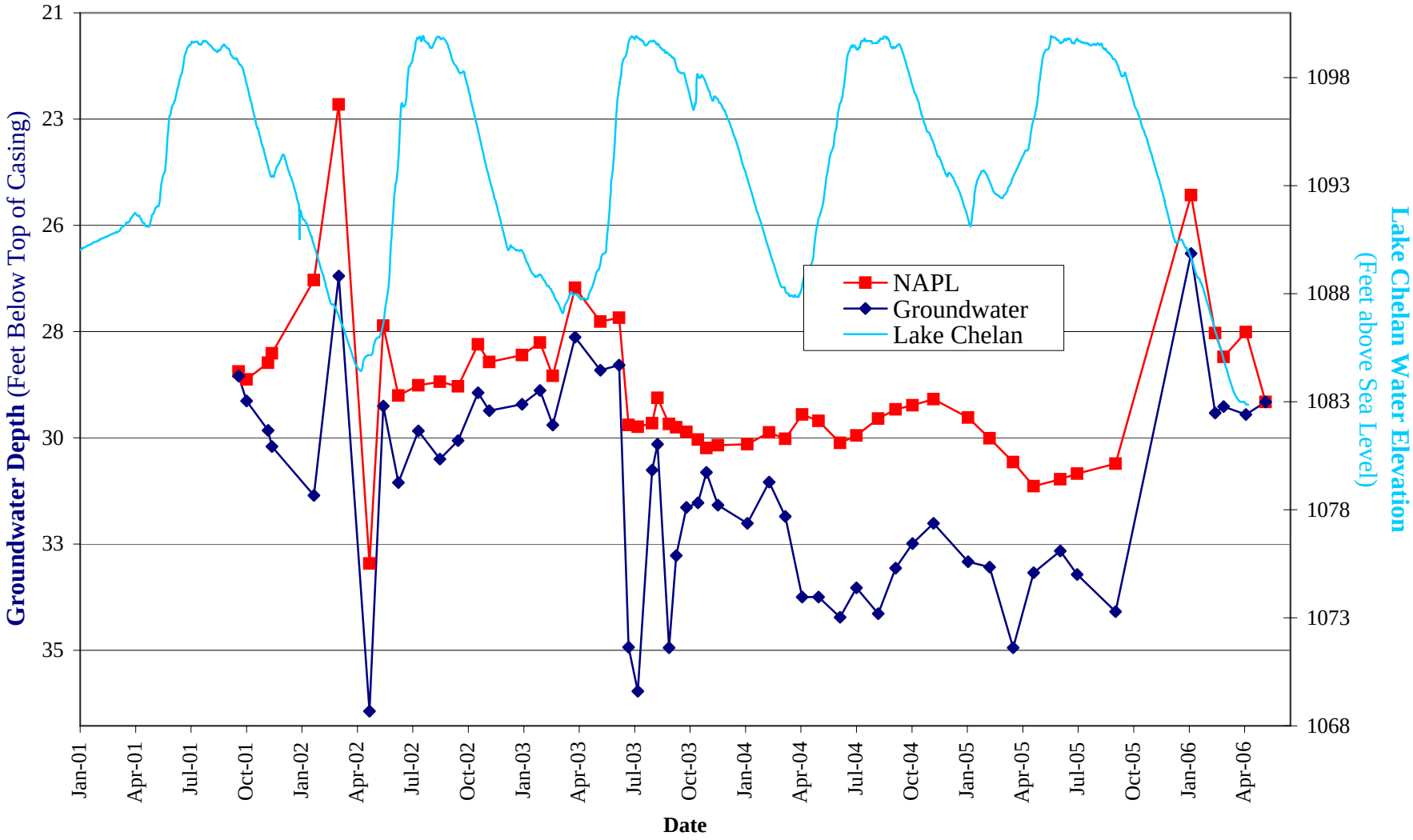
MW-9: Groundwater, NAPL Depth



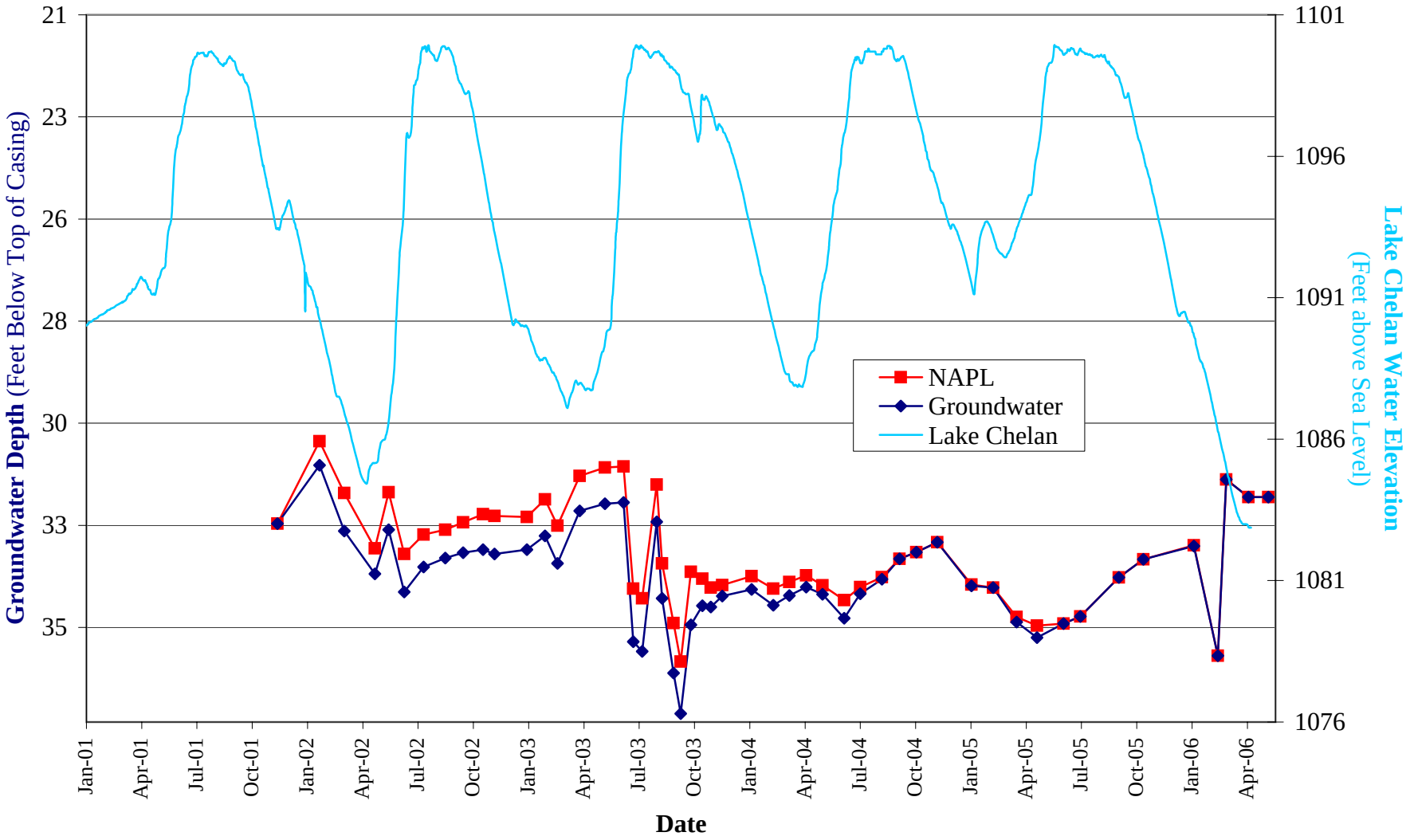
MW-10: Groundwater, NAPL Depth



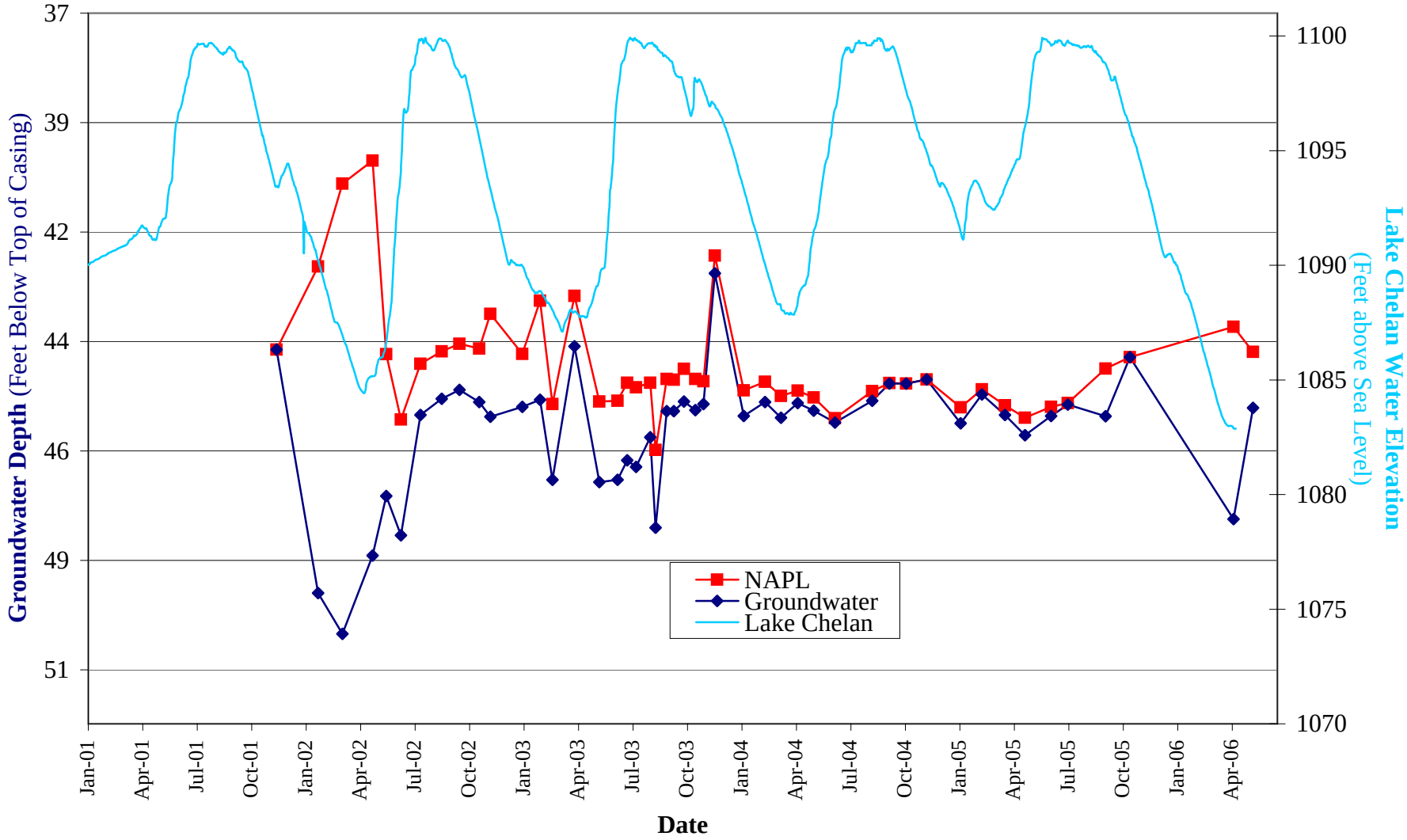
MW-12: Groundwater, NAPL Depth



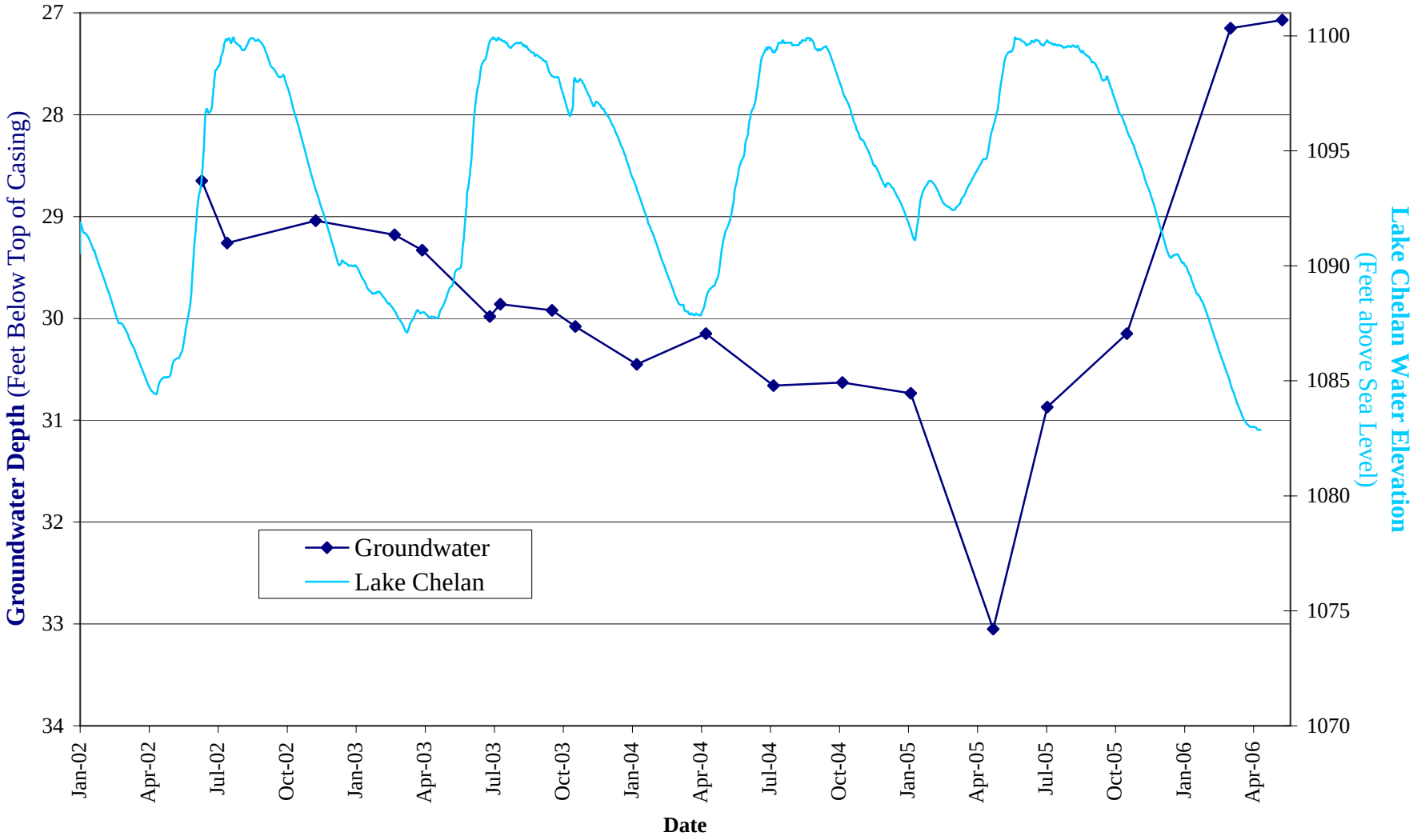
MW-15: Groundwater, NAPL Depth



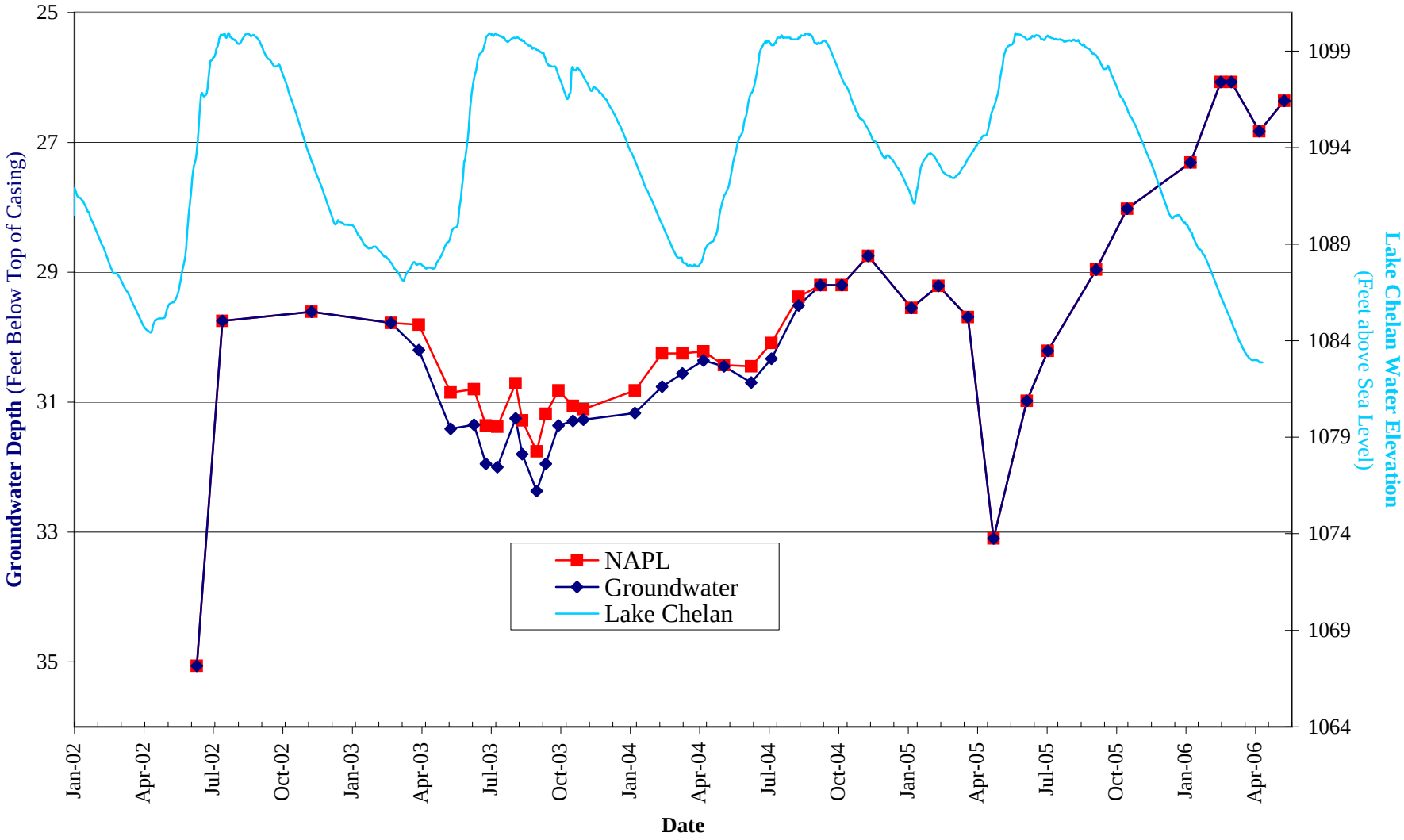
MW-16: Groundwater, NAPL Depth



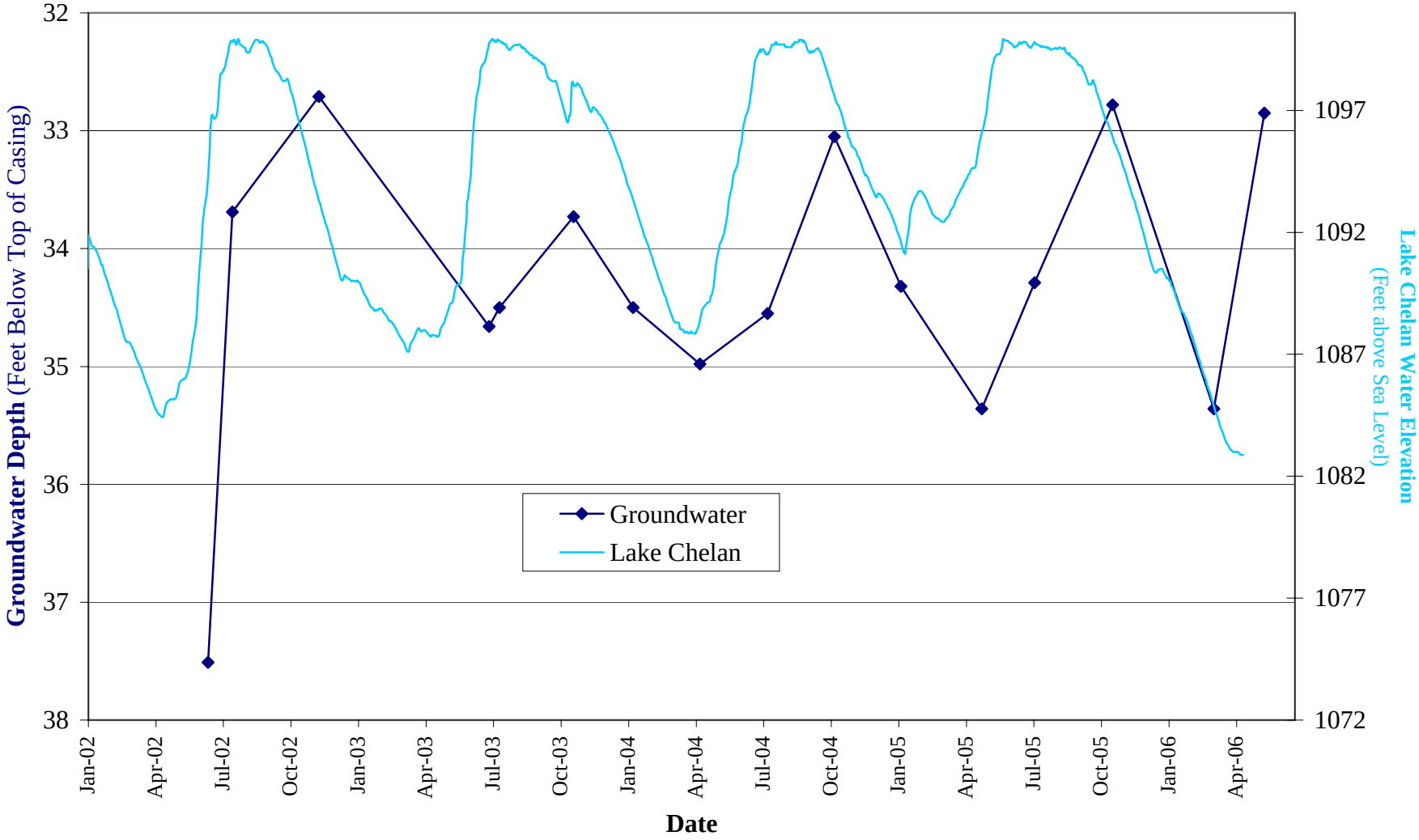
MW-17: Groundwater Depth



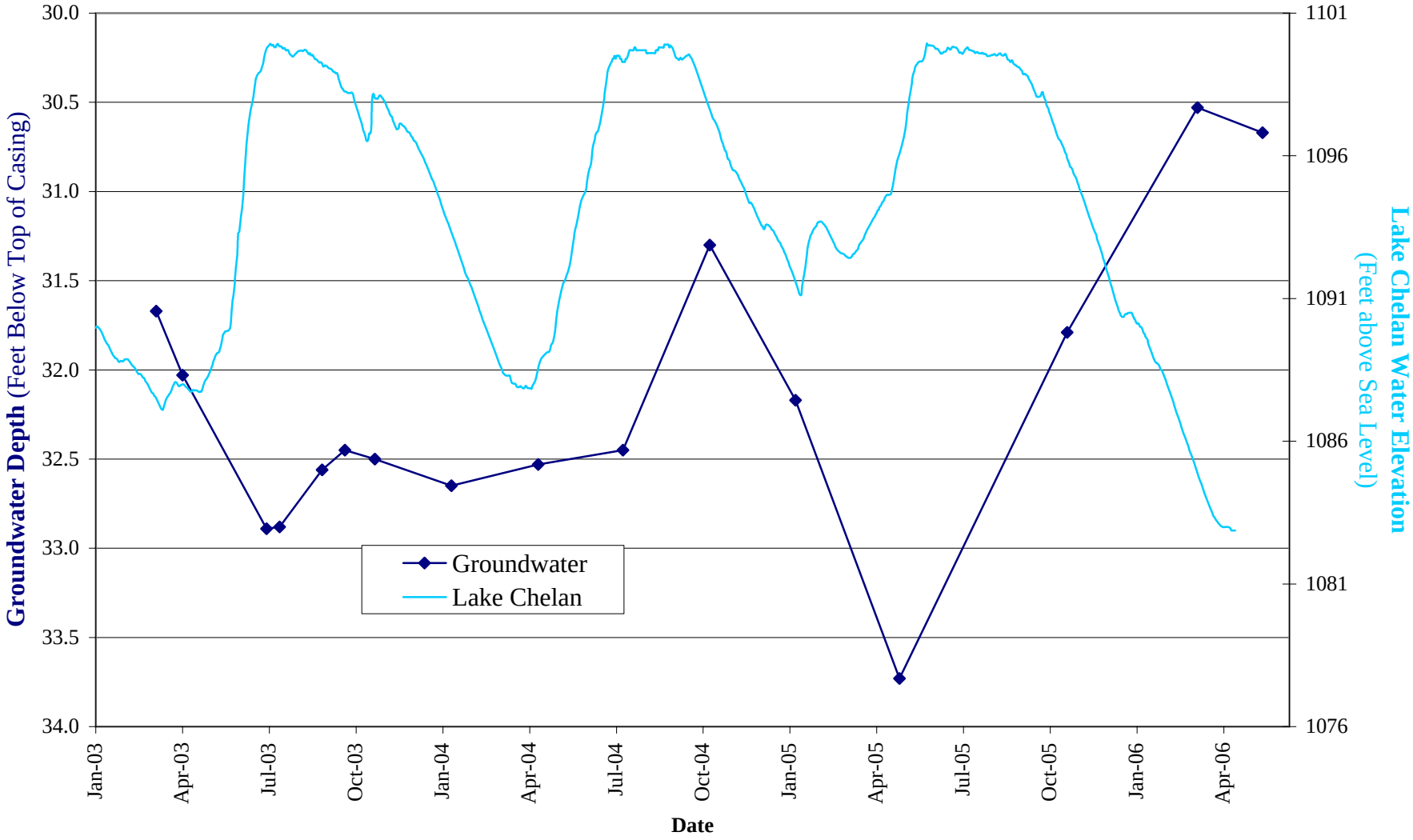
MW-18: Groundwater, NAPL Depth



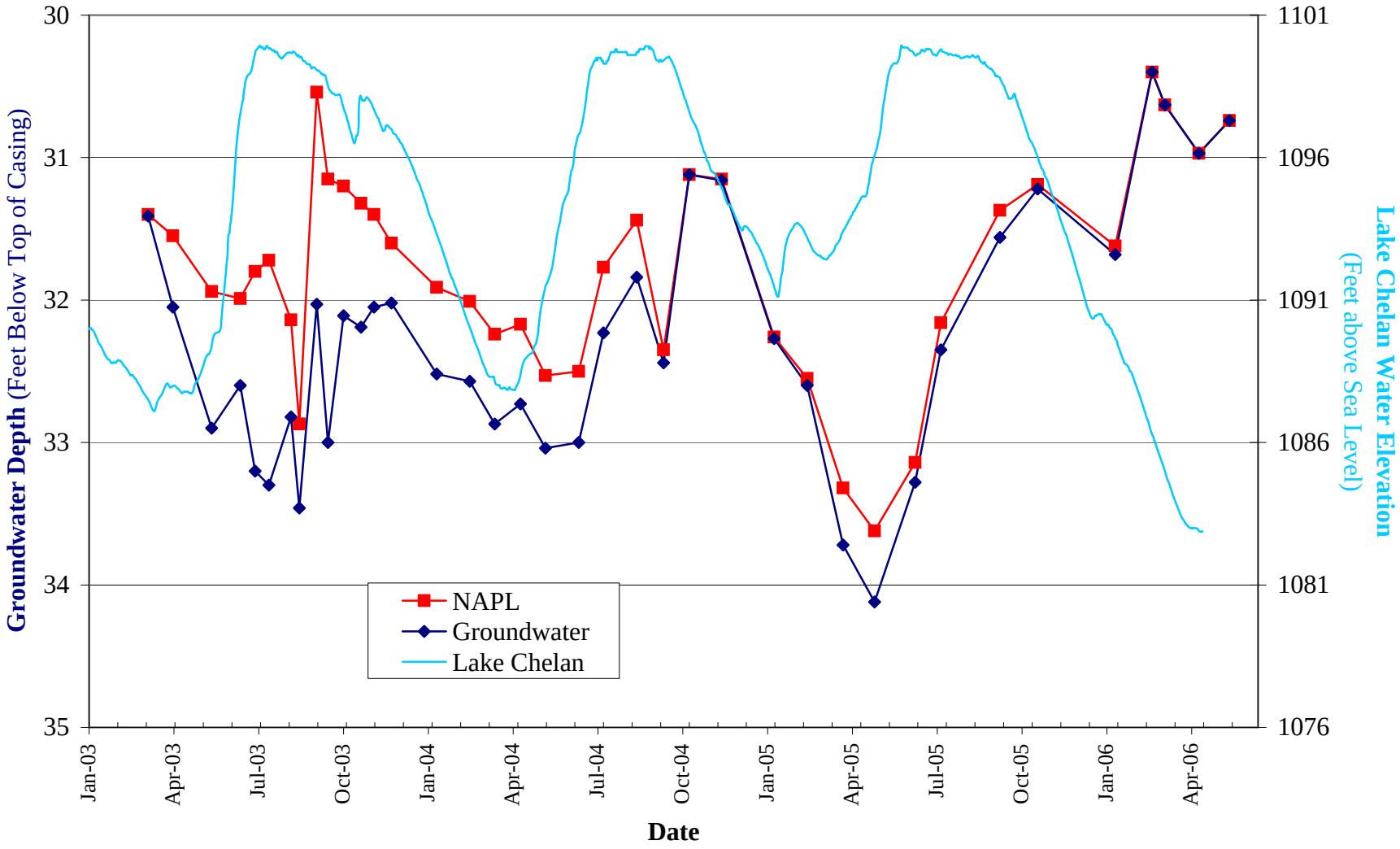
MW-19: Groundwater Depth



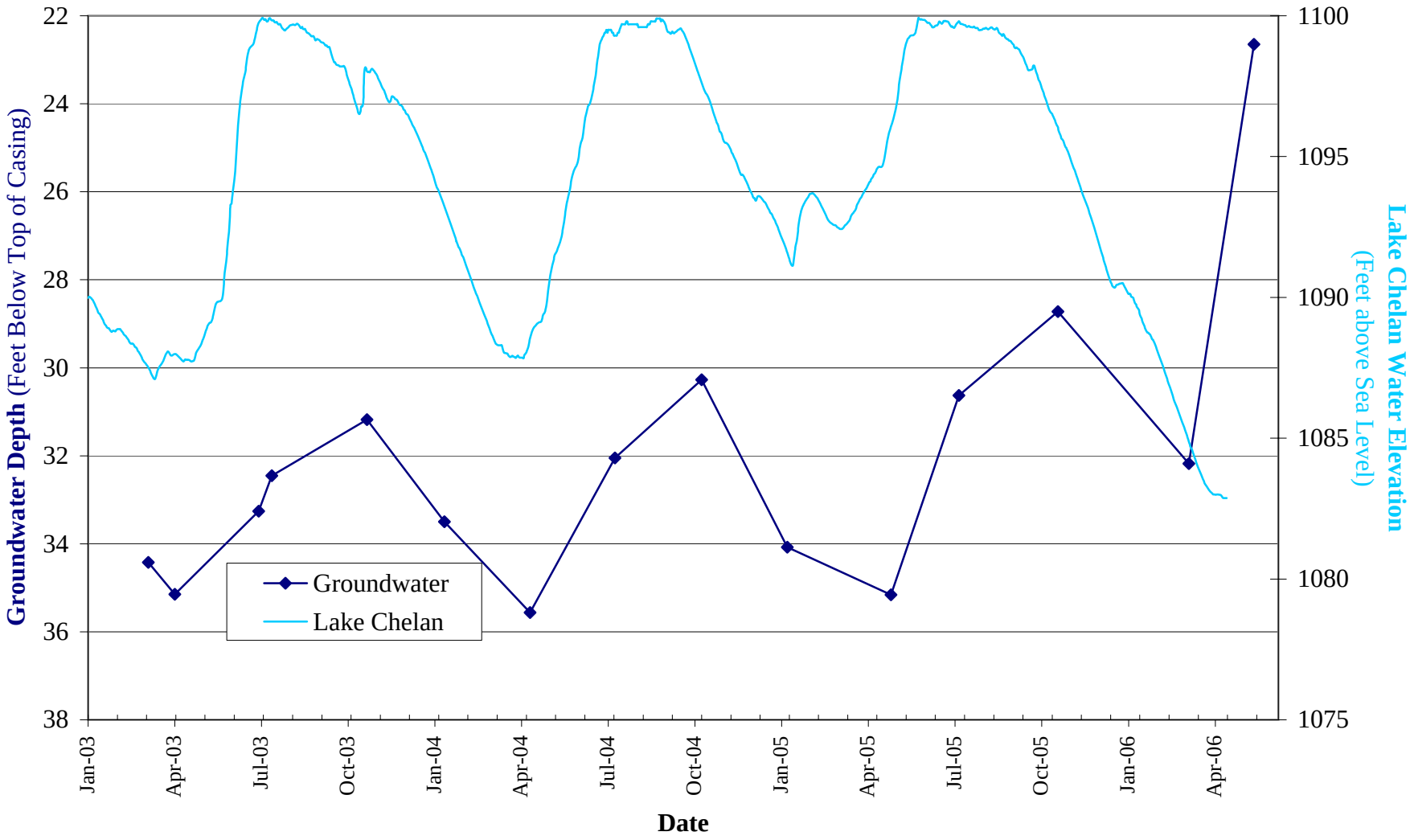
MW-21: Groundwater Depth

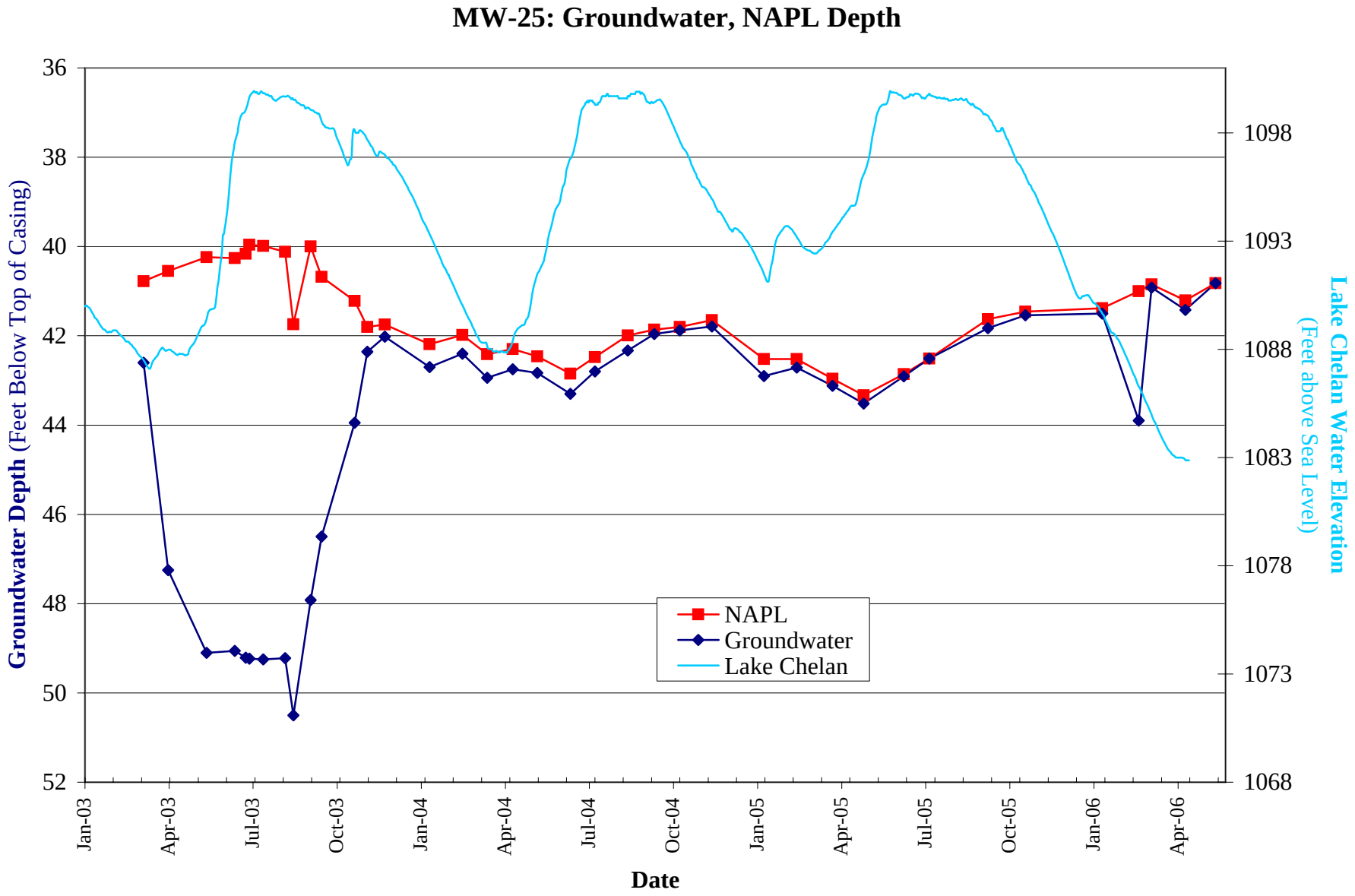


MW-22: Groundwater, NAPL Depth

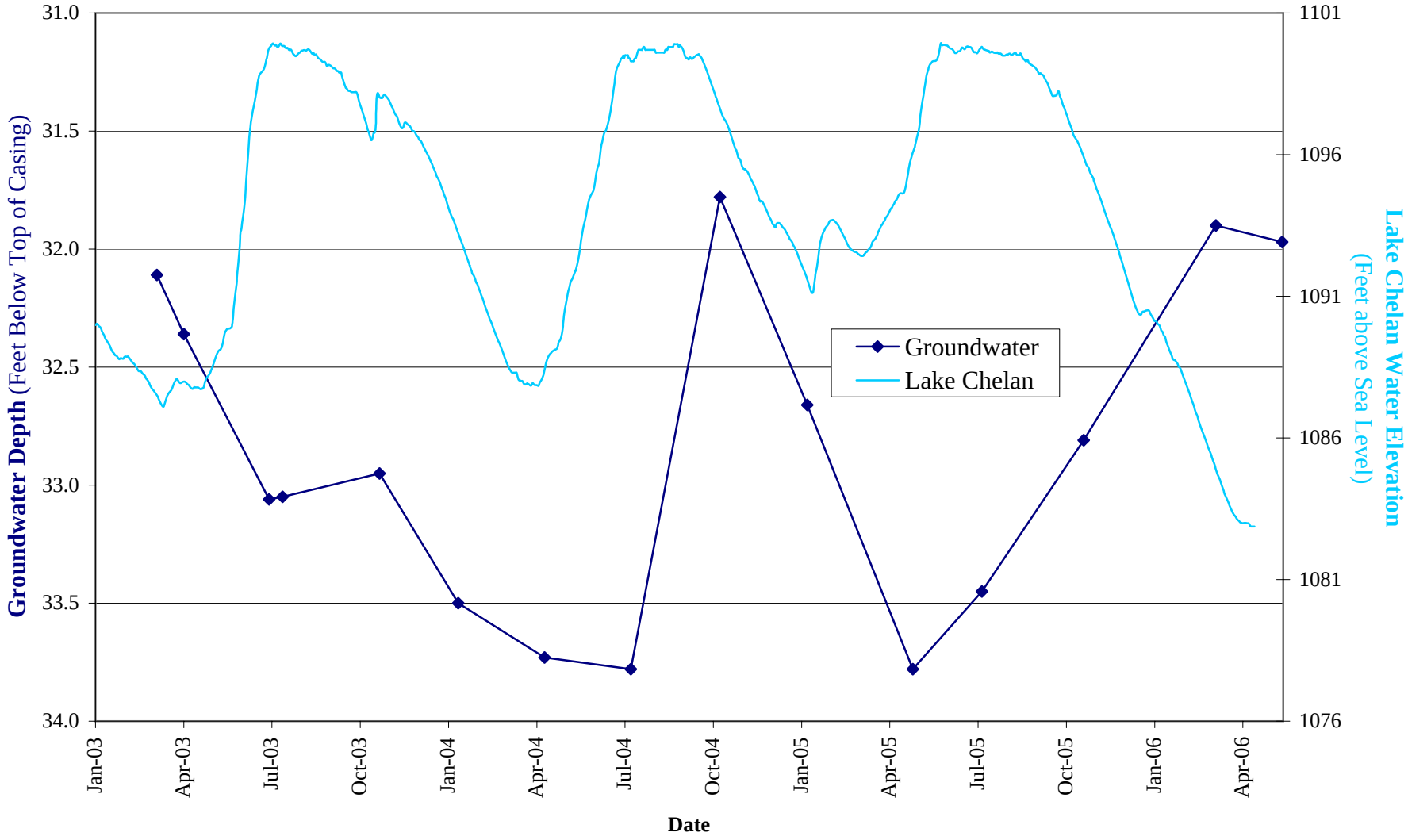


MW-23: Groundwater Depth

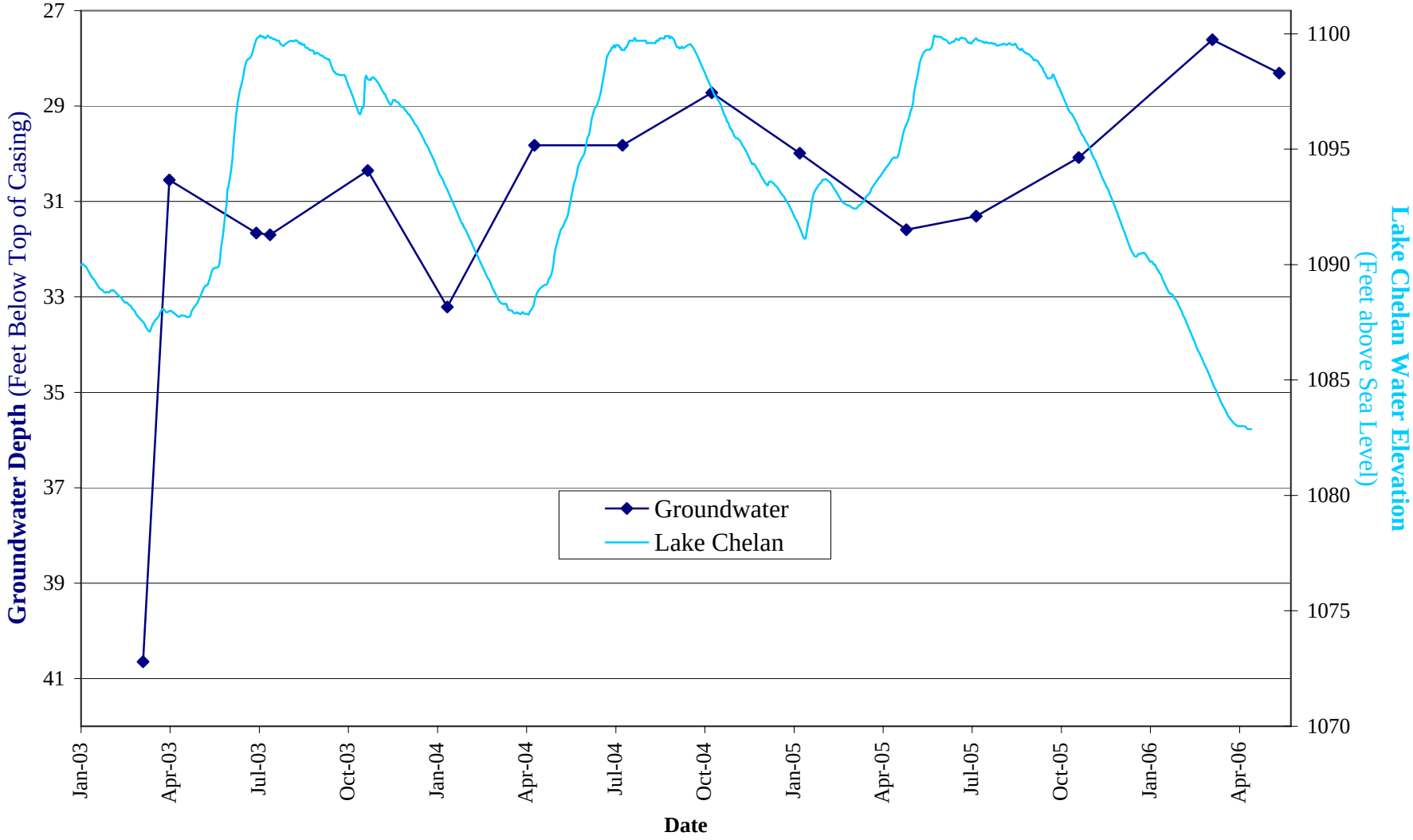



MW-25: Groundwater, NAPL Depth
Groundwater Depth (Feet Below Top of Casing)
36
38
40
42
44
46
48
50
52
Lake Chelan Water Elevation
(Feet above Sea Level)
1098
1093
1088
1083
1078
1073
1068
NAPL
Groundwater
Lake Chelan
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Date

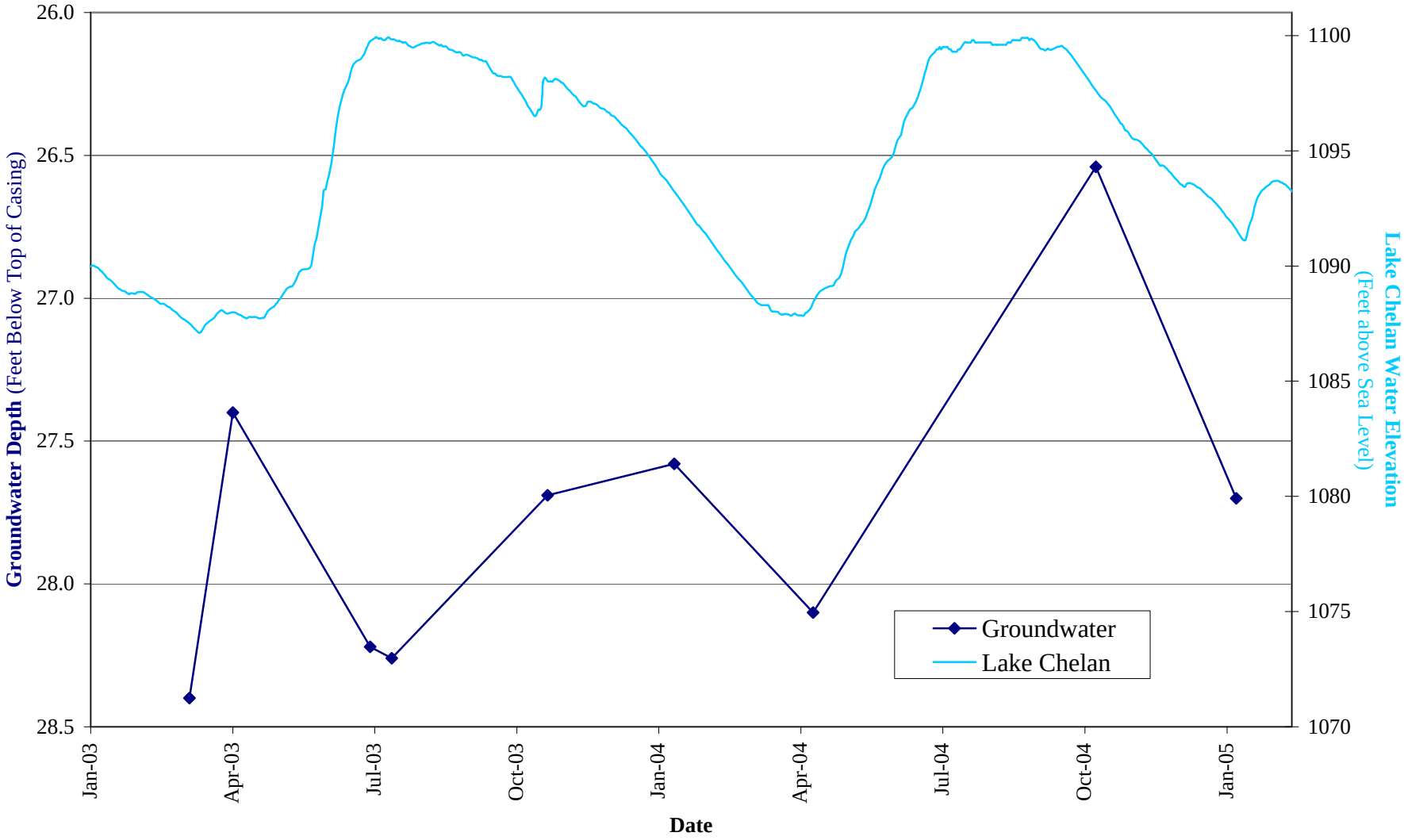
MW-27: Groundwater Depth

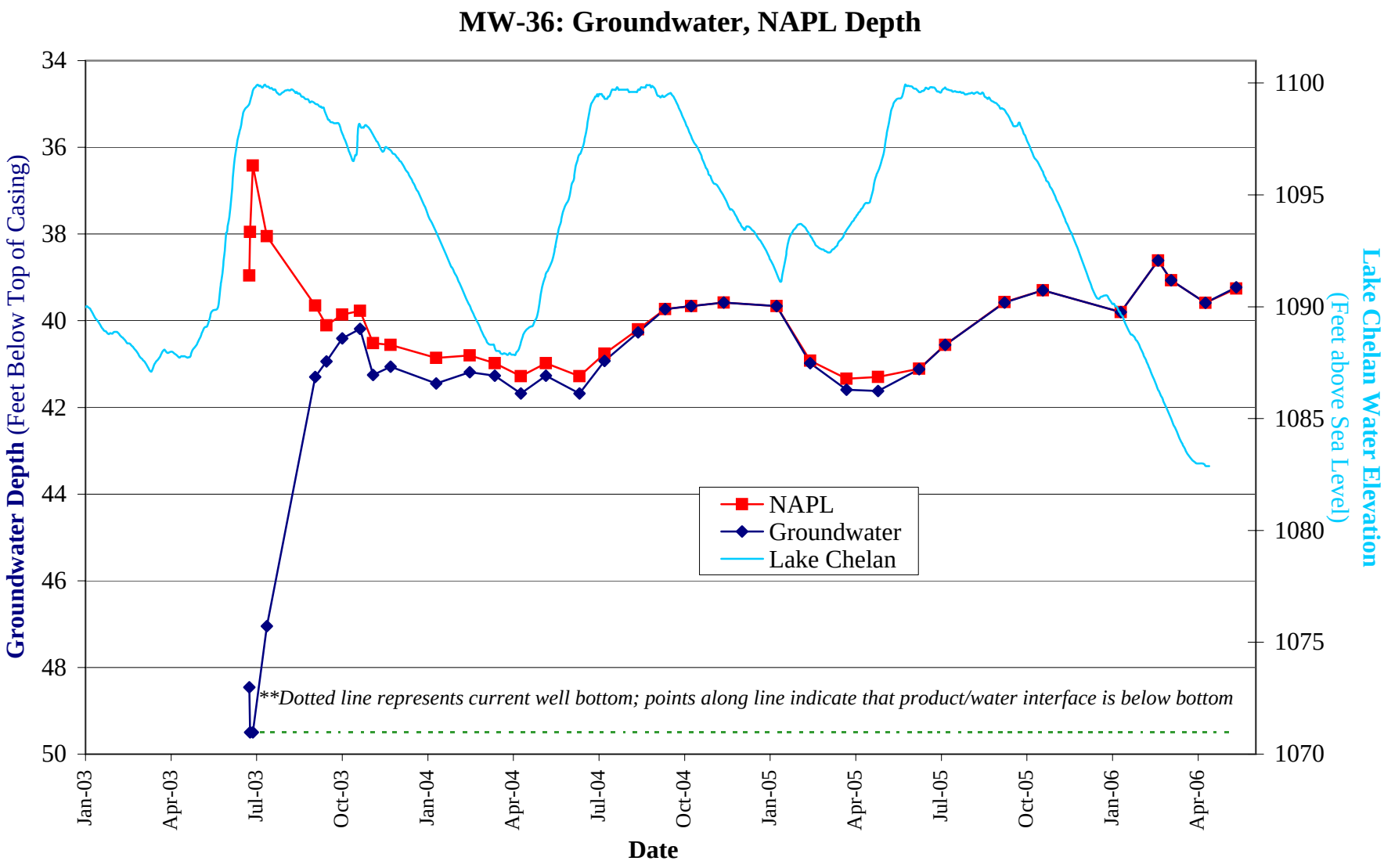


MW-28: Groundwater Depth

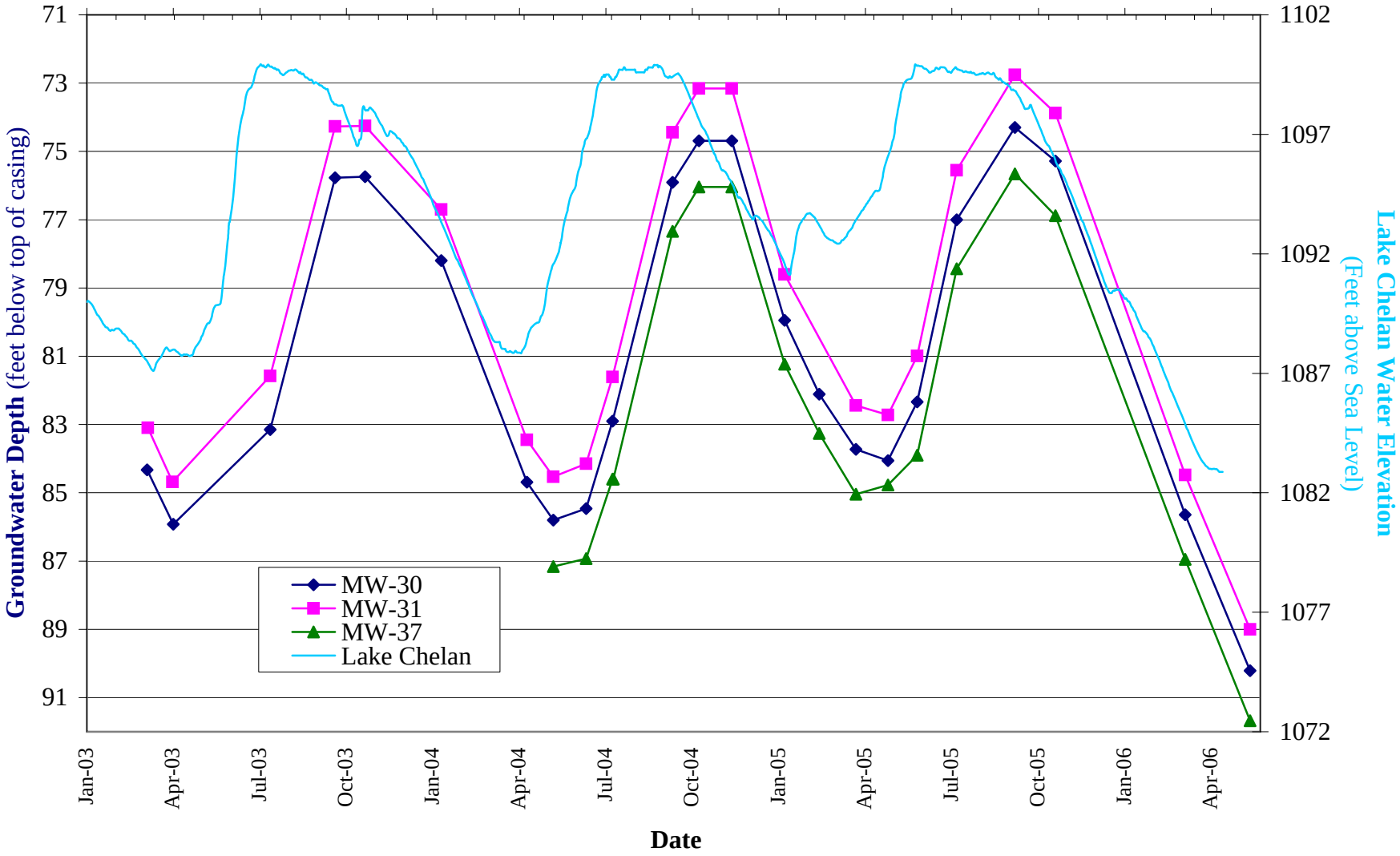


MW-29: Groundwater Depth




MW-36: Groundwater, NAPL Depth
Groundwater Depth (Feet Below Top of Casing)
34
36
38
40
42
44
46
48
50
Lake Chelan Water Elevation
(Feet above Sea Level)
1100
1095
1090
1085
1080
1075
1070
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Date
NAPL
Groundwater
Lake Chelan
**Dotted line represents current well bottom; points along line indicate that product/water interface is below bottom

MW-30, MW-31, and MW-37: Deep Groundwater Depth



APPENDIX D: MISCELLANEOUS FIELD AND ANALYTICAL INFORMATION

RI Duplicate Sample RPD Summary

Relative Percent Difference
For RI Soil Duplicate Samples
Chelan Chevron Facility No. 9-6590

Boring No./ Sample No.	Sample Date	TPH-G	TPH-D	TPH-O	B	T	E	X	Pb	MTBE	Naph	EDB
B30-30	03/06/03	32	<3	10	0.002	0.27	0.24	2.4	6.8	<0.005	0.19	0.005
3603001 (B30-30 dup)		32	120	10	0.02	0.081	0.19	1.3	6.5	0.047	0.29	*0.13*
	RPD:	0	***>190***	*0*	*0*	***108***	***23***	***59***	*4.5*	***>162***	***42***	***>185***
B31-85	03/07/03	<1	<3	<10	<0.002	<0.002	<0.002	<0.005	2.5	<0.005		
3703003 (B31-85 dup)		<1	<3	<10	<0.002	<0.002	<0.002	<0.005	2.5	<0.005		
	RPD:	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		
B-34-25	06/25/03	9.8	<3	19	0.02	0.4	0.2	1.5	----	<0.05	----	<0.001
B-062503-D (B-34-25 dup)		9.7	<3	27	0.02	0.4	0.2	1.5	----	<0.05	----	----
	RPD:	*1.0*	*0*	***35***	*0*	*0*	*0*	*0*		*0*		
VB-5B-20	06/27/03	1.6	<3	38	**0.3**	0.04	0.08	0.2	----	<0.05		
VB-062703-D (VB-5B-20 dup)		1.3	<3	<10	**0.2**	0.02	0.05	0.1	----	<0.05		
	RPD:	***21***	*0*	***>117***	***40***	***67***	***46***	***67***		*0*		

Reference: This RI/FS Report.

TPH-D = Total Petroleum Hydrocarbons, diesel range
TPH-O = Total Petroleum Hydrocarbons, heavy oil range
TPH-G = Total Petroleum Hydrocarbons, gasoline-range
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
MTBE = Methyl tertiary butyl ether
Naph = Naphthalene
EDB = 1,2-Dibromoethane (ethylene dibromide)
Pb = Lead

RPD = Relative Percent Difference = (Absolute(S-SD)*100/Average Concentration)%
S = Sample Concentration; SD = Sample Duplicate Concentration

Note: 14 out of 36 sample-analysis pairs are above the RPD standard of 20% (in bold).

Relative Percent Difference
For RI Soil Vapor Duplicate Samples
Chelan Chevron Facility No. 9-6590
Analytical units in ppbv

Well/ Sample Number	Screen Interval (feet bgs)[1]	Sample Date	C_2-C_{10} Hydro-carbons	Benzene	Toluene	Ethyl-benzene	m/p-Xylene	o-Xylene	Total Xylenes
VW-5B	8.5 - 11	7/1/2003	4,500	10	6	2	3	3	----
VW-070103-1 (VW-5B dup)			4,000	10	6	2	4	3	----
		RPD:	*12*	*0*	*0*	*0*	***29***	*0*	
VW-5A	18.5 - 21	7/1/2003	7,100,000	90,000	10,000	10,000	----	----	30,000
VW-070103-2 (VW-5A dup)			6,600,000	80,000	10,000	10,000	----	----	30,000
		RPD:	*7.3*	*12*	*0*	*0*			*0*

RPD = Relative Percent Difference = (Absolute(S-SD)*100/Average Concentration)%
S = Sample Concentration; SD = Sample Duplicate Concentration

Note: 1 out of 11 sample-analysis pairs are above the RPD standard of 20% (in bold).

Relative Percent Difference
For RI Groundwater Duplicate Samples
Chelan Chevron Facility No. 9-6590

Well No.	Sample Date	TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Xylenes
MW-5	4/2/03	<50	<250	<250	<0.5	<0.5	<0.5	<1.5
MW-5 (dup)		<50	<250	<250	<0.5	<0.5	<0.5	<1.5
RPD:		*0*	*0*	*0*	*0*	*0*	*0*	*0*
MW-17	10/23/03	4600	480	<94	13	5.3	1.6	66
MW-17 (dup)		4800	470	100	12	5.3	1.5	69
RPD:		*4*	*2*	*6*	*8*	*0*	*6*	*4*
MW-19	10/24/03	1500	100	130	1100	17	1	6.3
MW-19 (dup)		910	750	140	1500	27	<2.5	9.7
RPD:		***49***	***153***	*7*	***31***	***45***	***86***	***43***
MW-19	1/13/04	1200	570	310	1200	21	<2.0	8.4
MW-19 (dup)		1200	650	280	1200	22	<2.0	7.9
RPD:		*0*	*13*	*10*	*0*	*5*	*0*	*6*
MW-28	7/15/03	3800	<250	<250	<10	5	0.8	260
MW-28 (dup)		4300	<250	<250	<10	4.4	1	280
RPD:		*12*	*0*	*0*	*0*	*13*	***22***	*7.4*
MW-30	4/2/03	<50	<250	<250	<0.5	<0.5	<0.5	<1.5
MW-30 (dup)		<50	<250	<250	<0.5	<0.5	<0.5	<1.5
RPD:		0	0	0	0	0	0	0
MW-30	1/12/05	<48	<83	<100	<0.5	<0.5	<0.5	<1.5
MW-30 (dup)		<48	<82	<100	<0.5	<0.5	<0.5	<1.5
RPD:		0	*1*	0	0	0	0	0
MW-31	1/13/04	<50	<100	<130	<0.2	<0.2	<0.2	<0.6
MW-31 (dup)		<50	<94	<120	<0.2	<0.2	<0.2	<0.6
RPD:		*0*	*6*	*8*	*0*	*0*	*0*	*0*
MW-31	4/13/04	<50	<76	<95	<0.5	<0.5	<0.5	<1.5
MW-31 (dup)		<50	<75	<94	<0.5	<0.5	<0.5	<1.5
RPD:		*0*	*1*	*1*	0	0	0	0
MW-37	7/13/04	<50	<76	<95	<0.5	<0.5	<0.5	<1.5
MW-37 (dup)		<50	<76	<95	<0.5	<0.5	<0.5	<1.5
RPD:		*0*	0	0	0	0	0	0
MW-37	10/13/04	<50	<80	<100	<0.5	<0.5	<0.5	<1.5
MW-37 (dup)		<50	<81	<100	<0.5	<0.5	<0.5	<1.5
RPD:		*0*	*1*	0	0	0	0	0

Reference: This RI/FS Report.

TPH-D = Total Petroleum Hydrocarbons, diesel range

TPH-O = Total Petroleum Hydrocarbons, heavy oil range

TPH-G = Total Petroleum Hydrocarbons, gasoline-range

RPD = Relative Percent Difference = (Absolute(S-SD)*100/Average Concentration)%

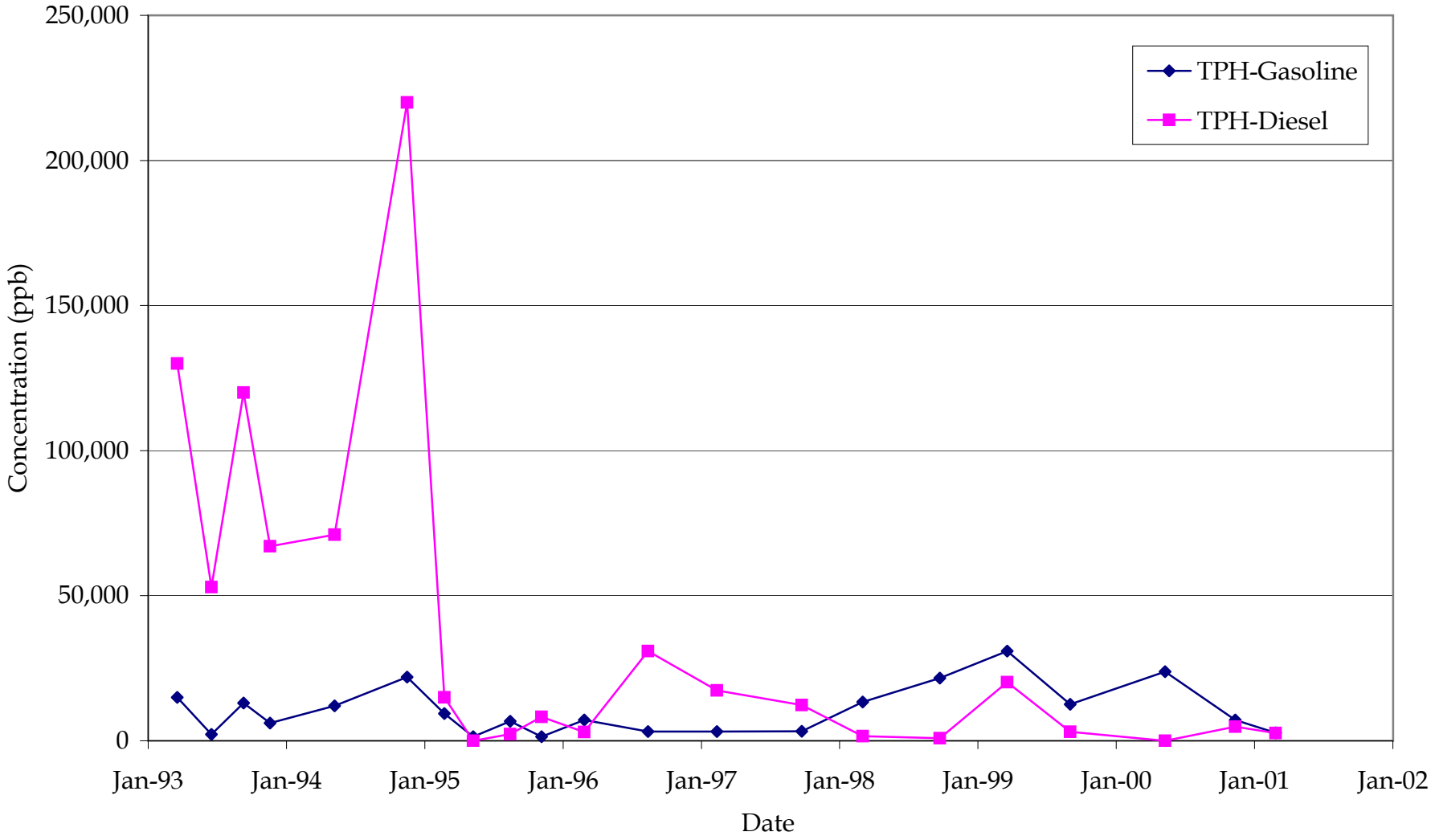
S = Sample Concentration; SD = Sample Duplicate Concentration

Note: 1 out of 21 sample-analysis pairs are above the RPD standard of 20% (in bold).

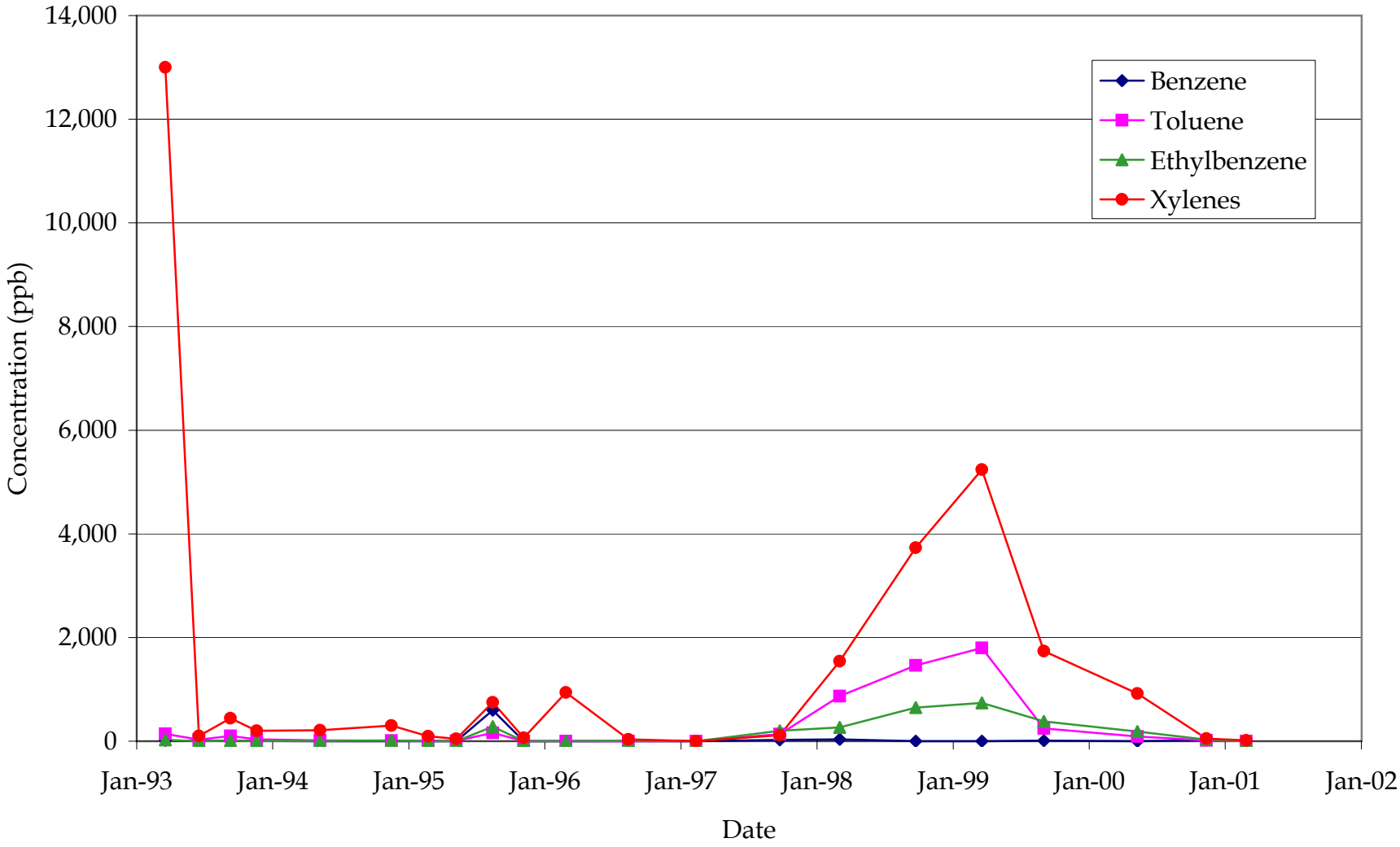
APPENDIX D: MISCELLANEOUS FIELD AND ANALYTICAL INFORMATION

Charts of TPH and BTEX Data for Groundwater Since 1992

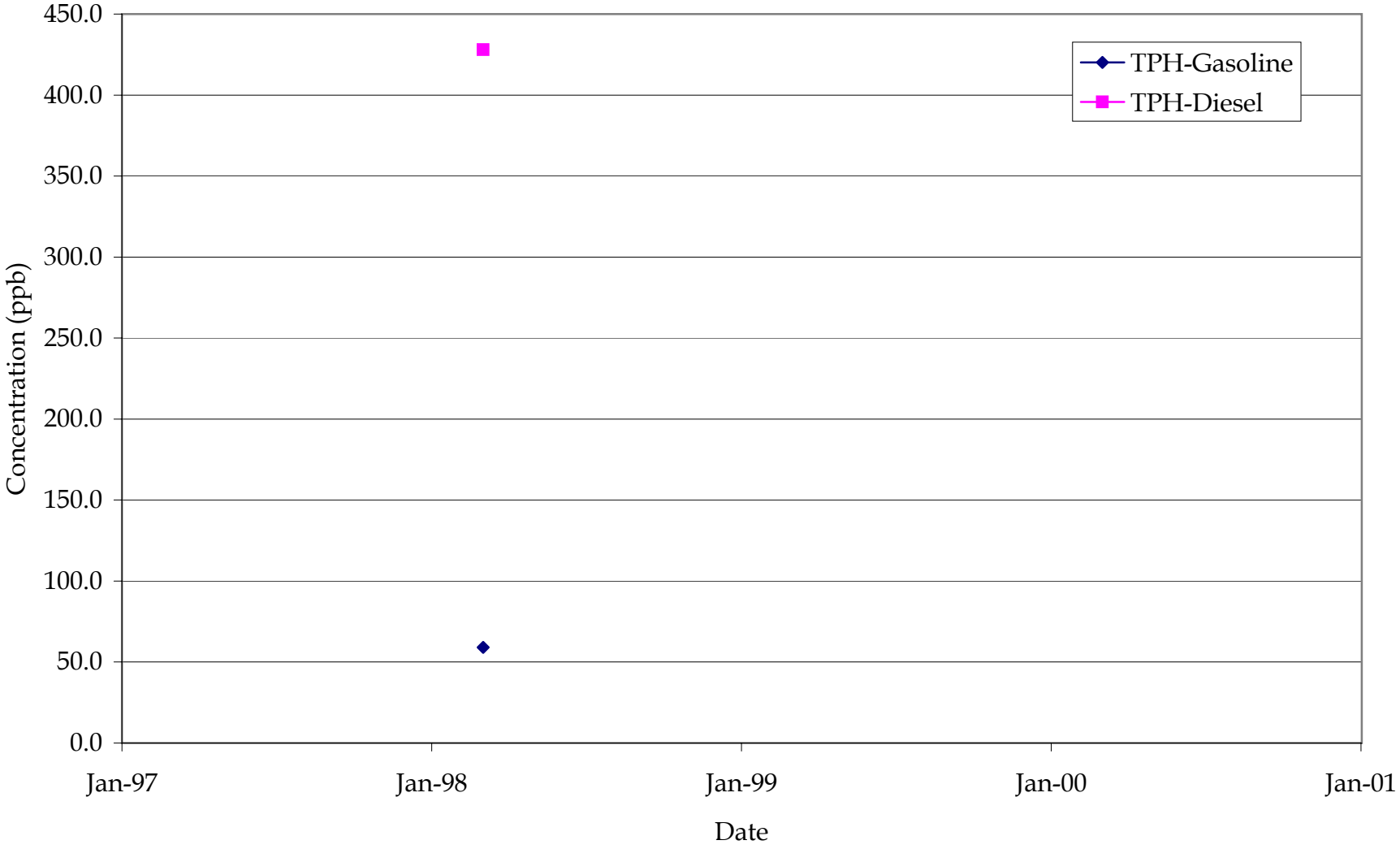
MW-2: TPH-Gasoline, TPH-Diesel



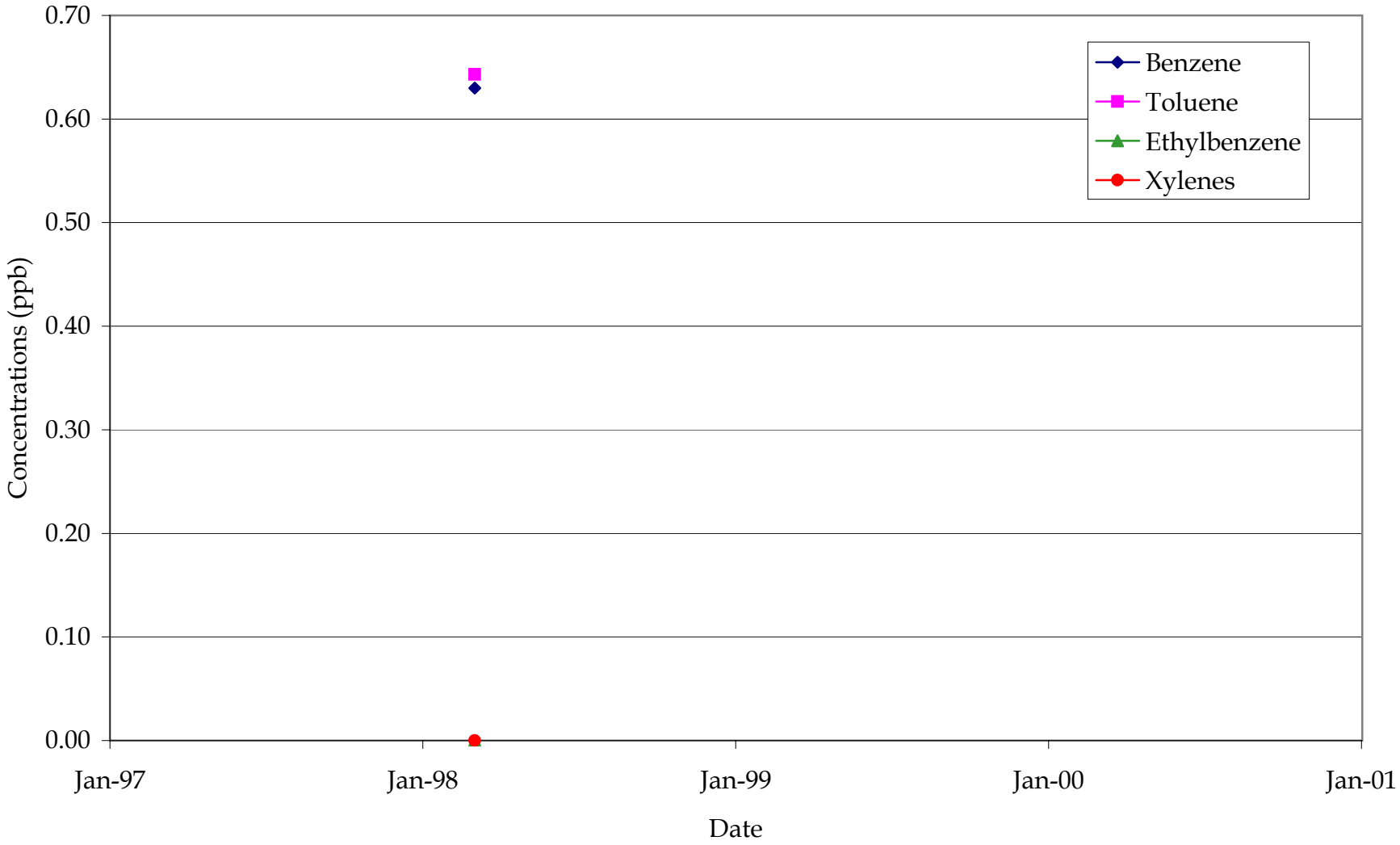
MW-2: Benzene, Toluene, Ethylbenzene, Xylenes



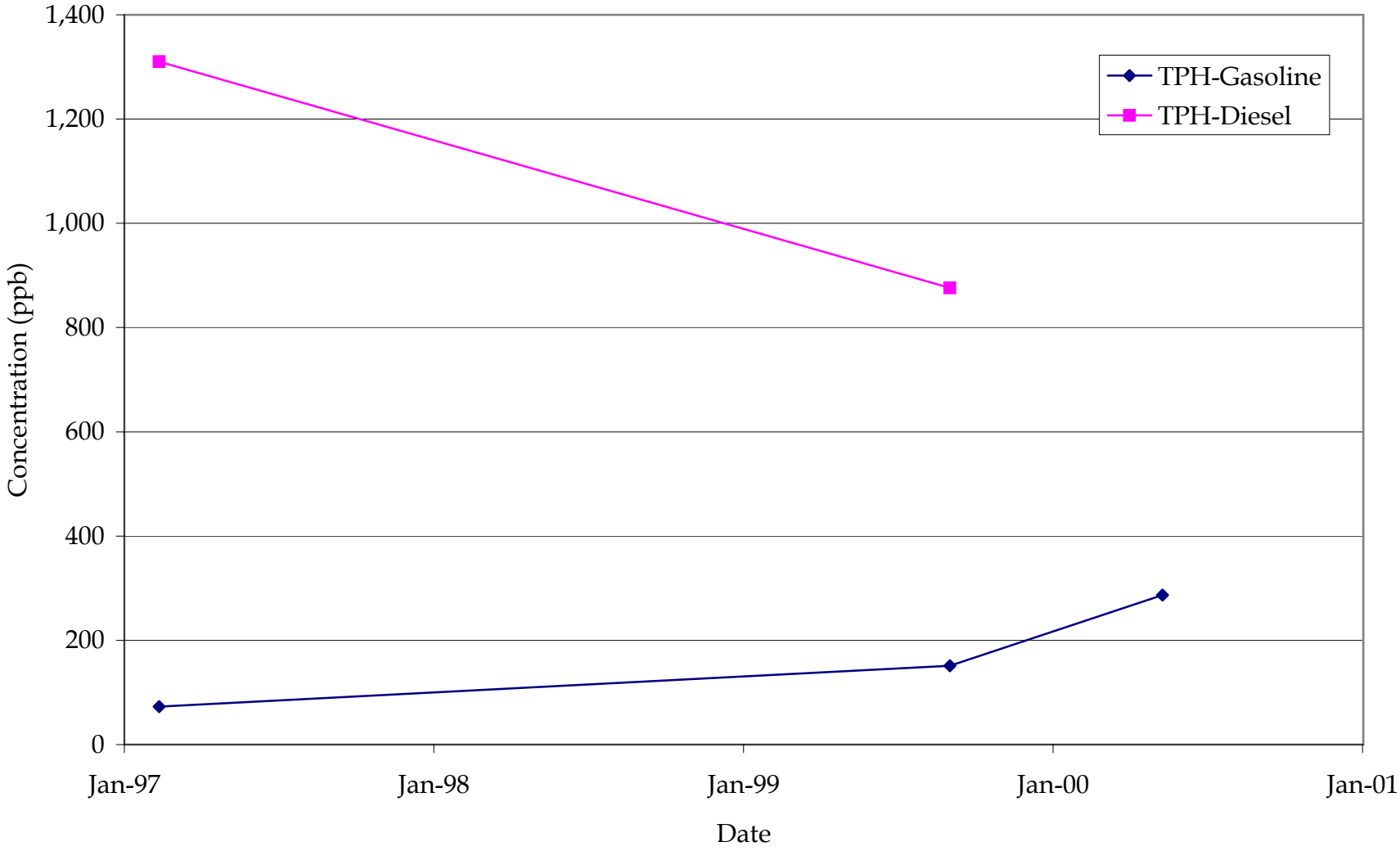
MW-3: TPH-Gasoline, TPH-Diesel



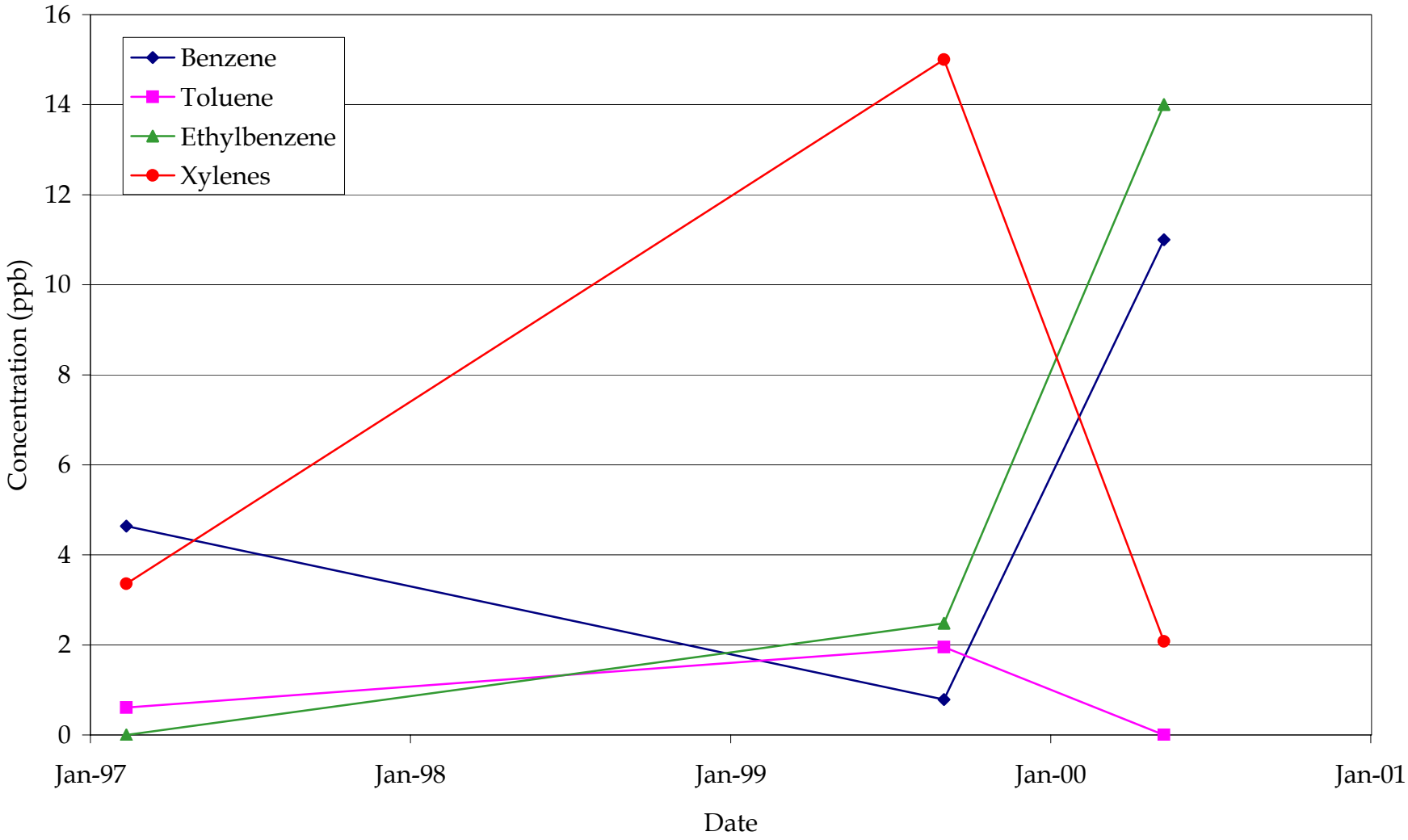
MW-3: Benzene, Toluene, Ethylbenzene, Xylenes



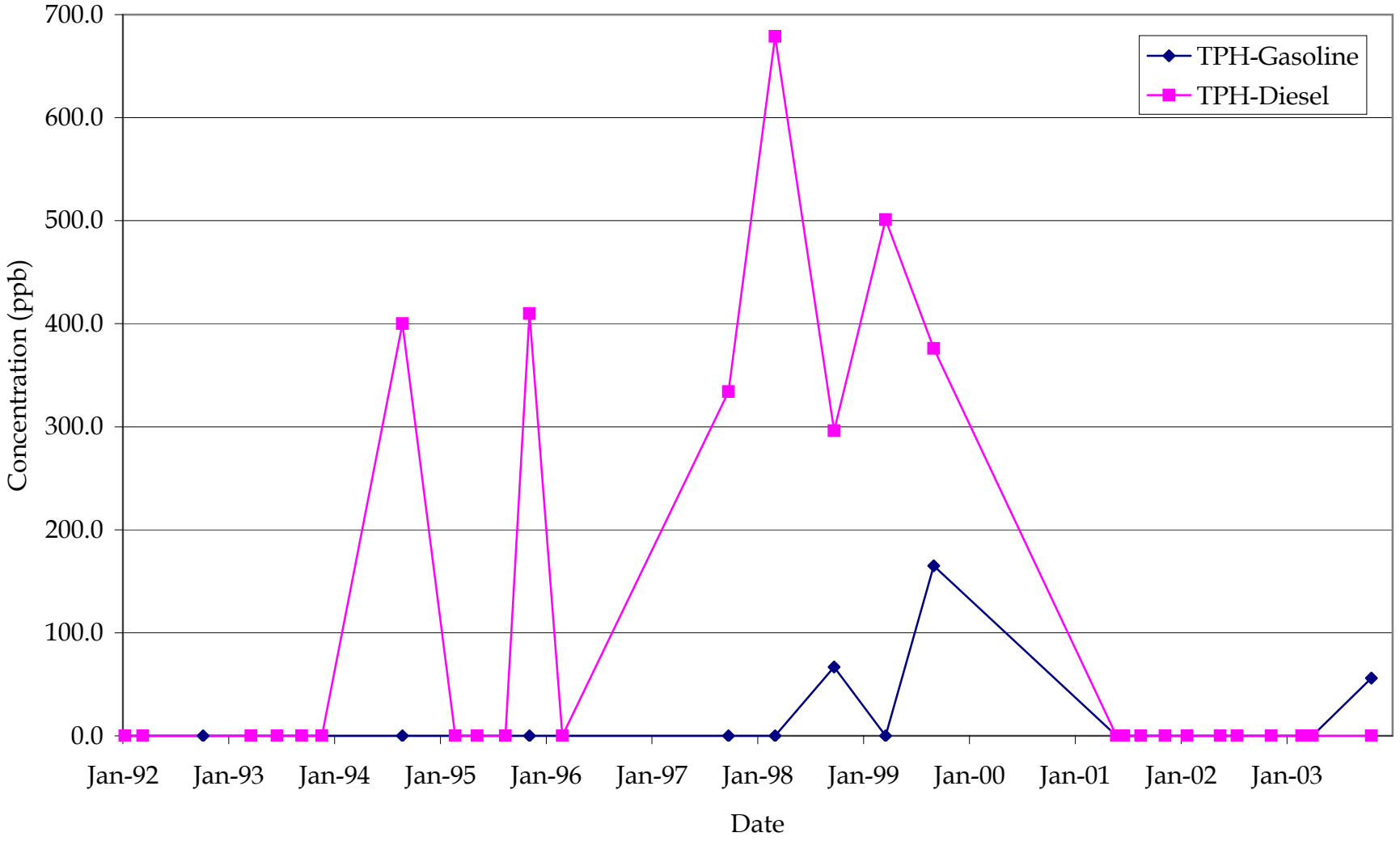
MW-4: TPH-Gasoline, TPH-Diesel



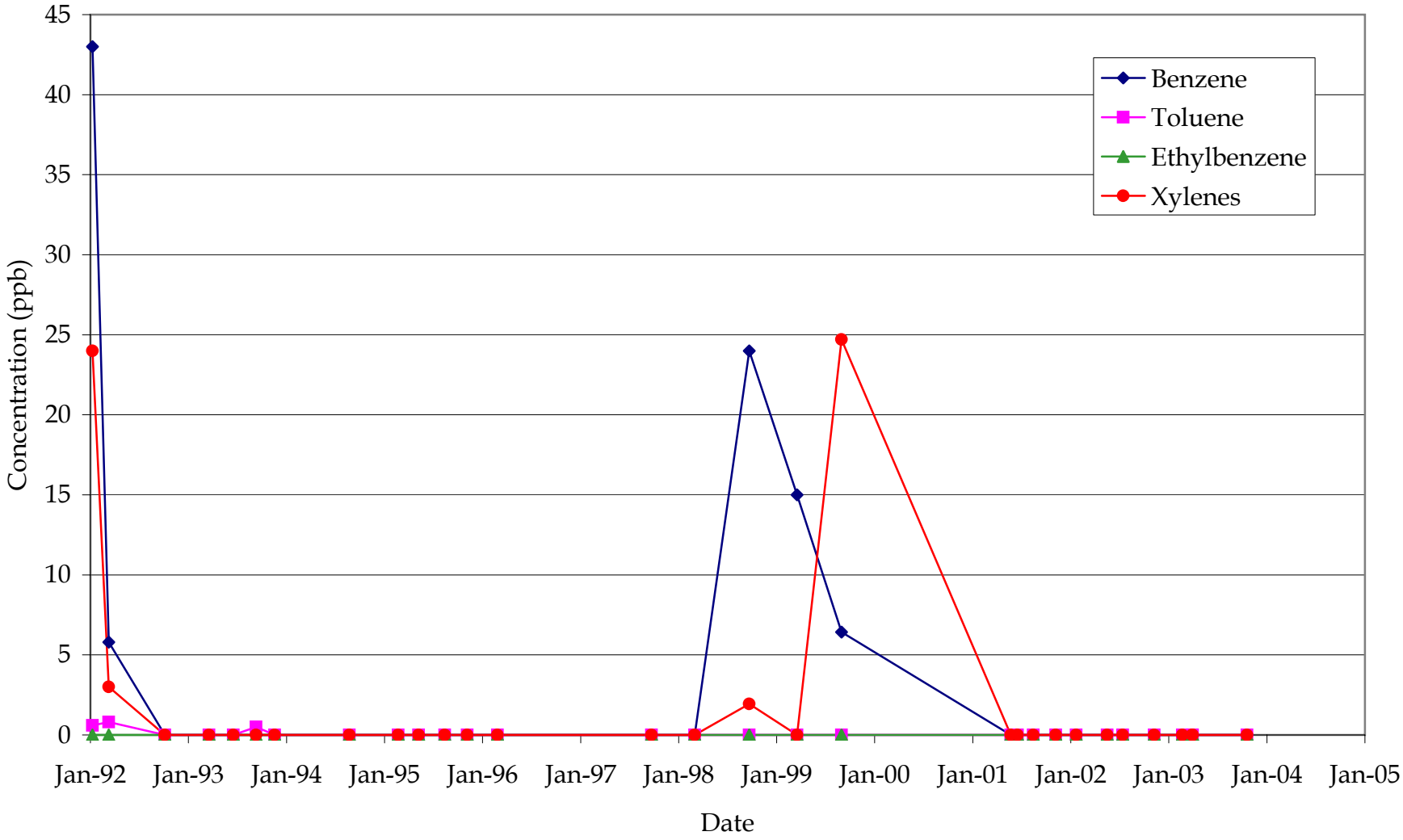
MW-4: Benzene, Toluene, Ethylbenzene, Xylenes



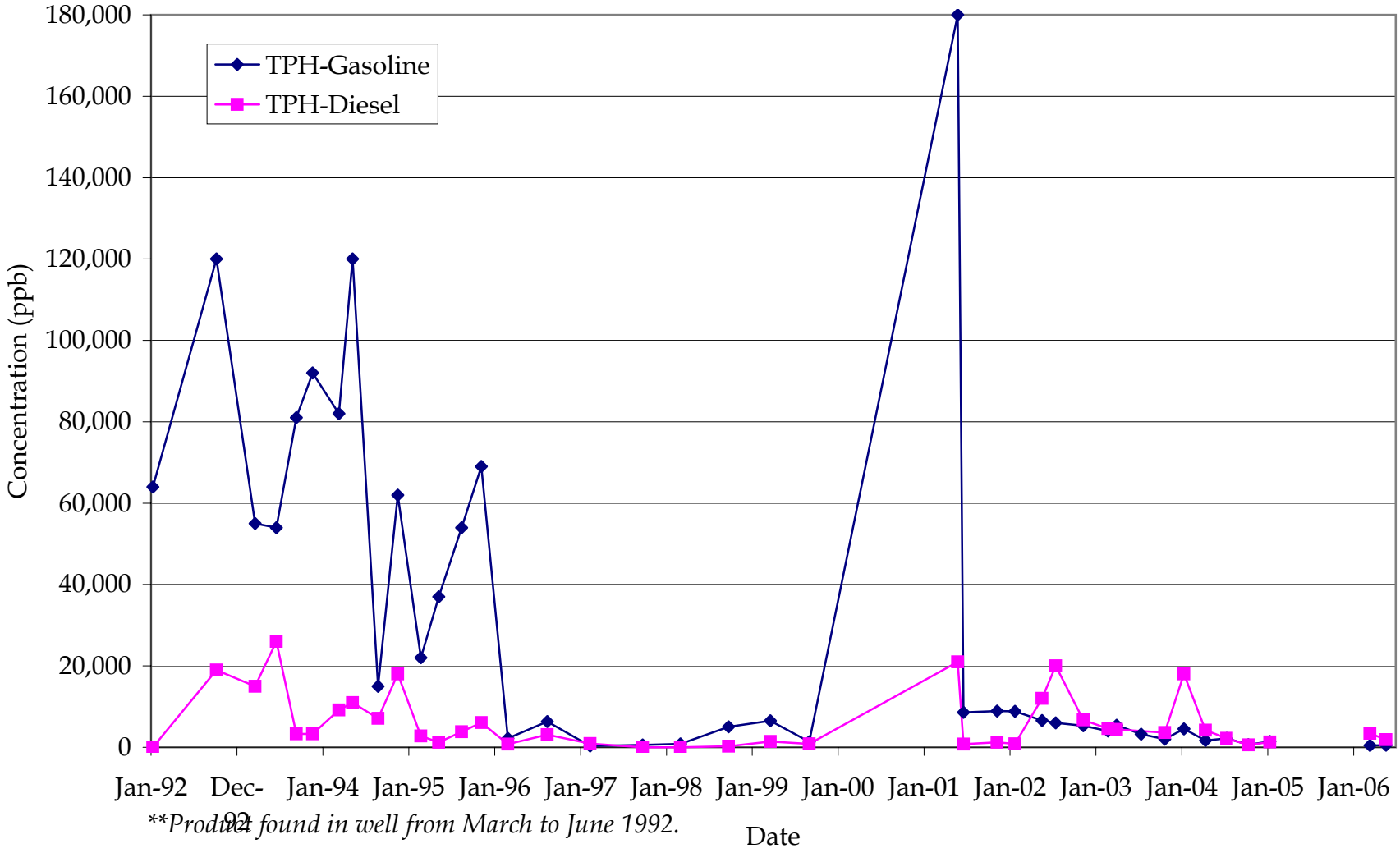
MW-5: TPH-Gasoline, TPH-Diesel



MW-5: Benzene, Toluene, Ethylbenzene, Xylenes

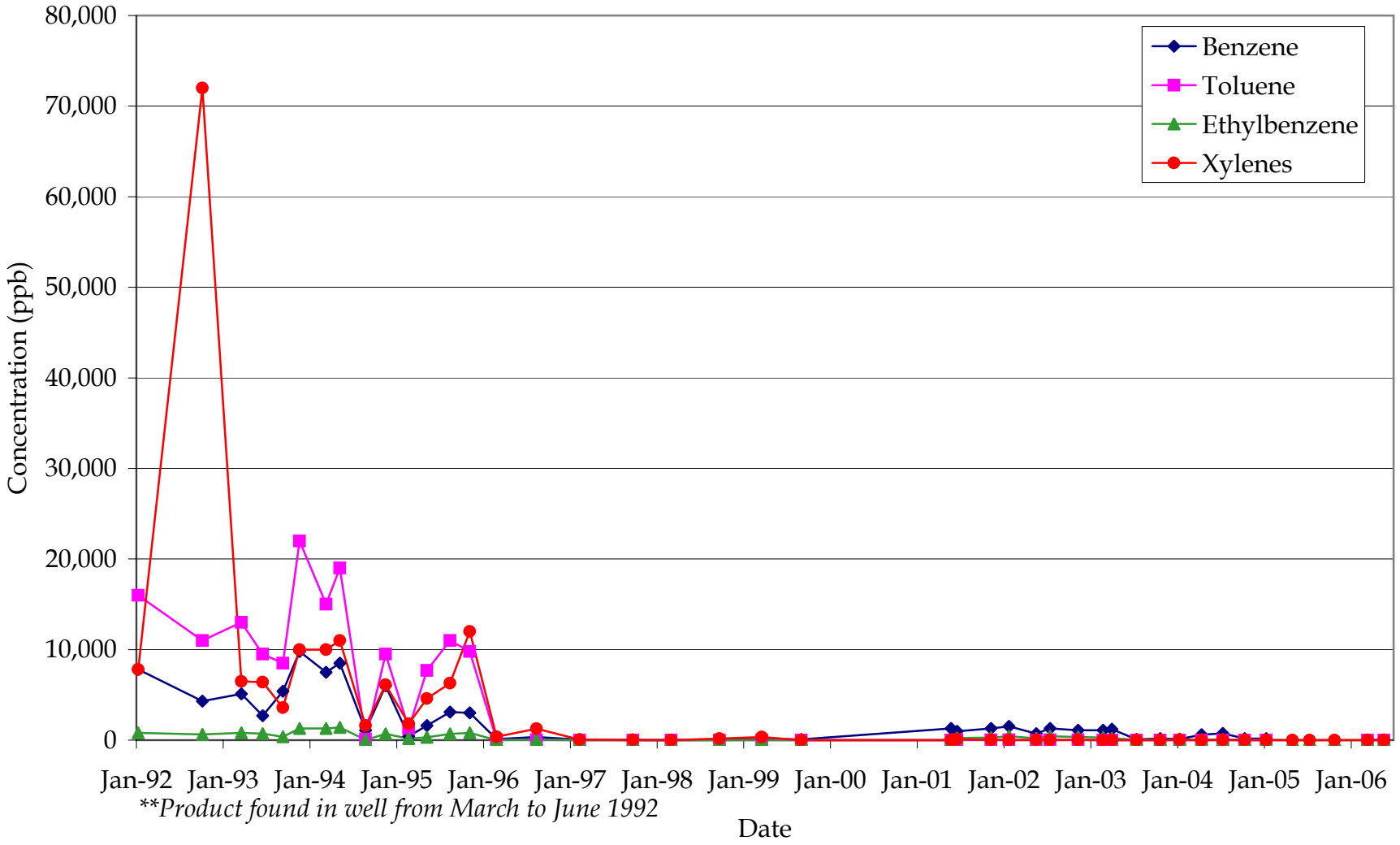


MW-6: TPH-Gasoline, TPH-Diesel



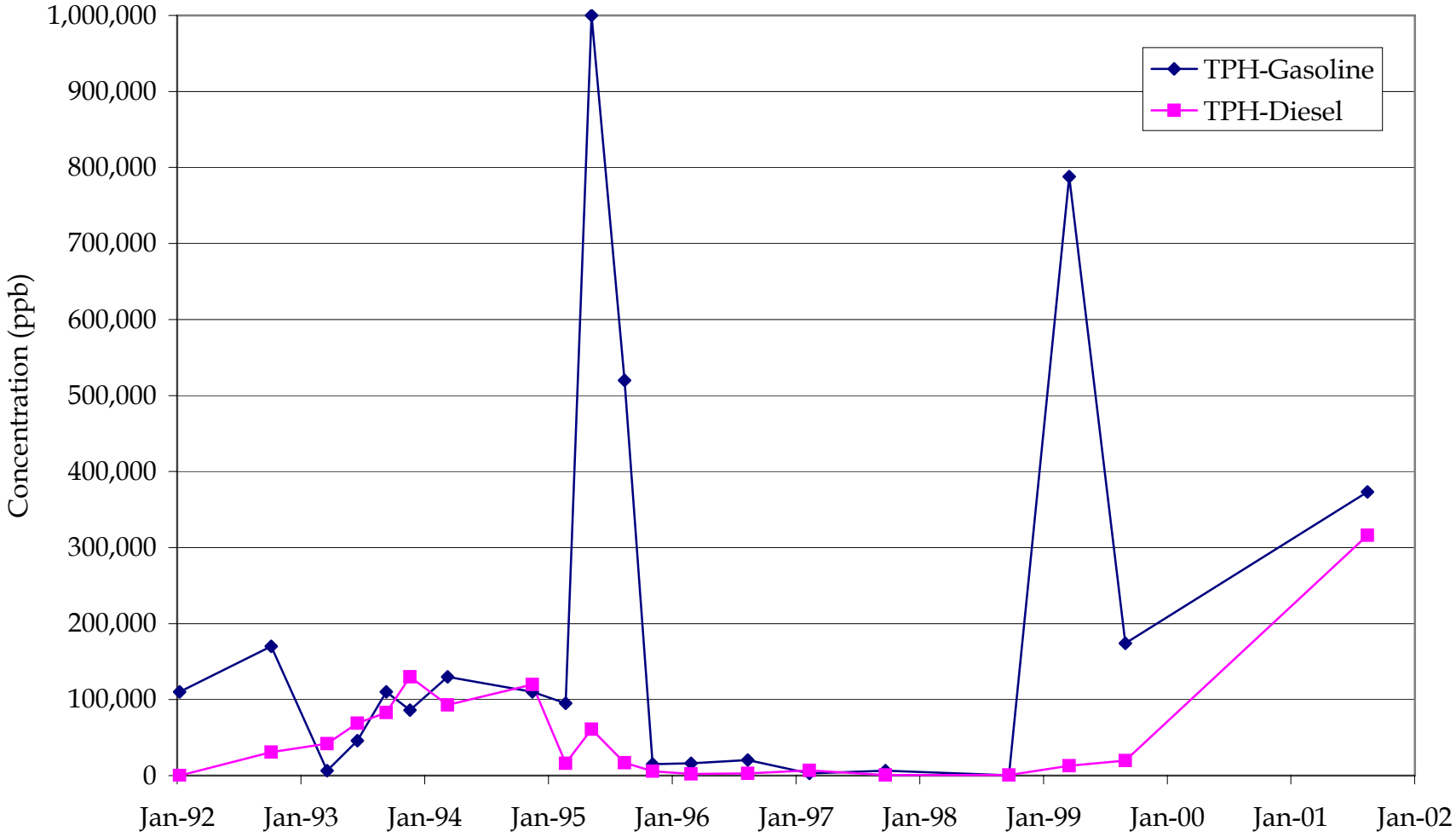
***Product found in well from March to June 1992.*

MW-6: Benzene, Toluene, Ethylbenzene, Xylenes



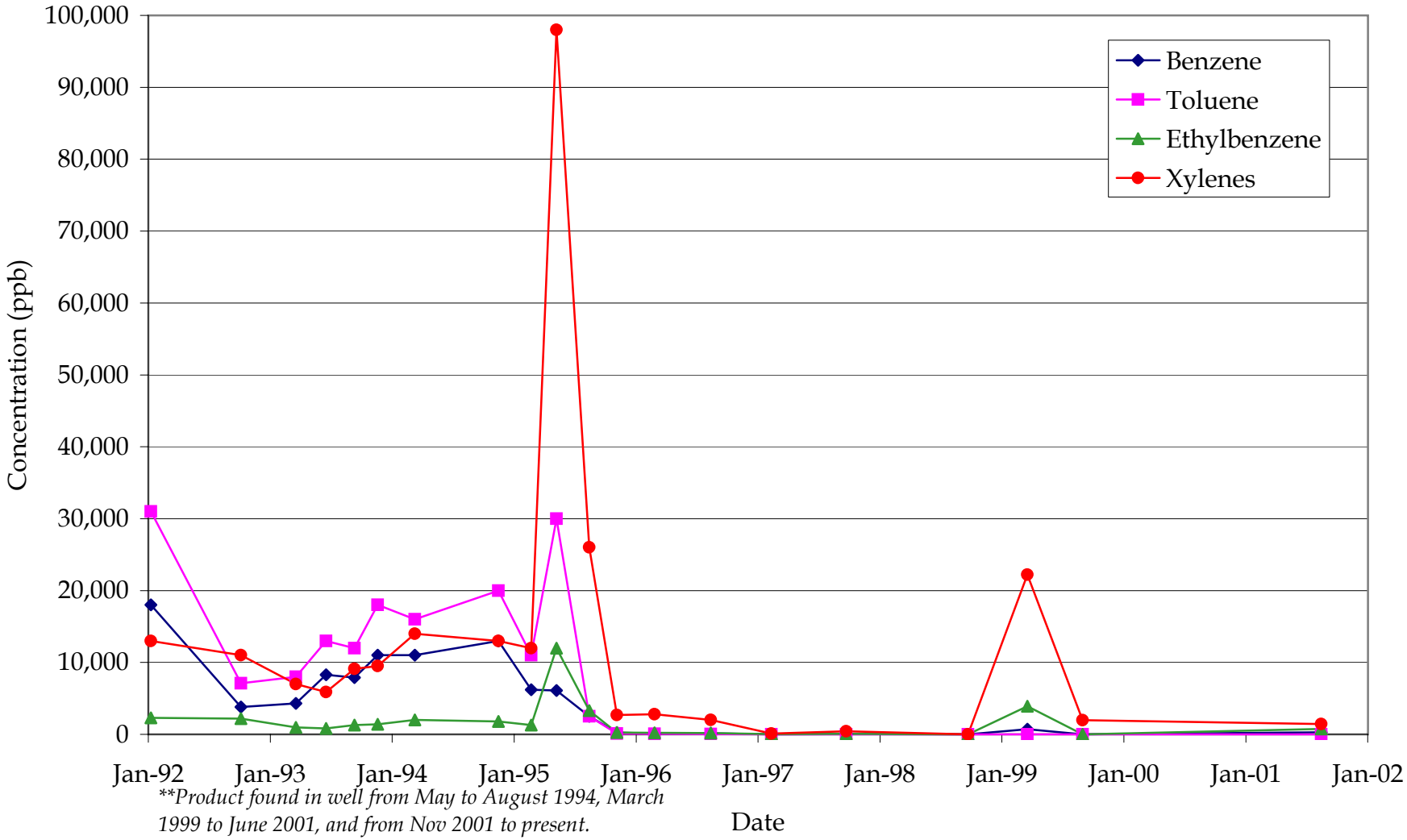
***Product found in well from March to June 1992*

MW-7: TPH-Gasoline, TPH-Diesel



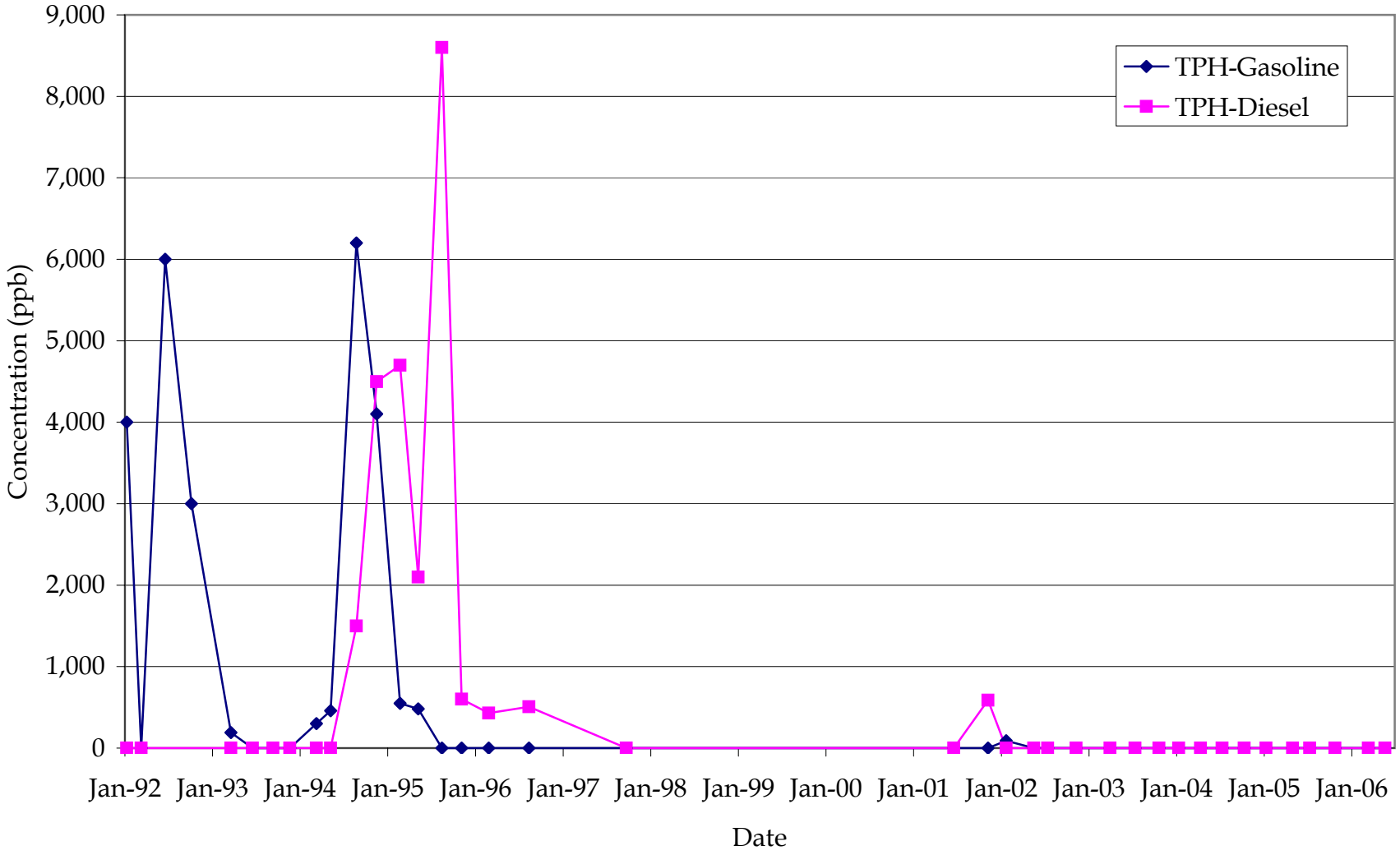
***Product found in well from May to August 1994, March 1999 to June 2001, and from Nov 2001 to present.*

MW-7: Benzene, Toluene, Ethylbenzene, Xylenes

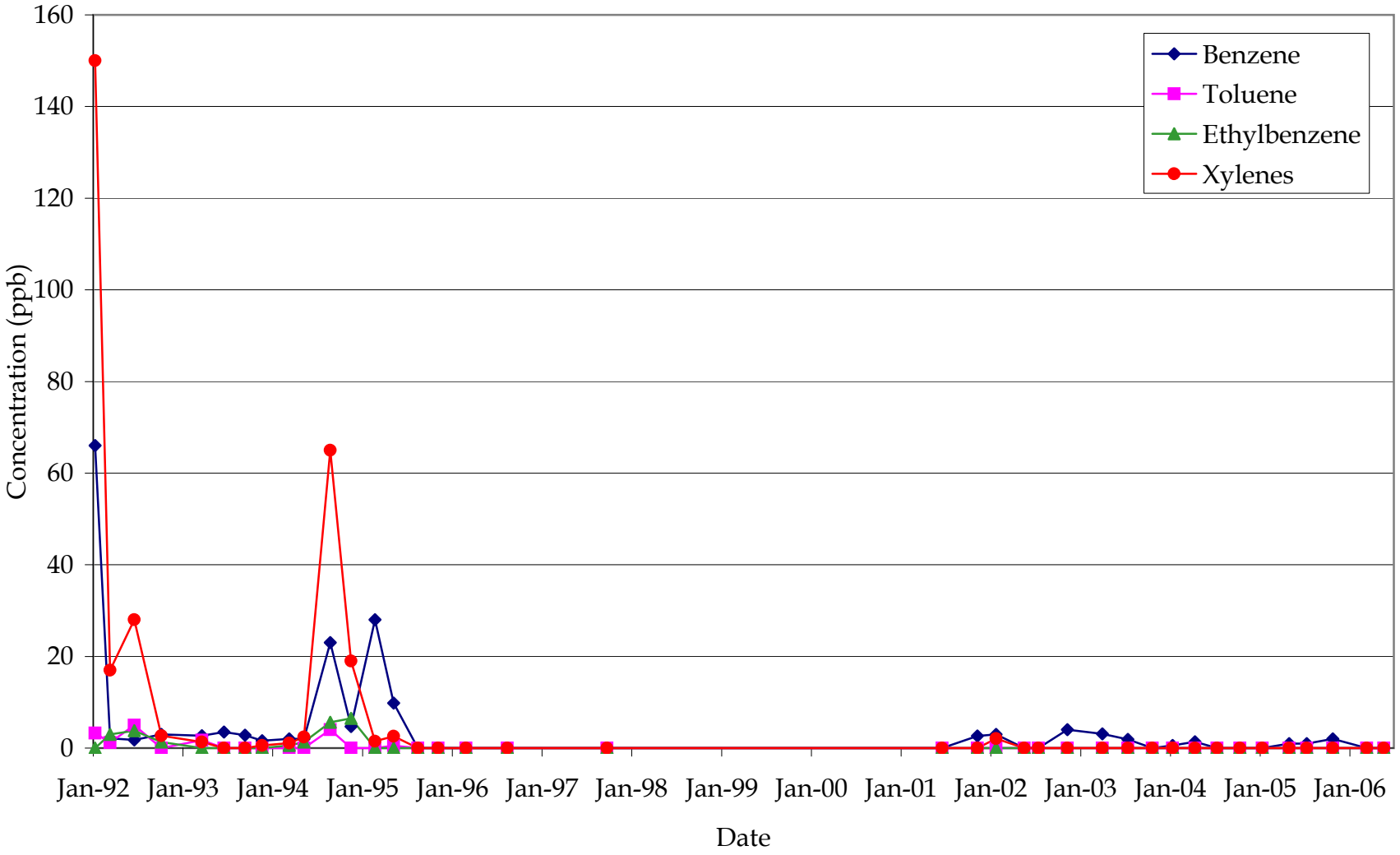


***Product found in well from May to August 1994, March 1999 to June 2001, and from Nov 2001 to present.*

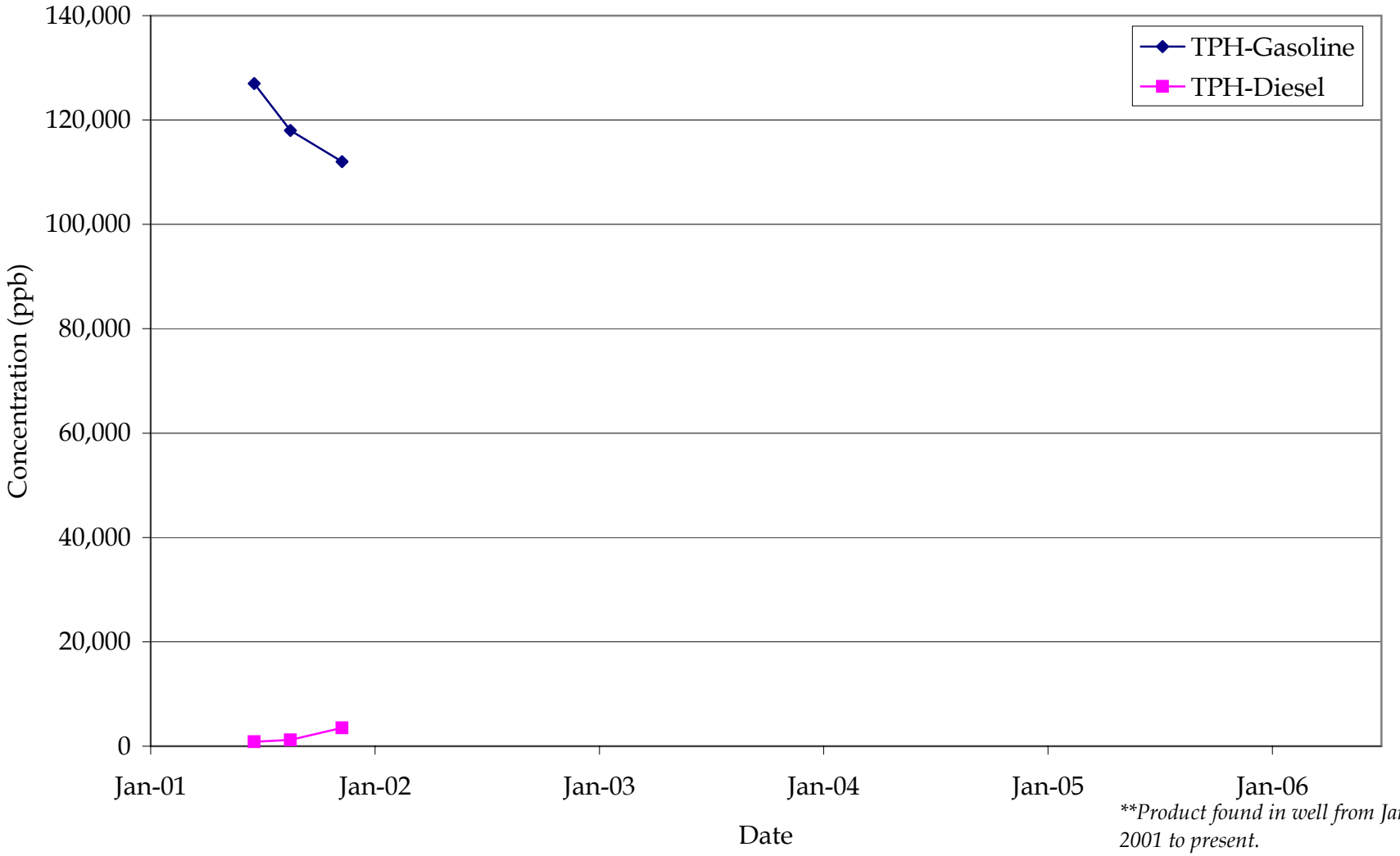
MW-8: TPH-Gasoline, TPH-Diesel



MW-8: Benzene, Toluene, Ethylbenzene, Xylenes

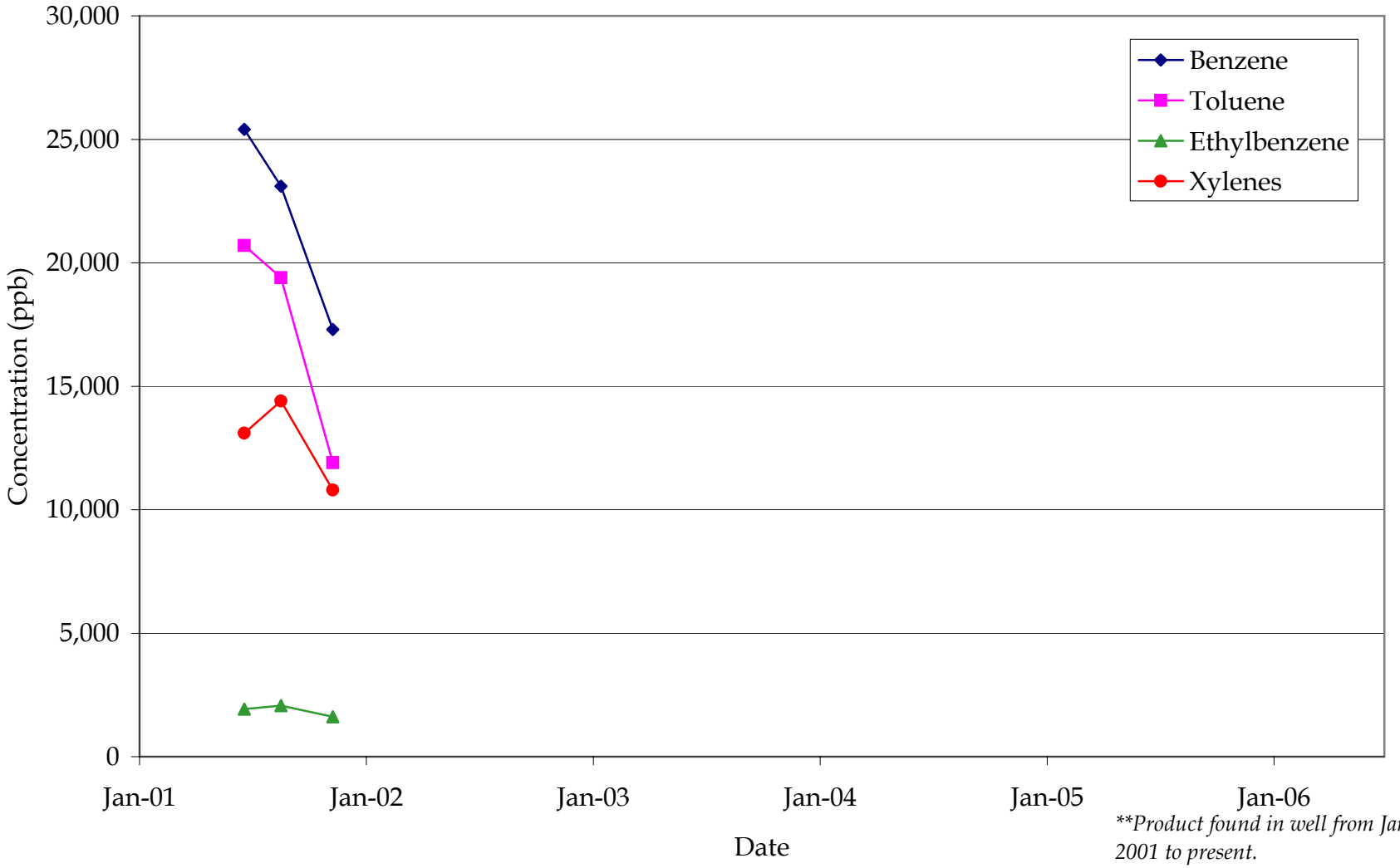


MW-9: TPH-Gasoline, TPH-Diesel



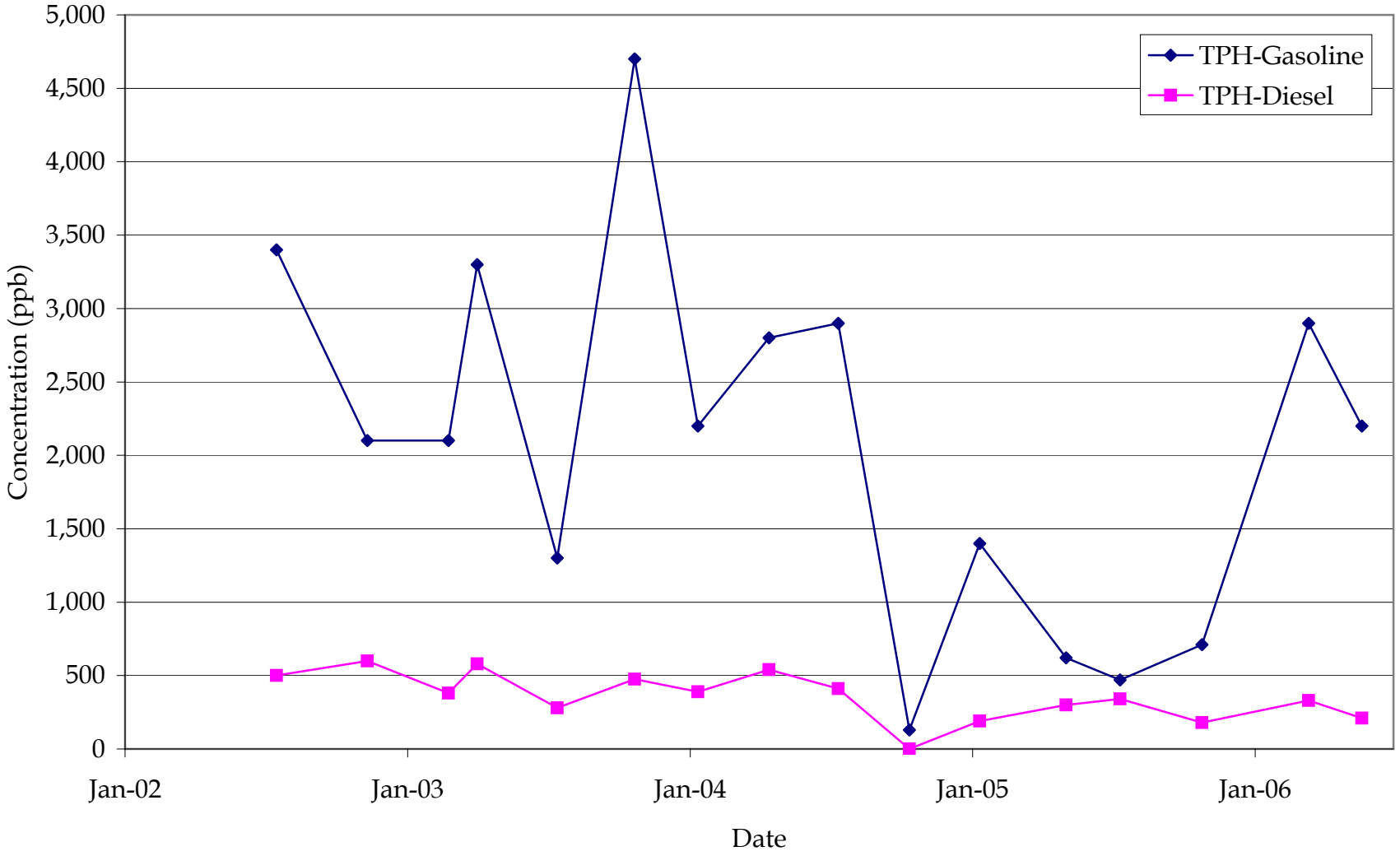
***Product found in well from Jan 2001 to present.*

MW-9: Benzene, Toluene, Ethylbenzene, Xylenes

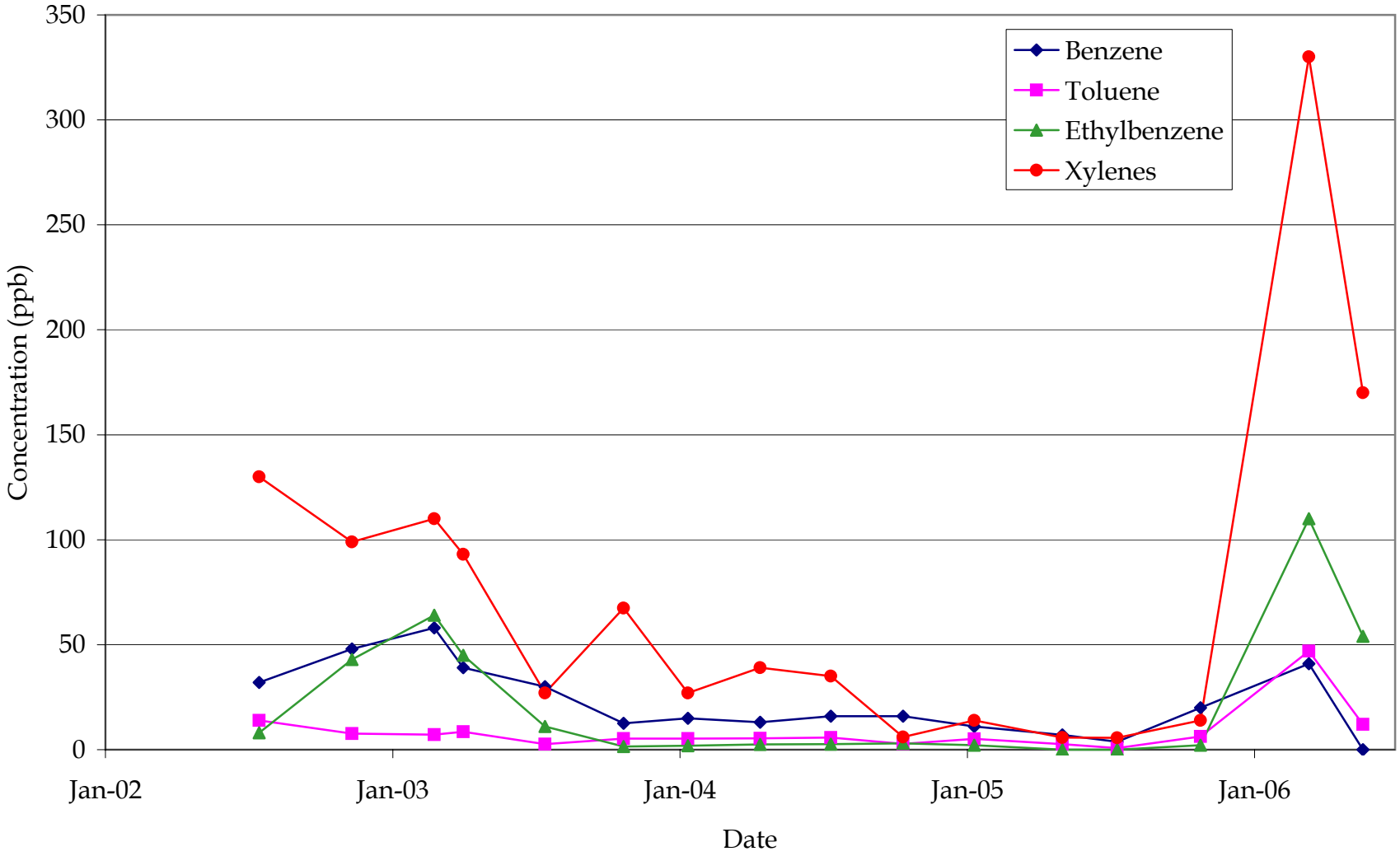


***Product found in well from Jan 2001 to present.*

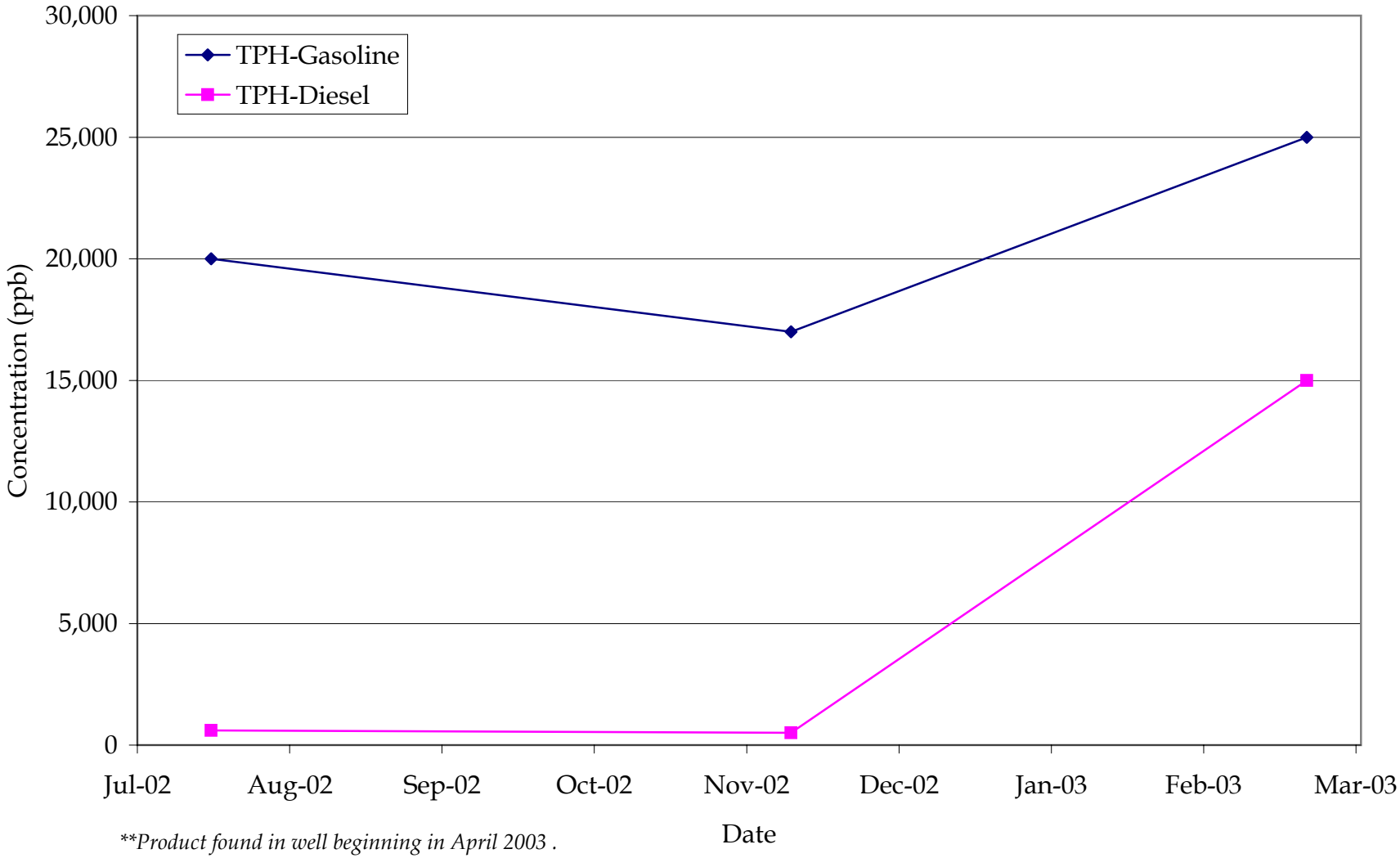
MW-17: TPH-Gasoline, TPH-Diesel



MW-17: Benzene, Toluene, Ethylbenzene, Xylenes

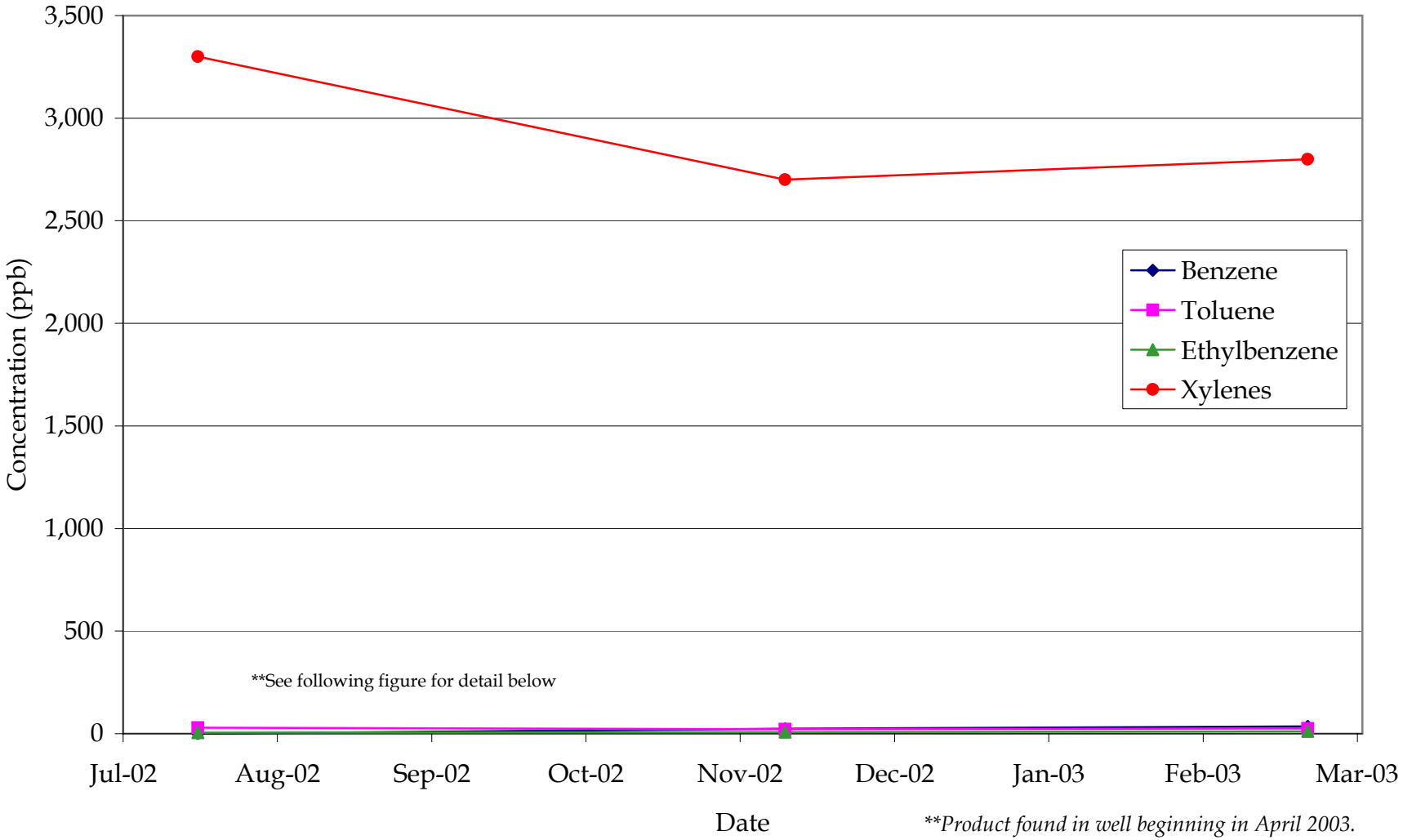


MW-18: TPH-Gasoline, TPH-Diesel



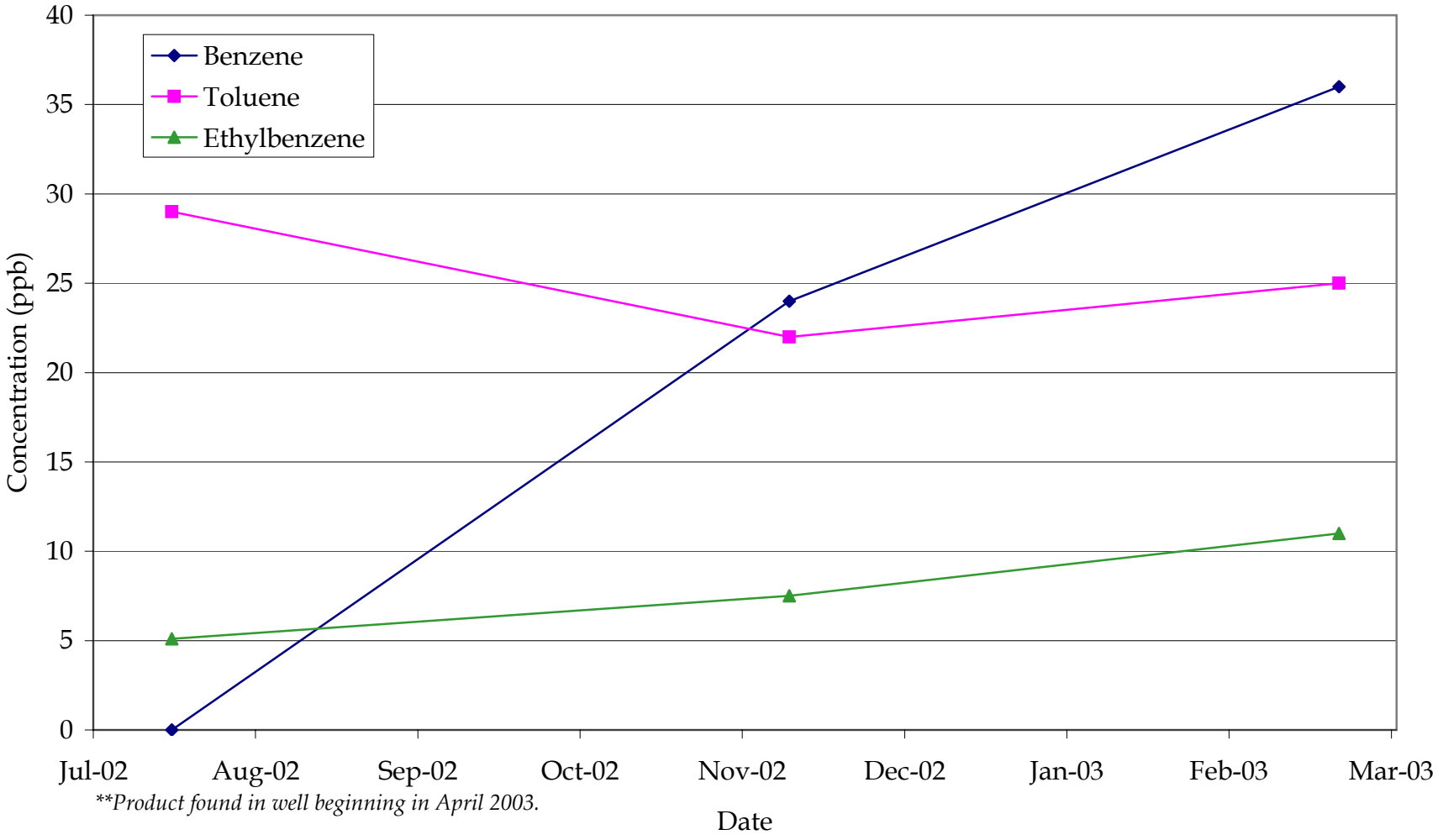
***Product found in well beginning in April 2003 .*

MW-18: Benzene, Toluene, Ethylbenzene, Xylenes



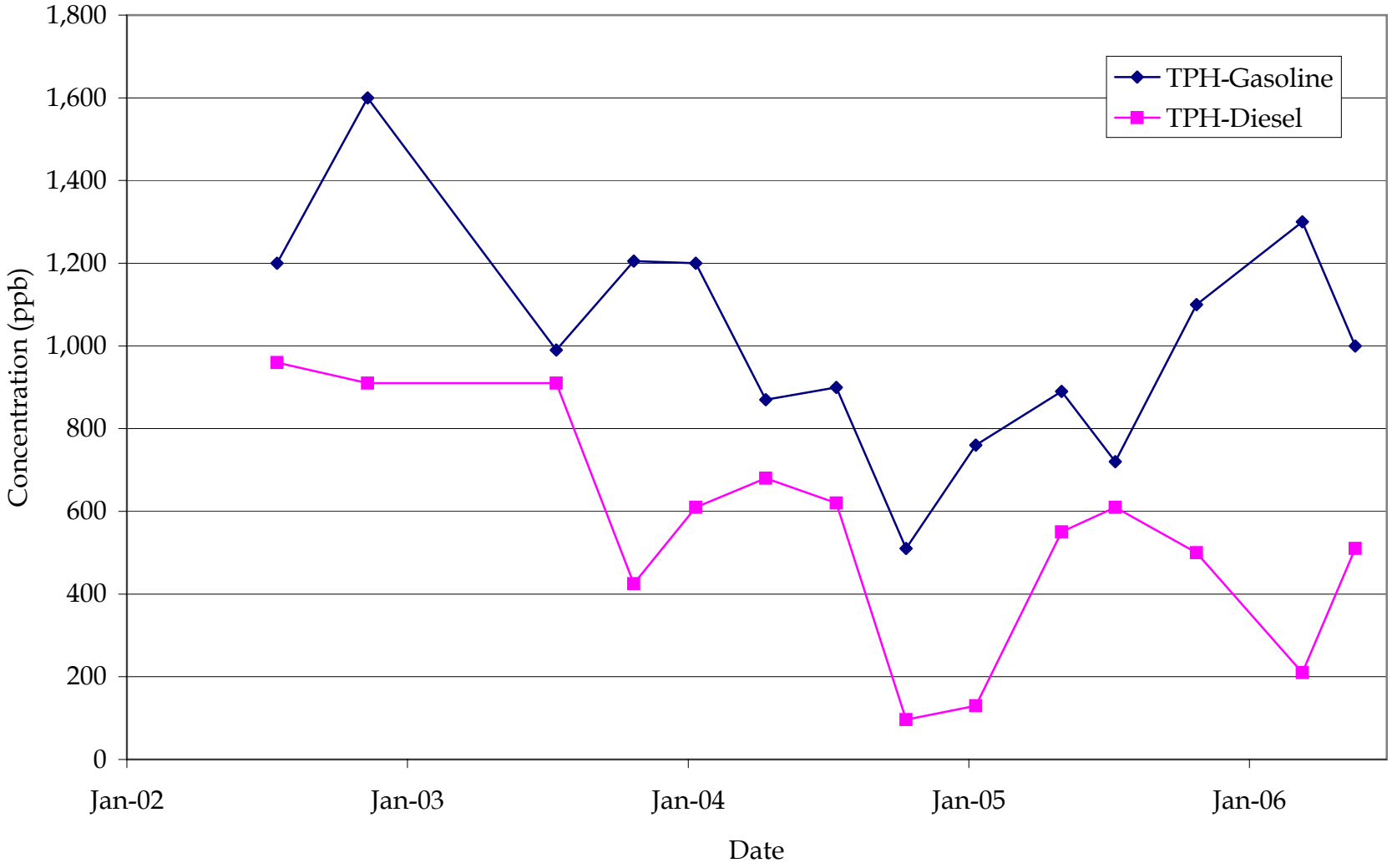
***Product found in well beginning in April 2003.*

MW-18: Benzene, Toluene, Ethylbenzene

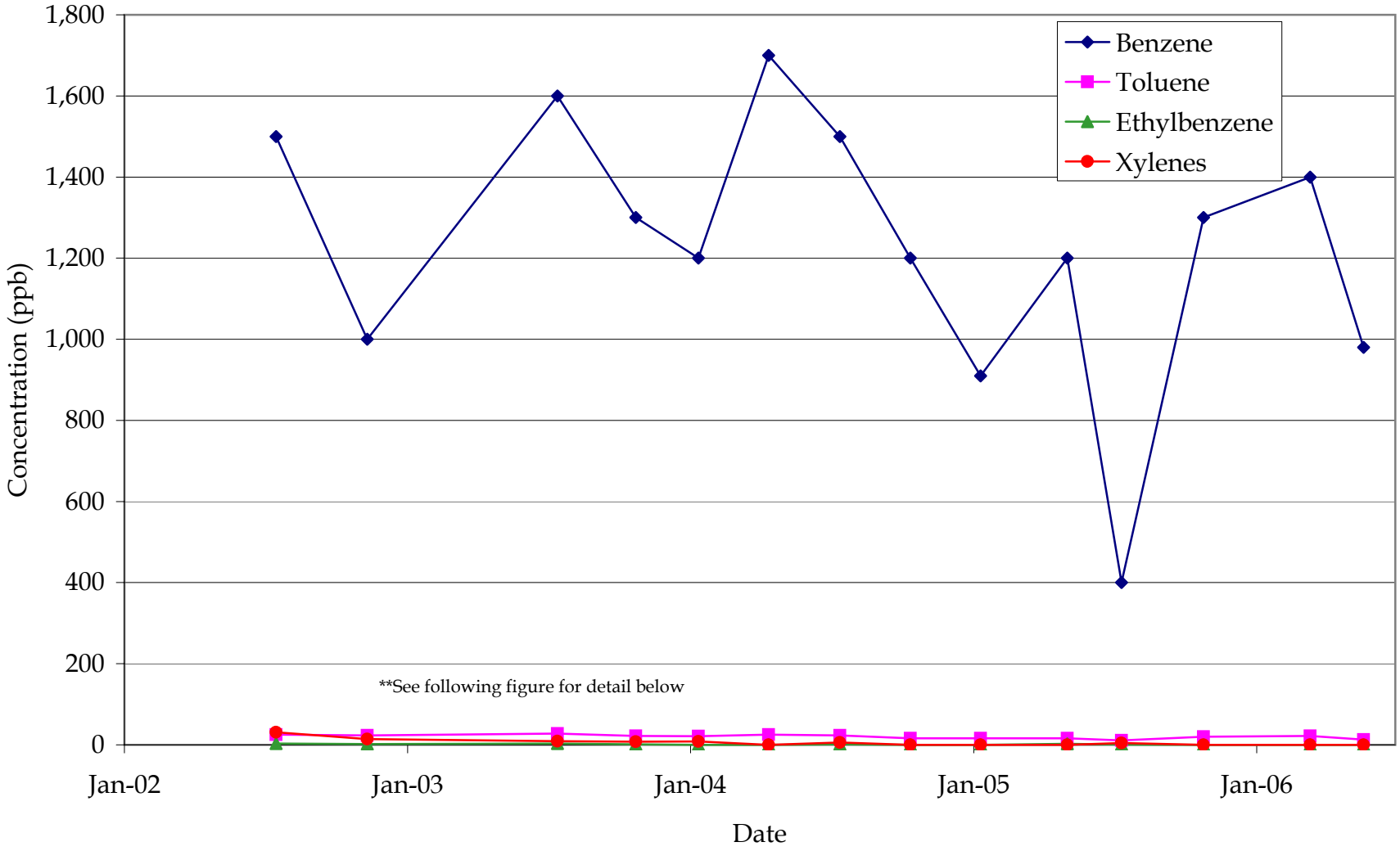


***Product found in well beginning in April 2003.*

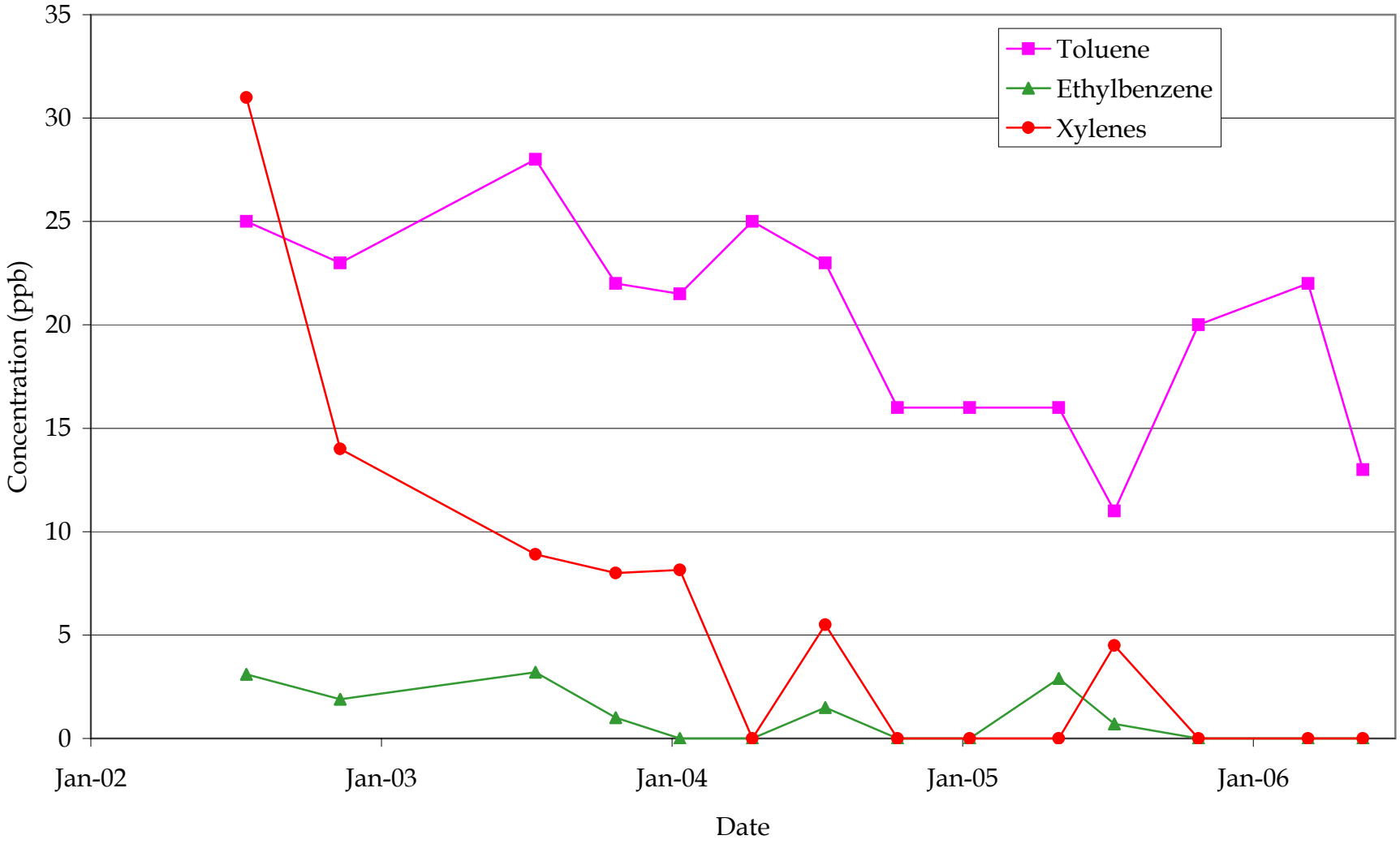
MW-19: TPH-Gasoline, TPH-Diesel



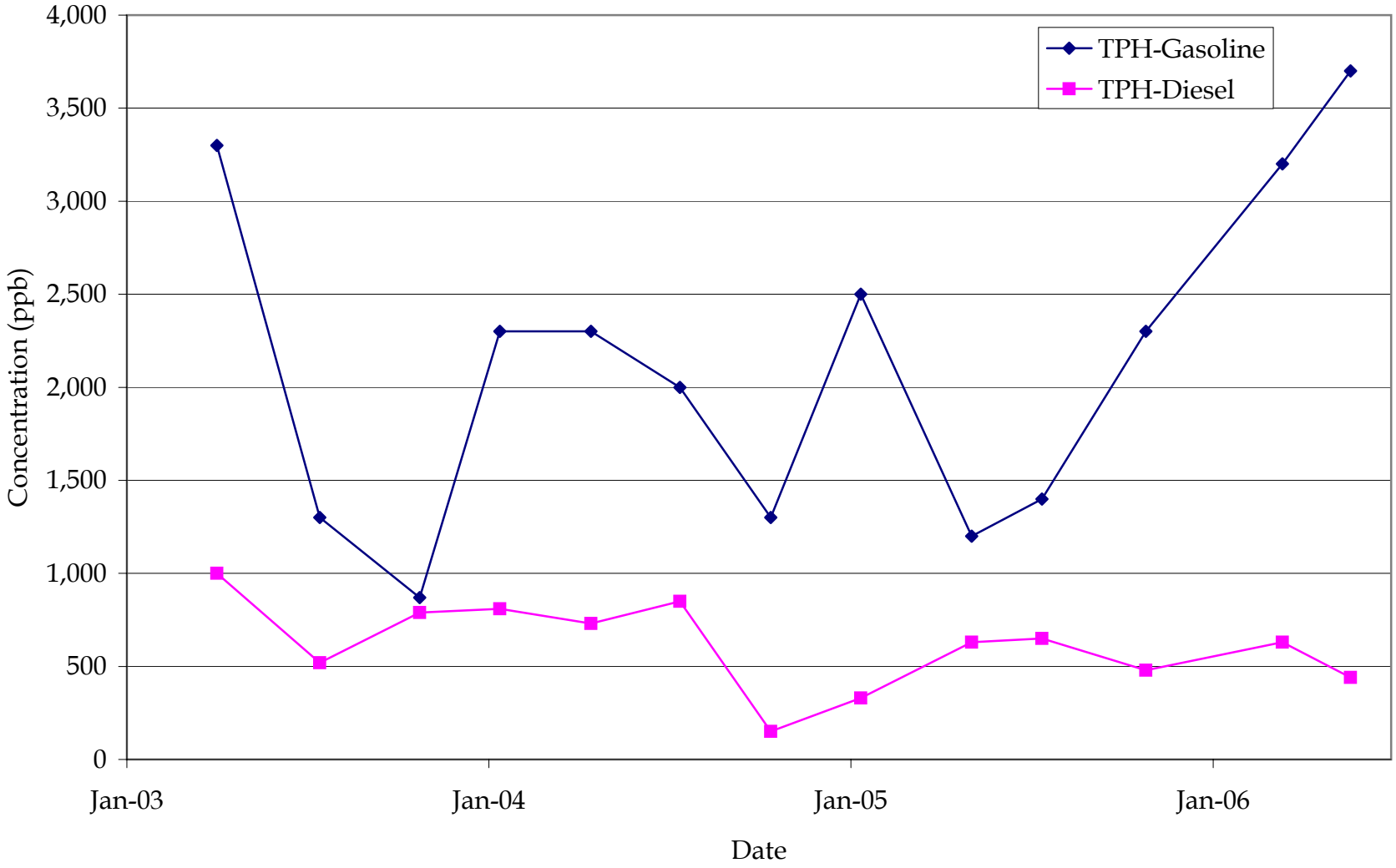
MW-19: Benzene, Toluene, Ethylbenzene, Xylenes



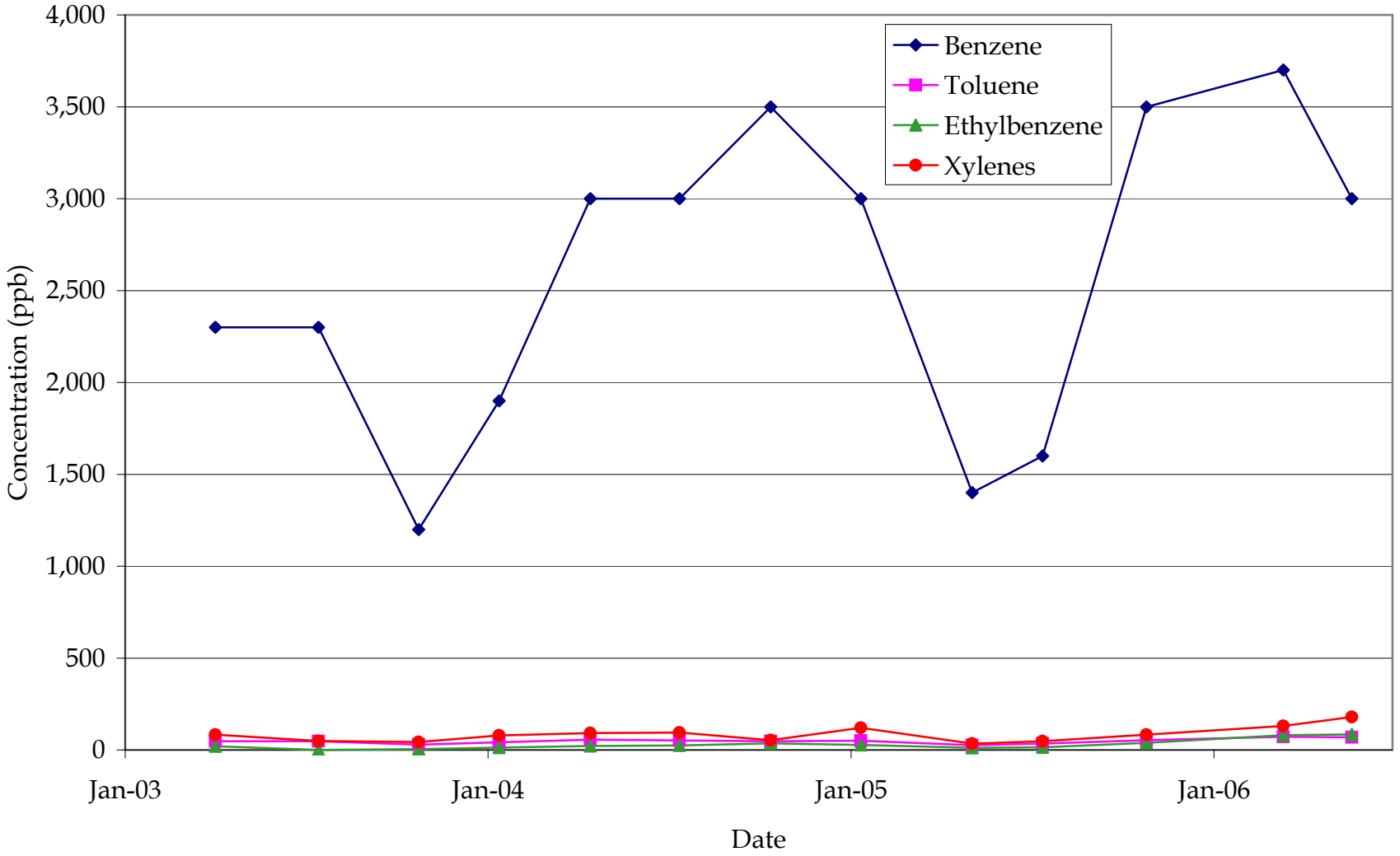
MW-19: Toluene, Ethylbenzene, Xylenes



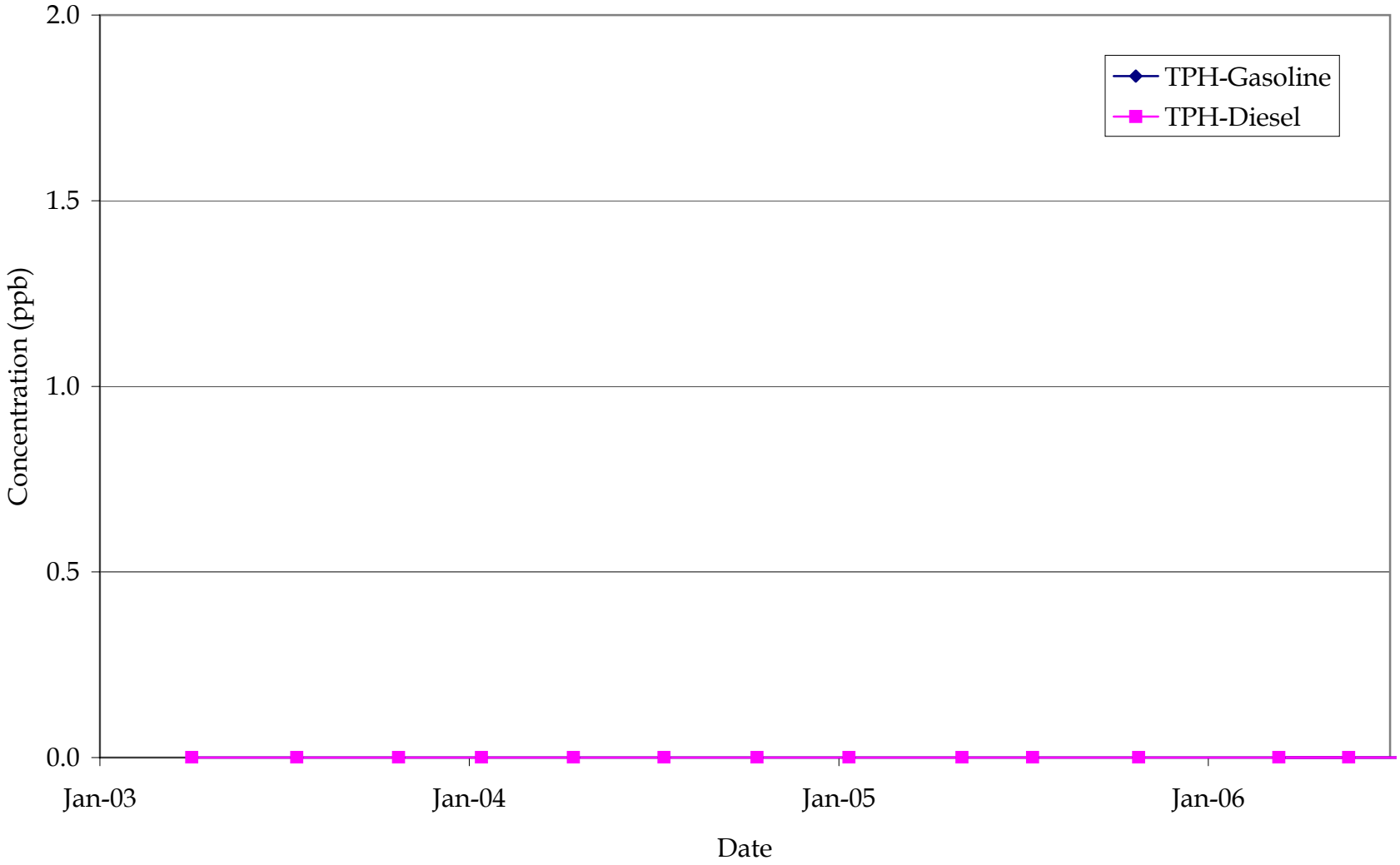
MW-21: TPH-Gasoline, TPH-Diesel



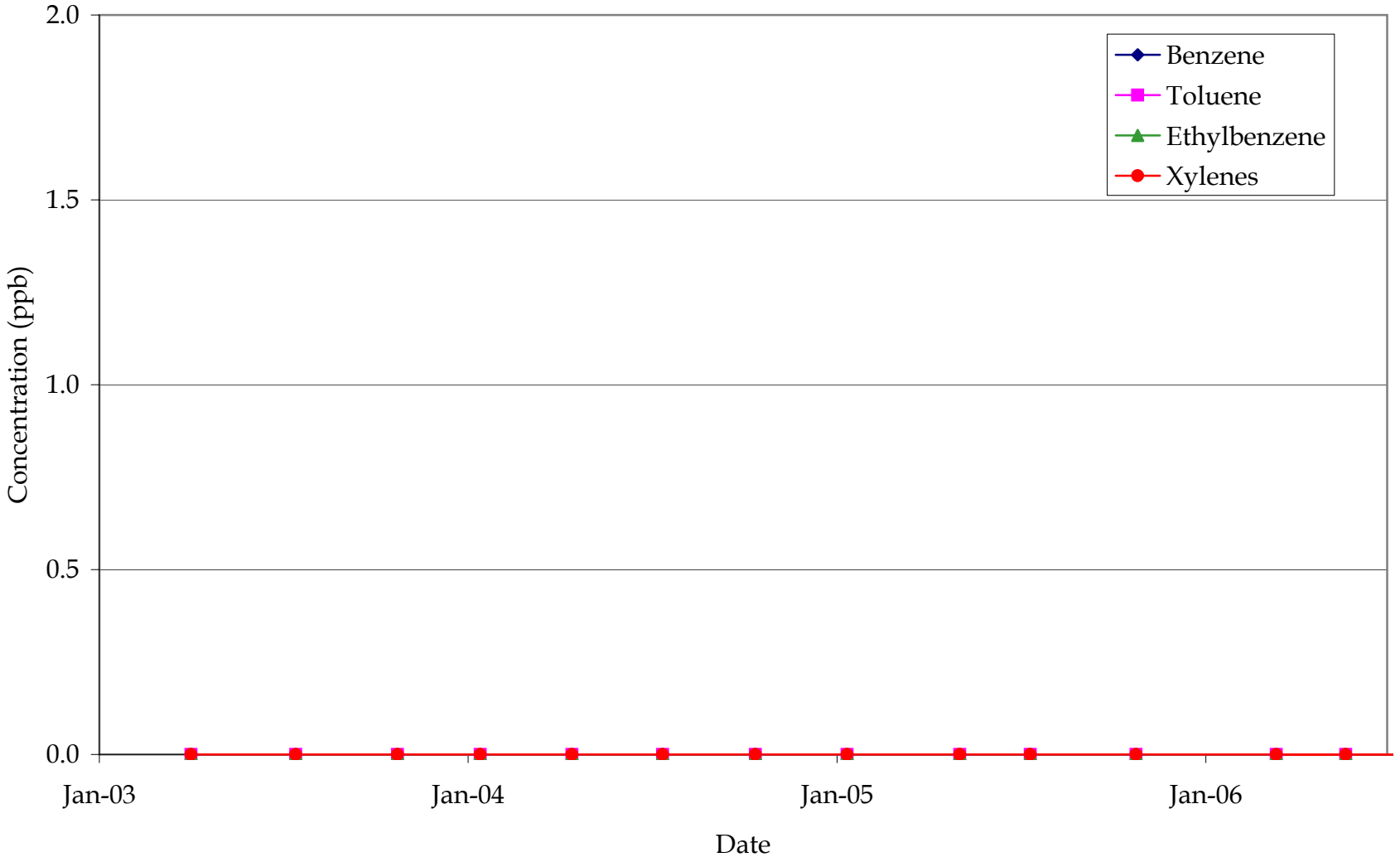
MW-21: Benzene, Toluene, Ethylbenzene, Xylenes



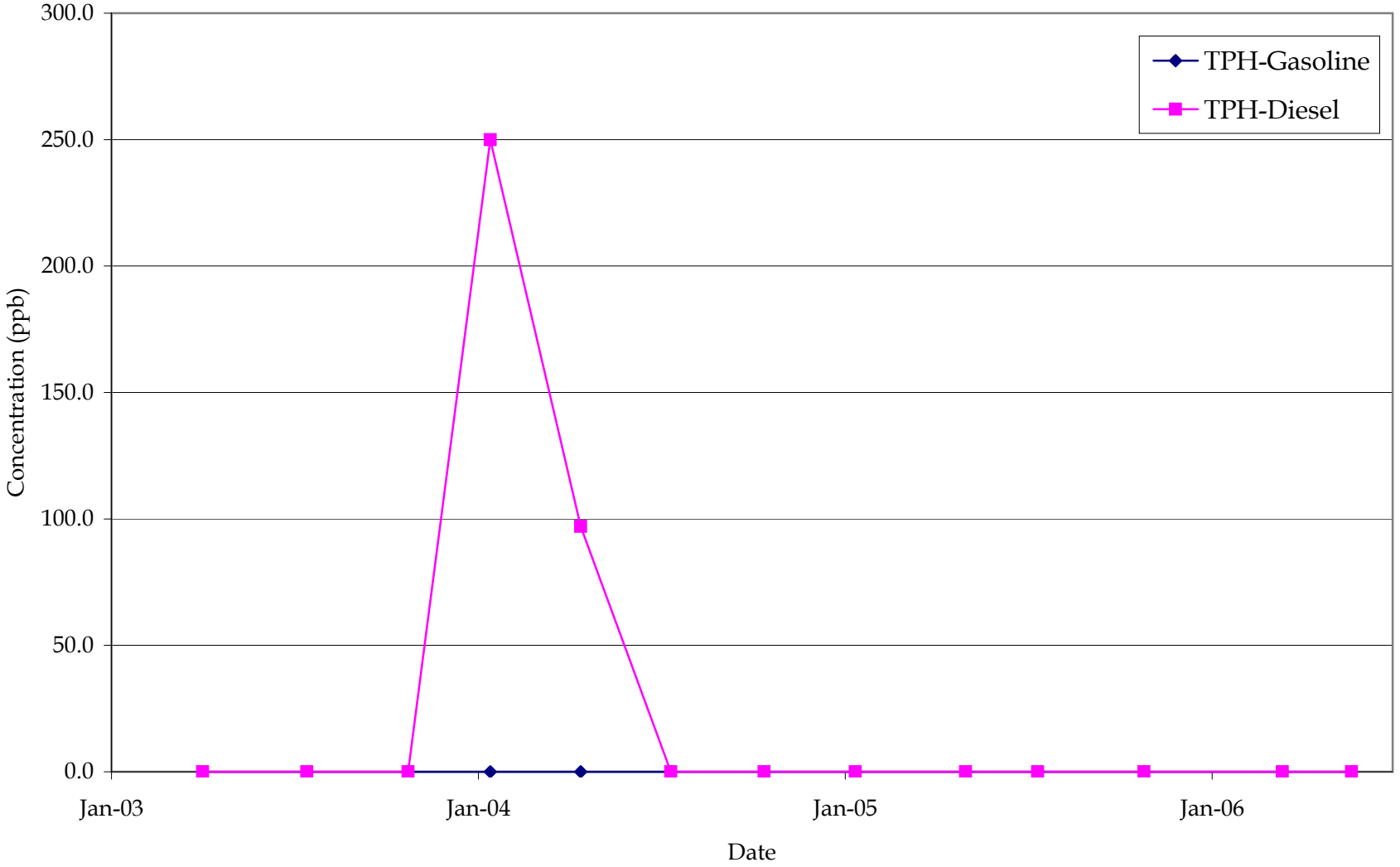
MW-23: TPH-Gasoline, TPH-Diesel



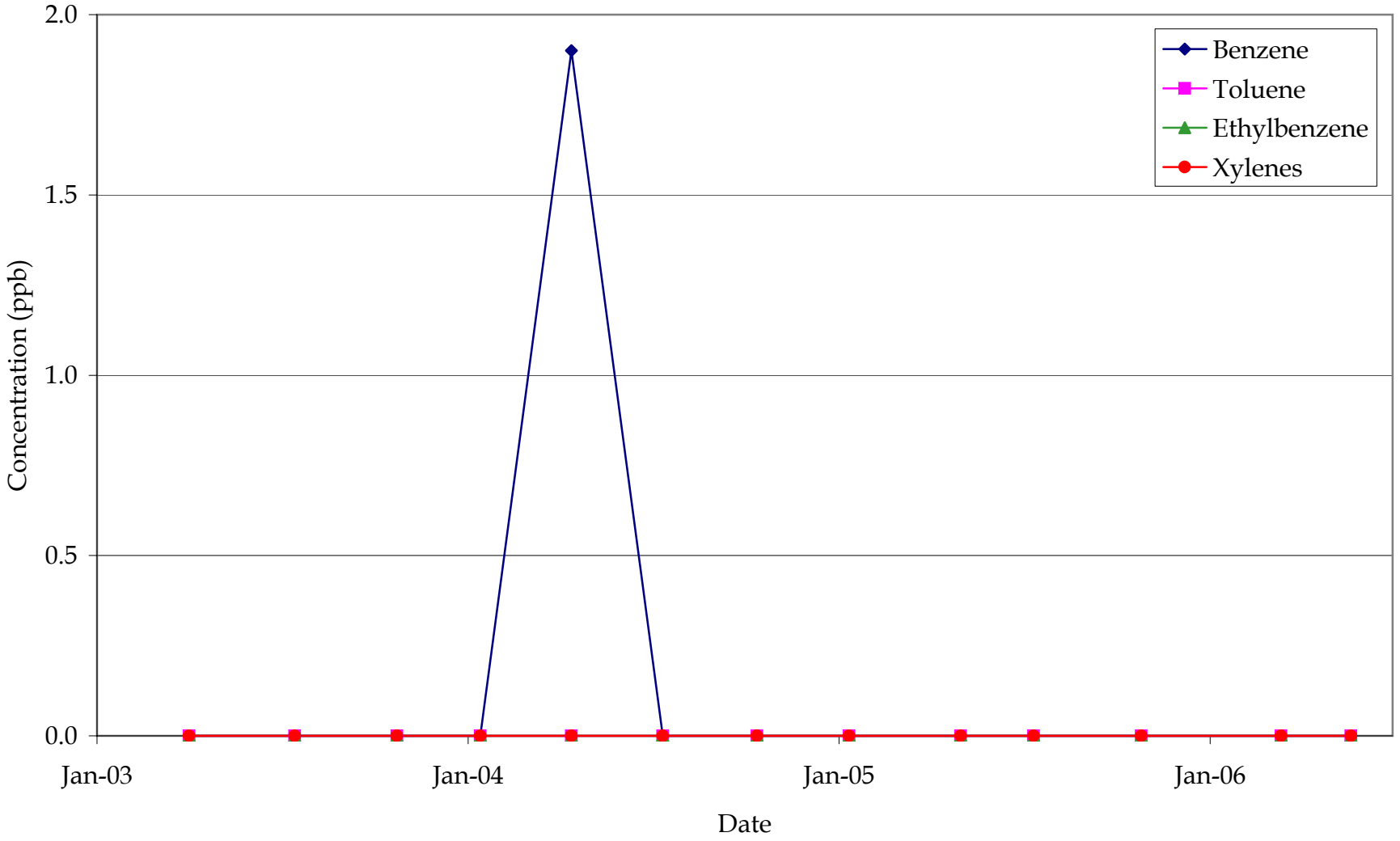
MW-23: Benzene, Toluene, Ethylbenzene, Xylenes



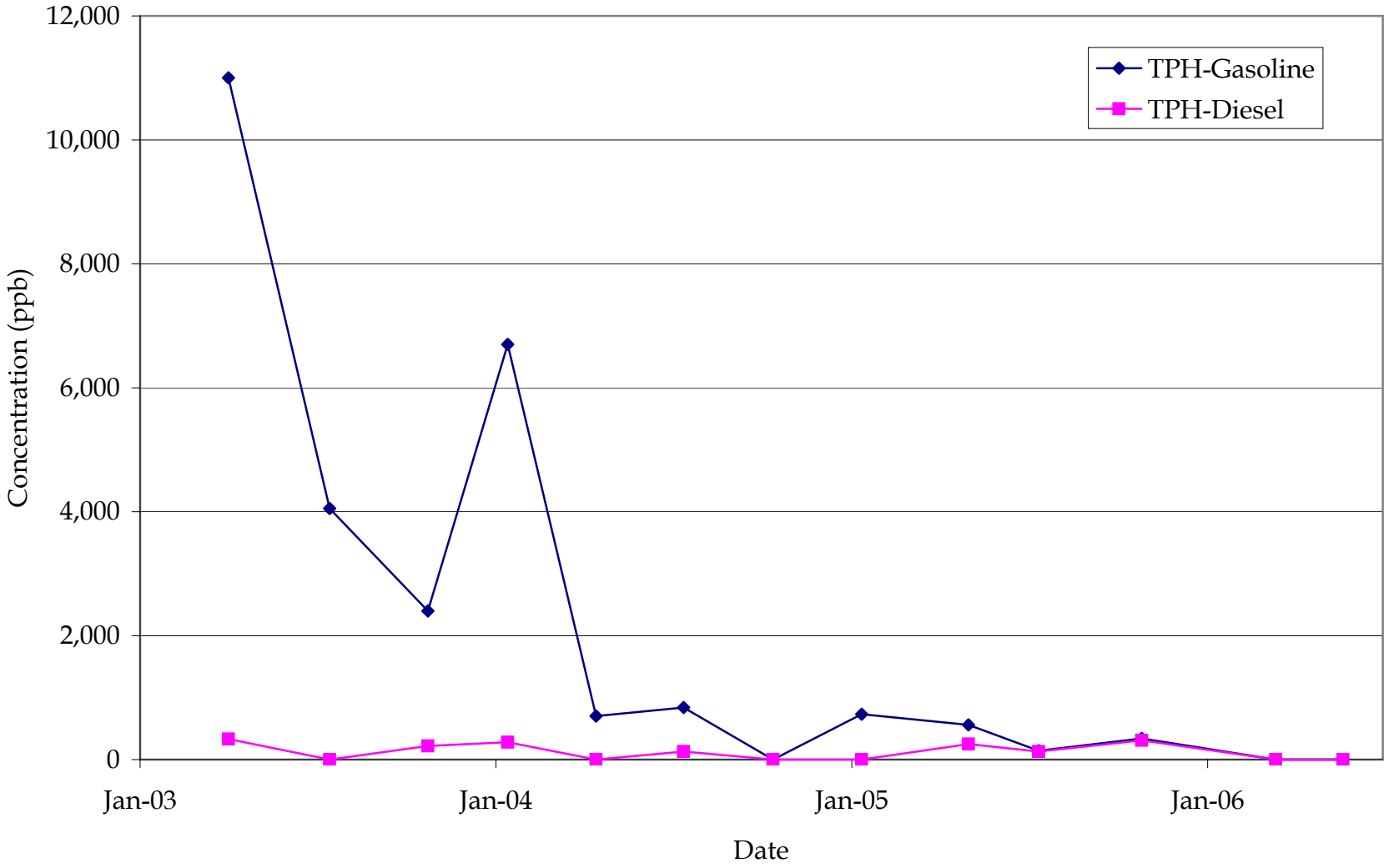
MW-27: TPH-Gasoline, TPH-Diesel



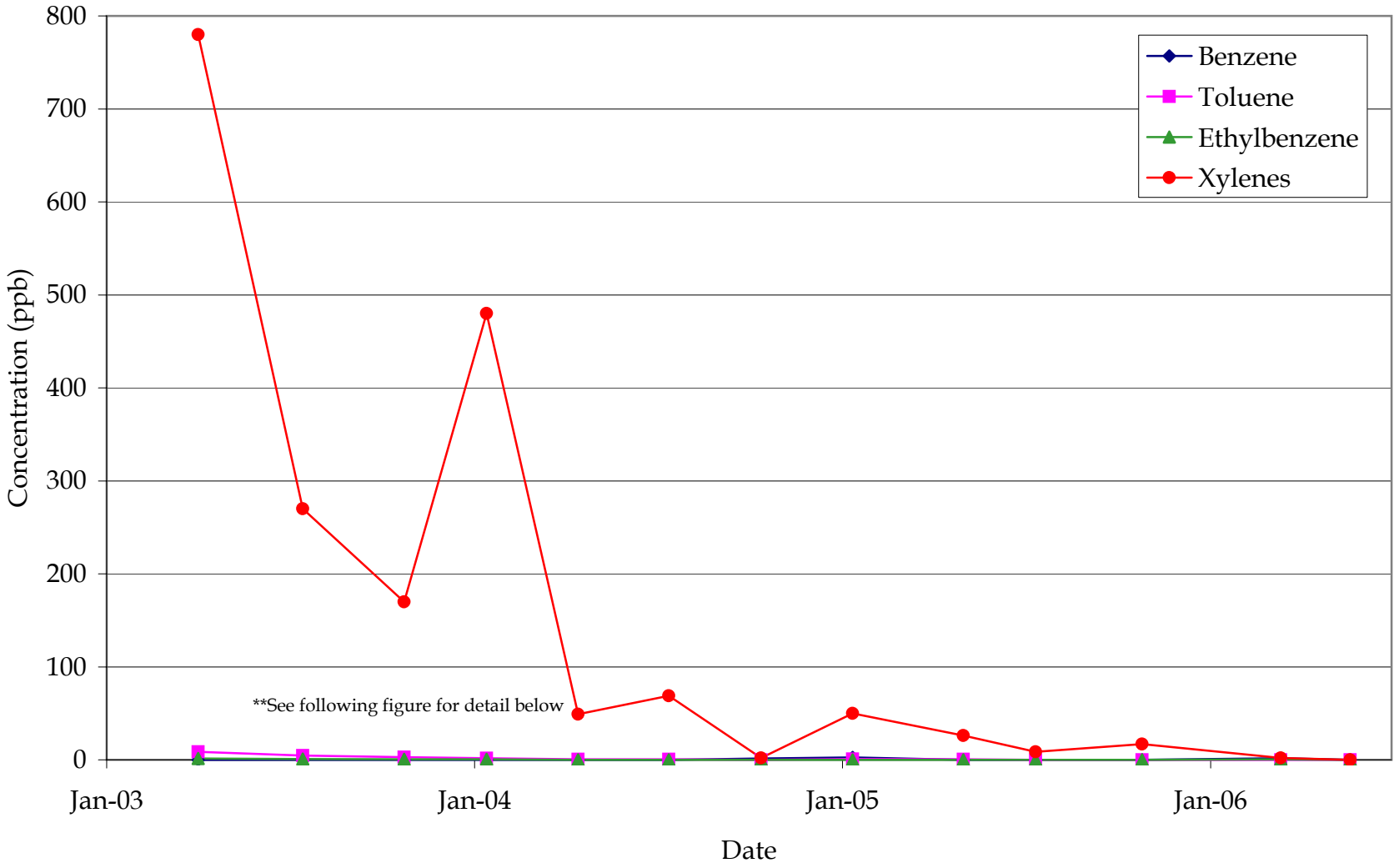
MW-27: Benzene, Toluene, Ethylbenzene, Xylenes



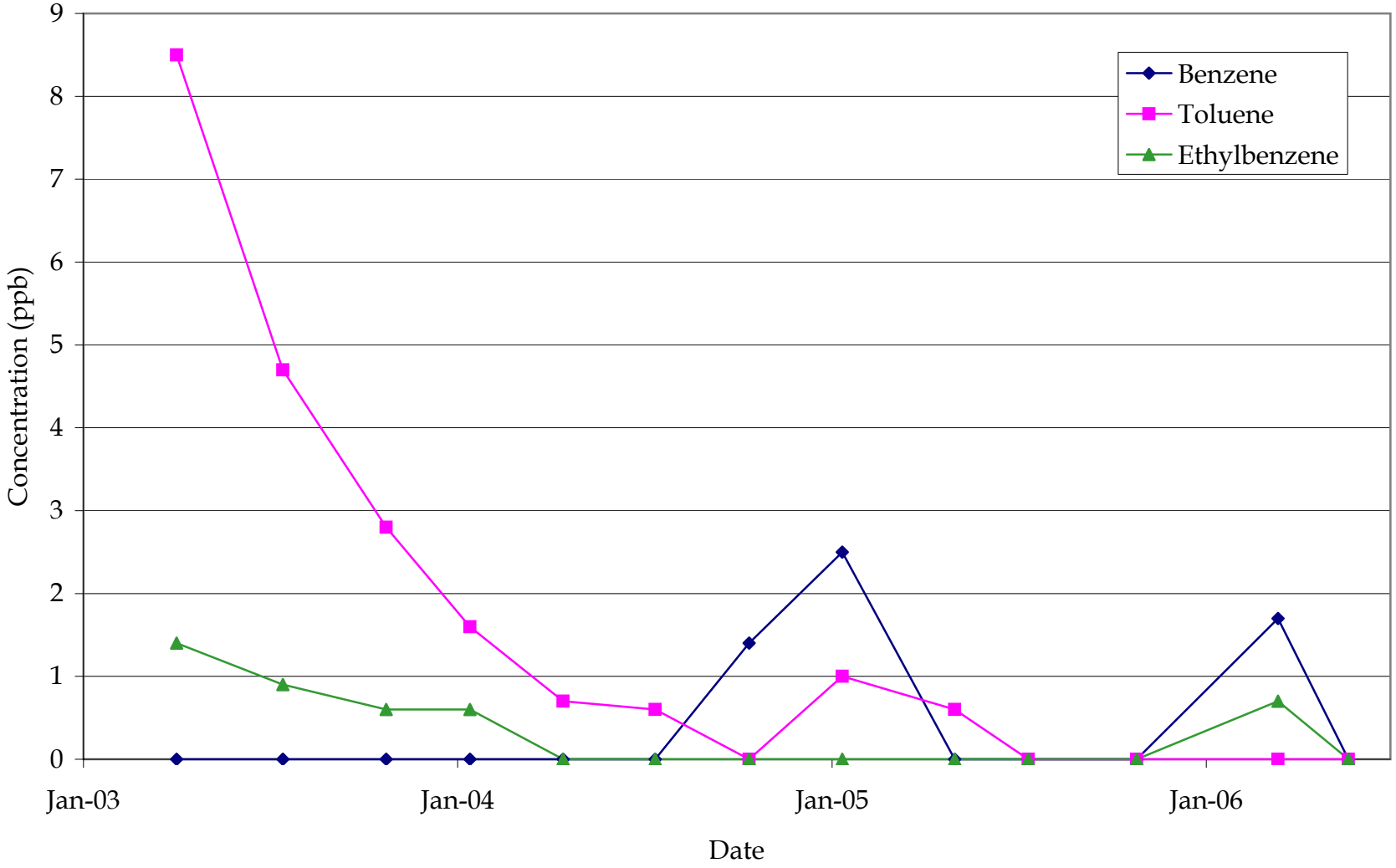
MW-28: TPH-Gasoline, TPH-Diesel



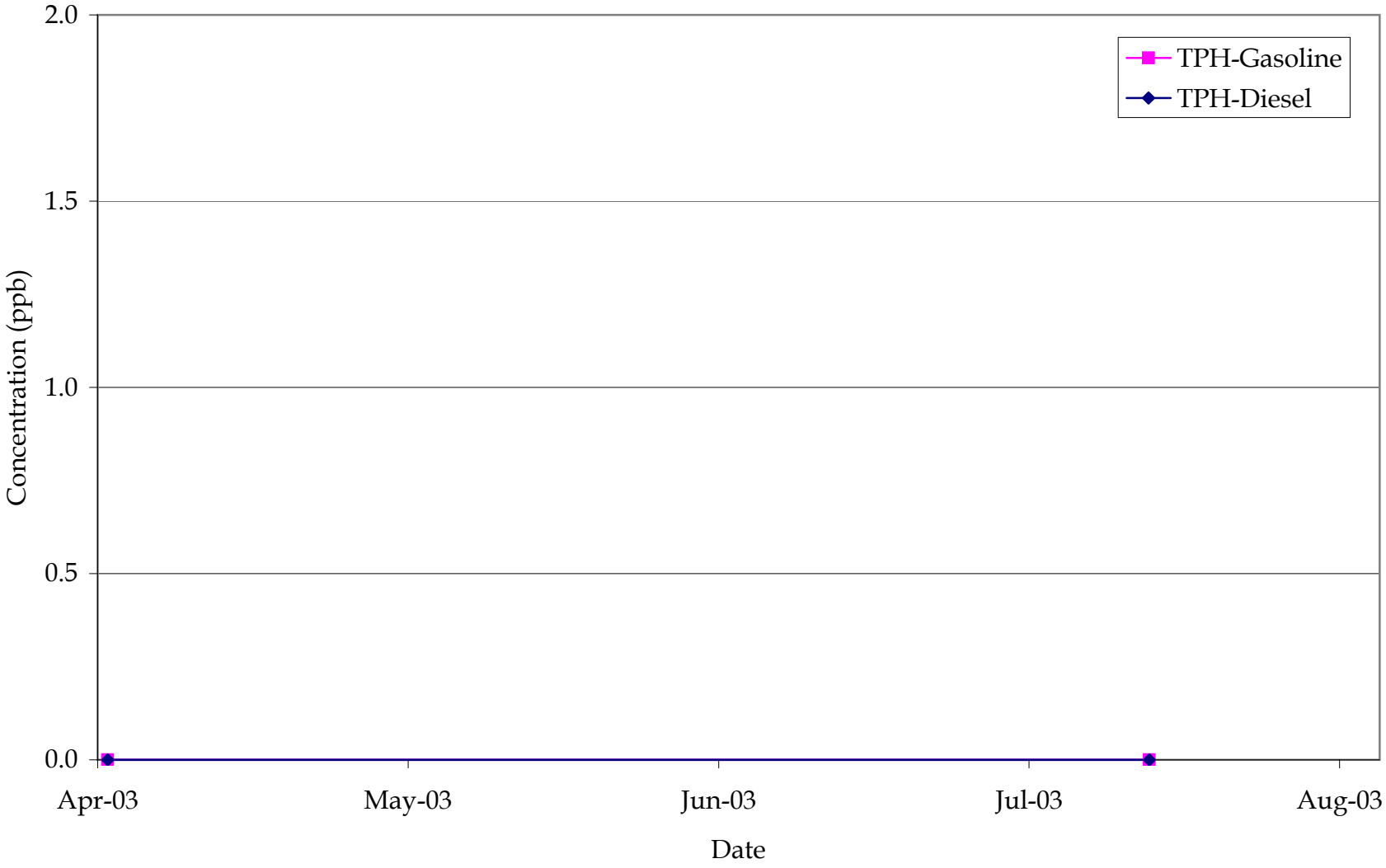
MW-28: Benzene, Toluene, Ethylbenzene, Xylenes



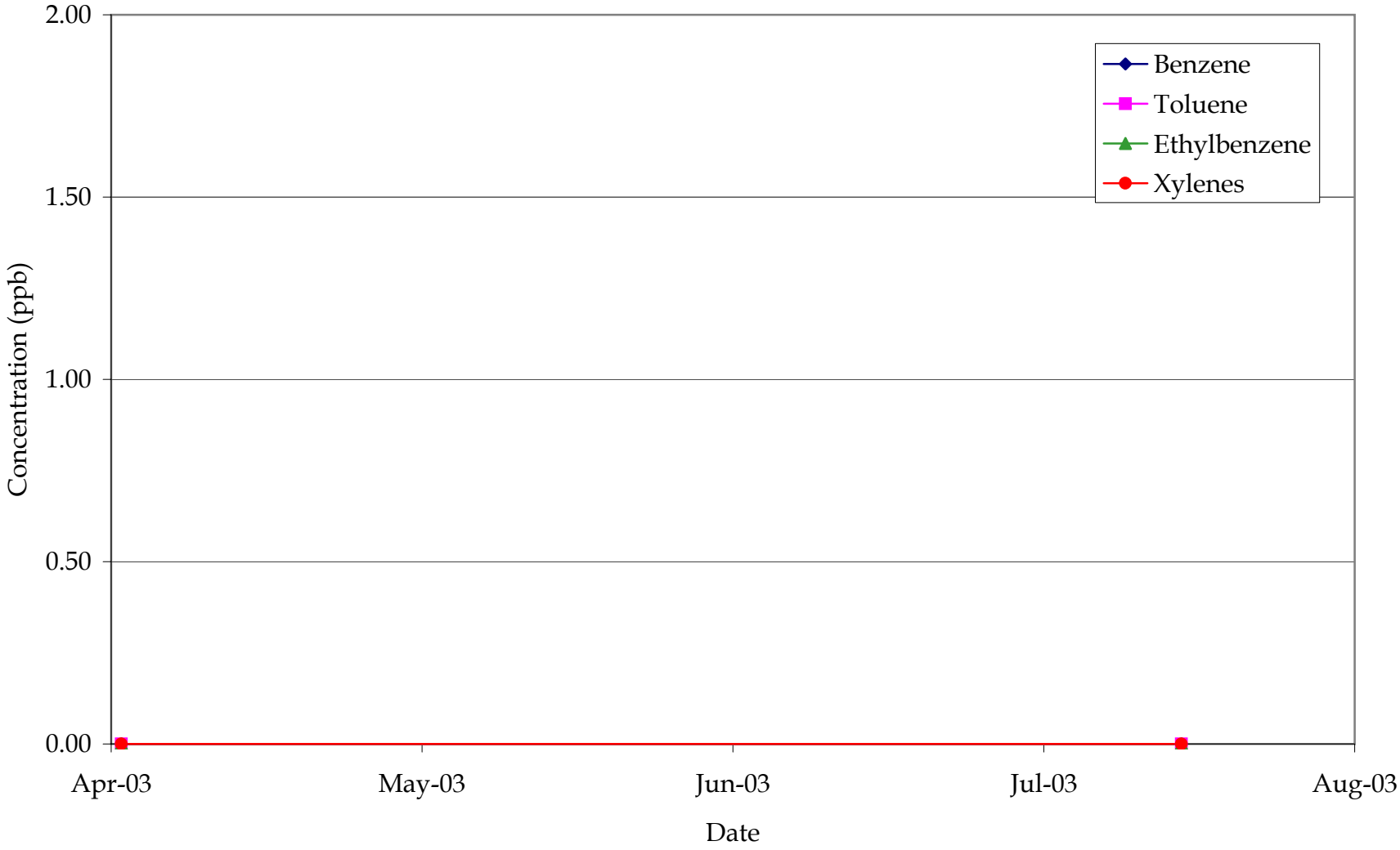
MW-28: Benzene, Toluene, Ethylbenzene



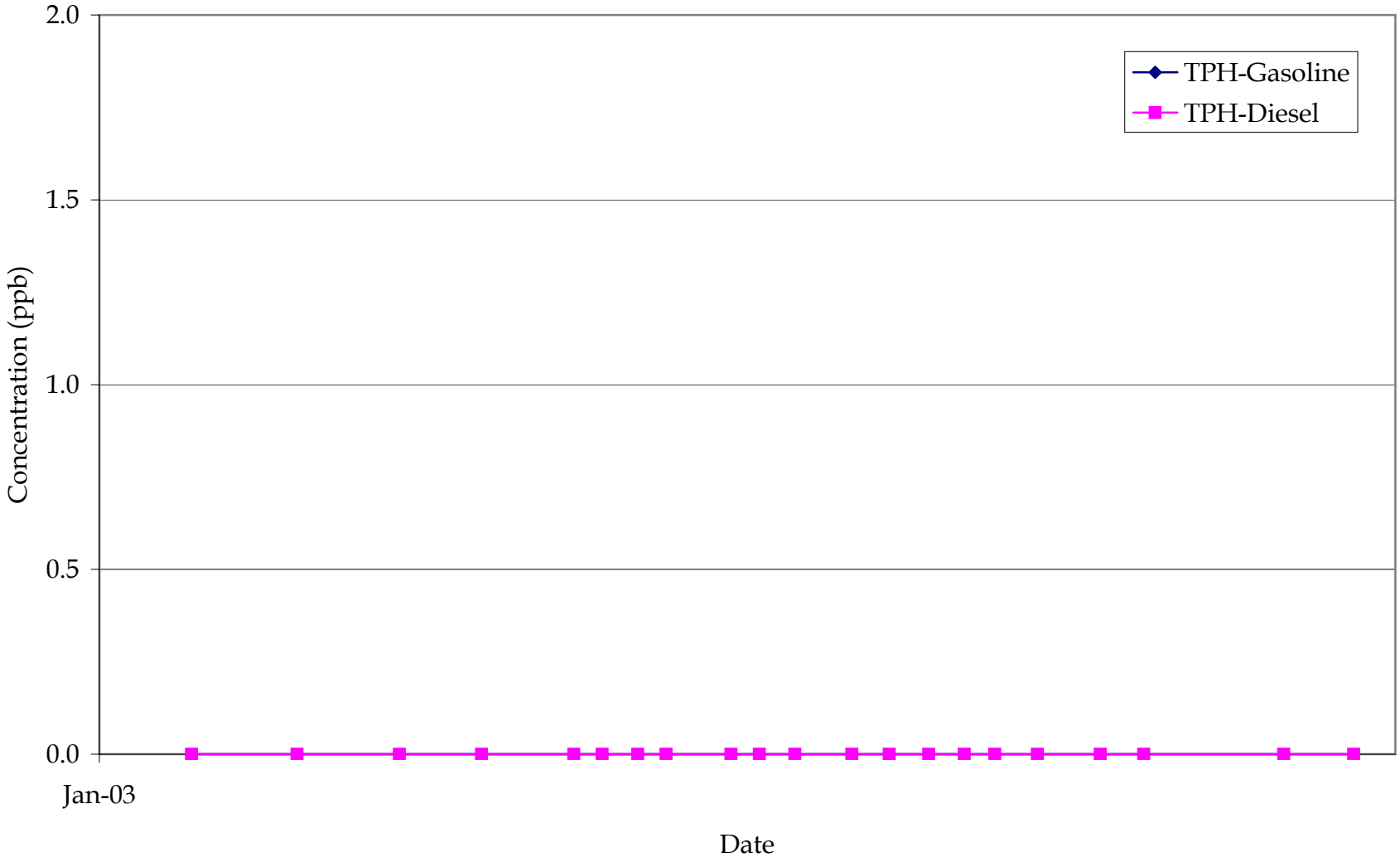
MW-29: TPH-Gasoline, TPH-Diesel



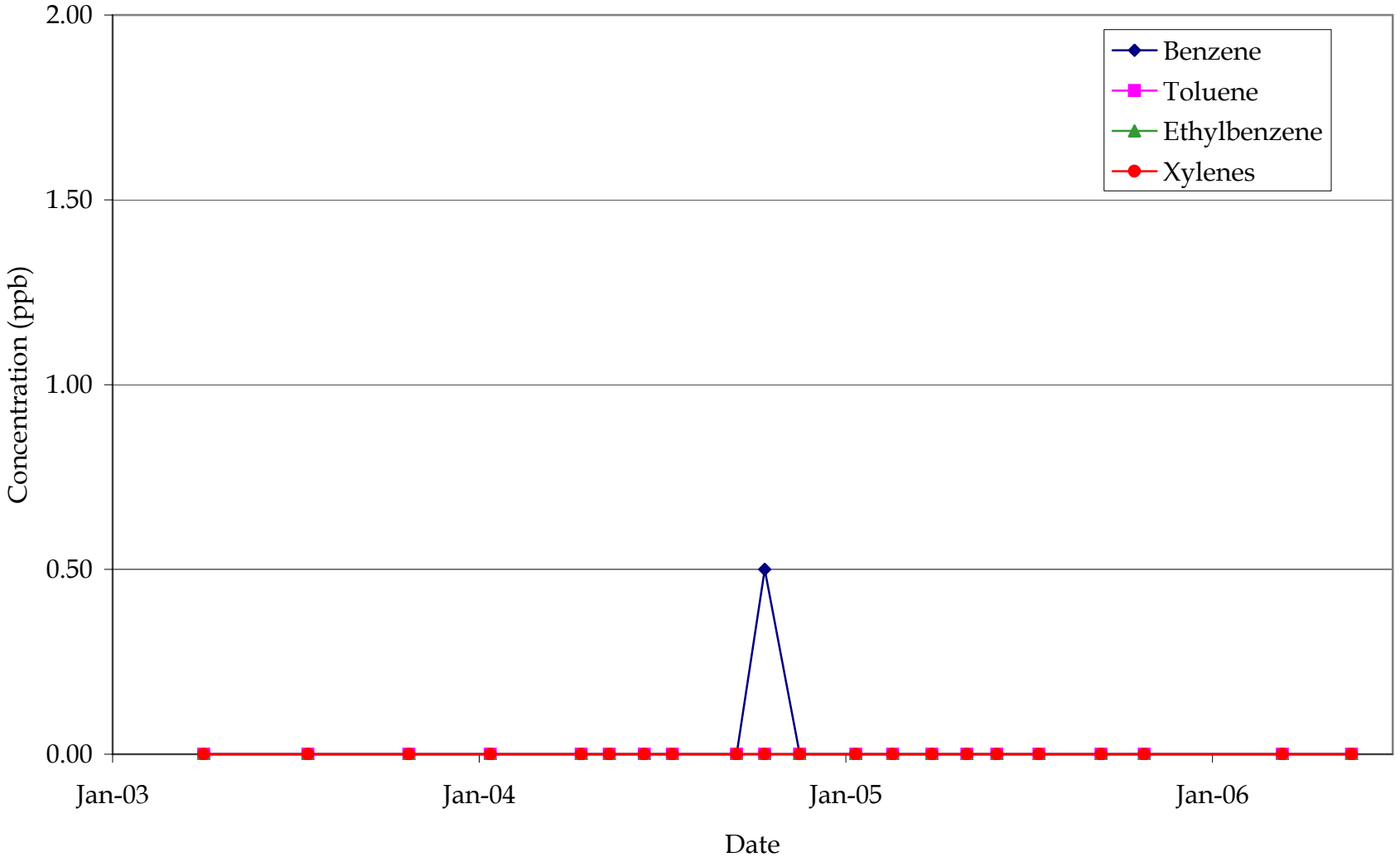
MW-29: Benzene, Toluene, Ethylbenzene, Xylenes



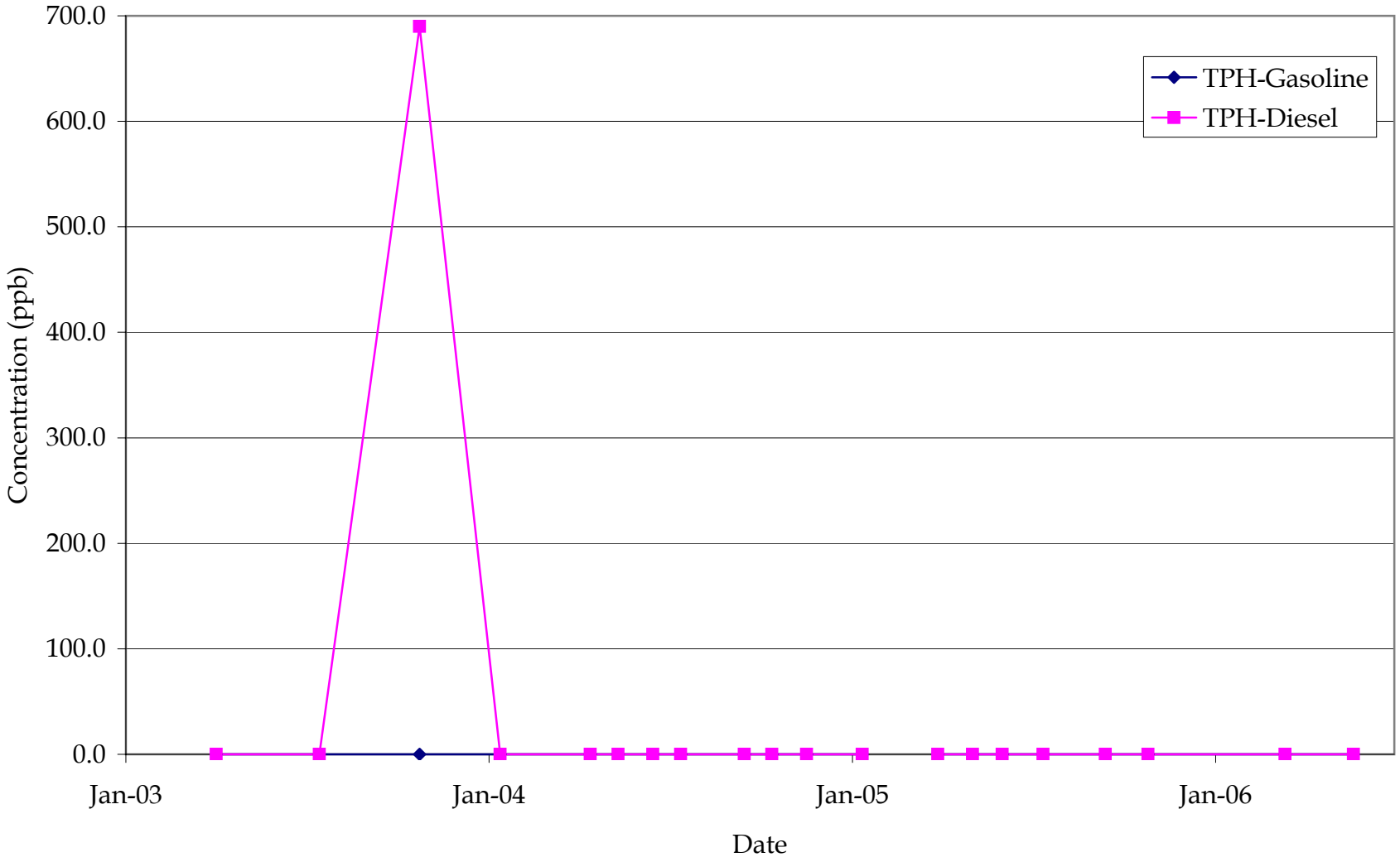
MW-30: TPH-Gasoline, TPH-Diesel



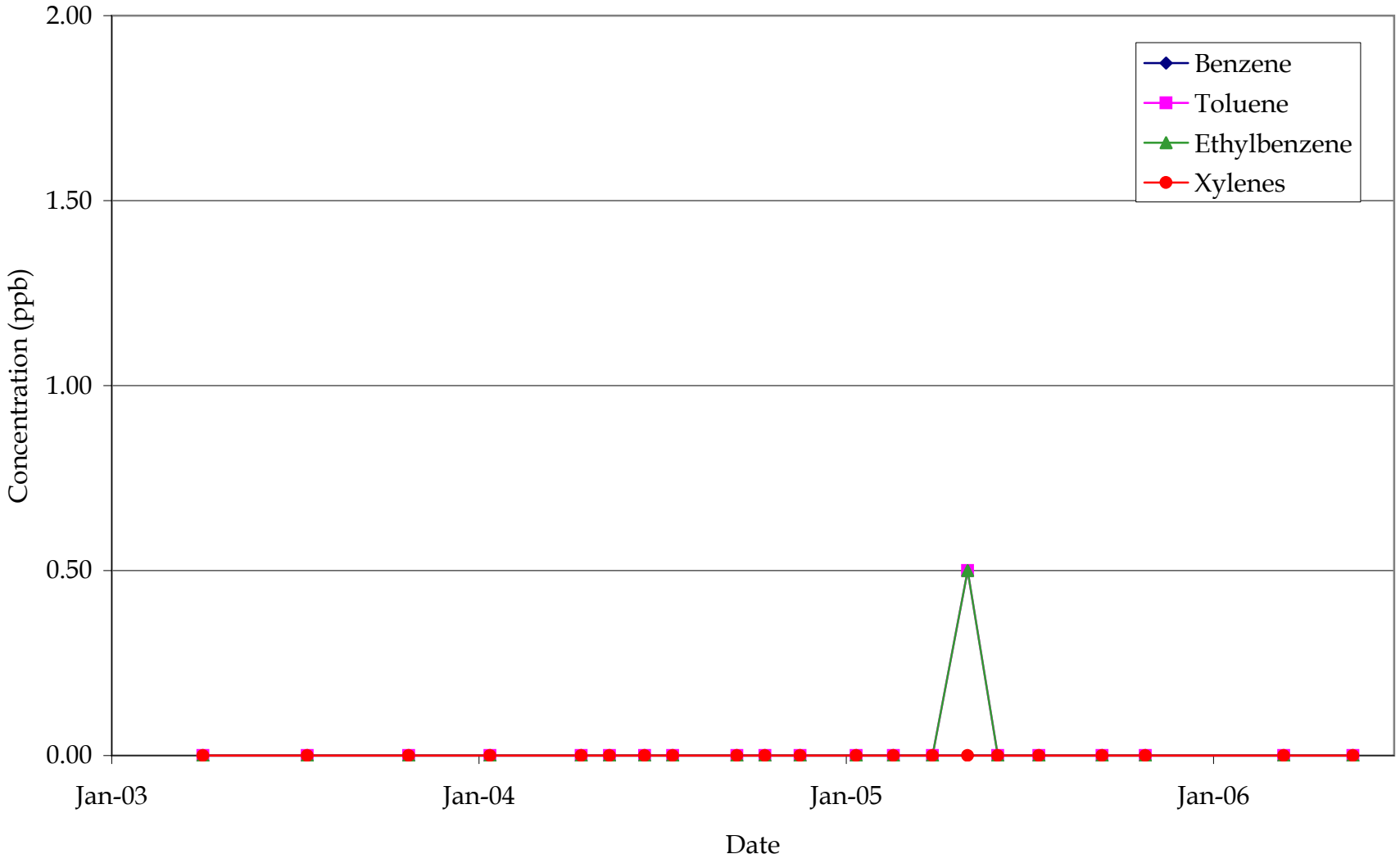
MW-30: Benzene, Toluene, Ethylbenzene, Xylenes



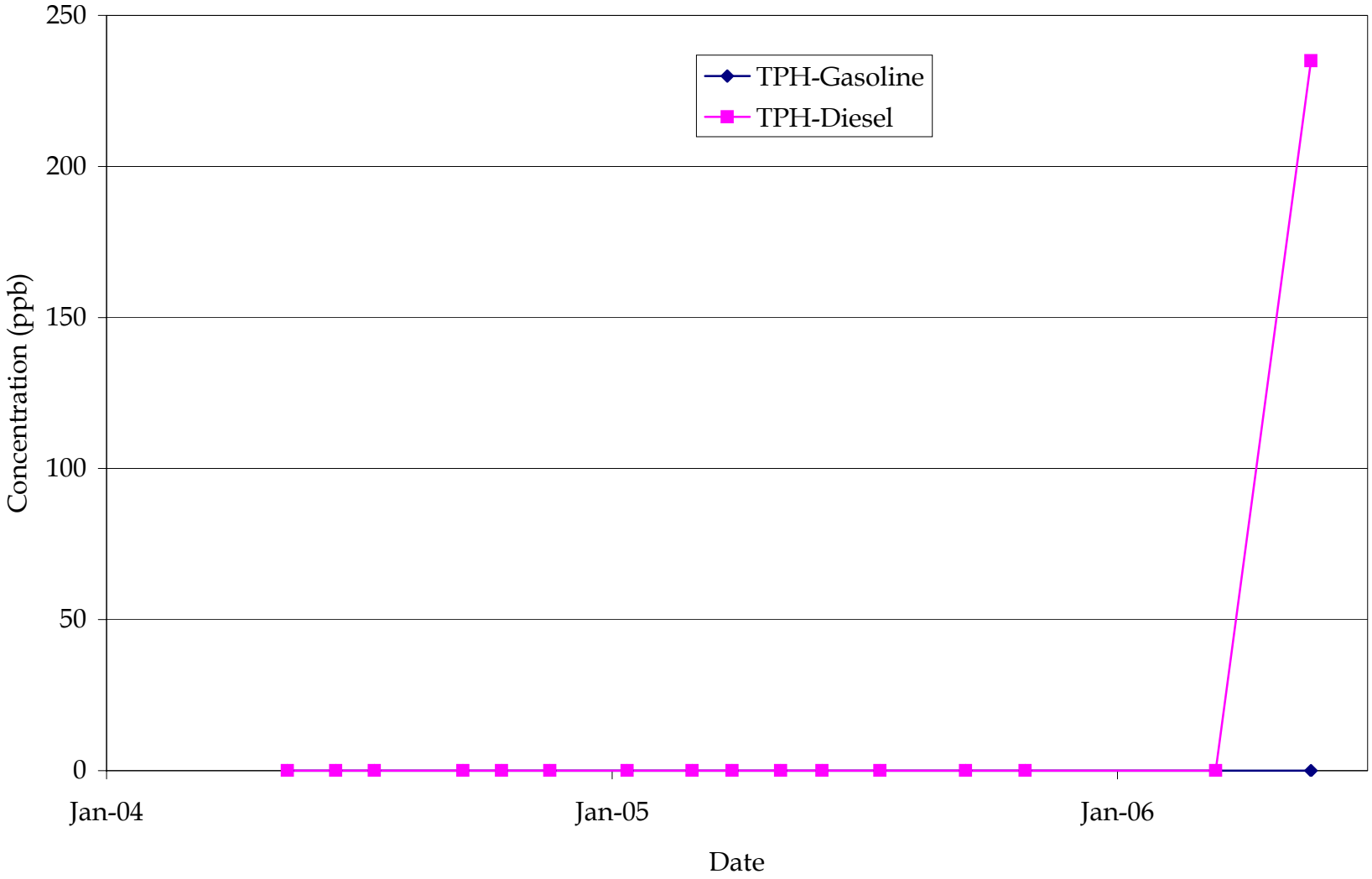
MW-31: TPH-Gasoline, TPH-Diesel



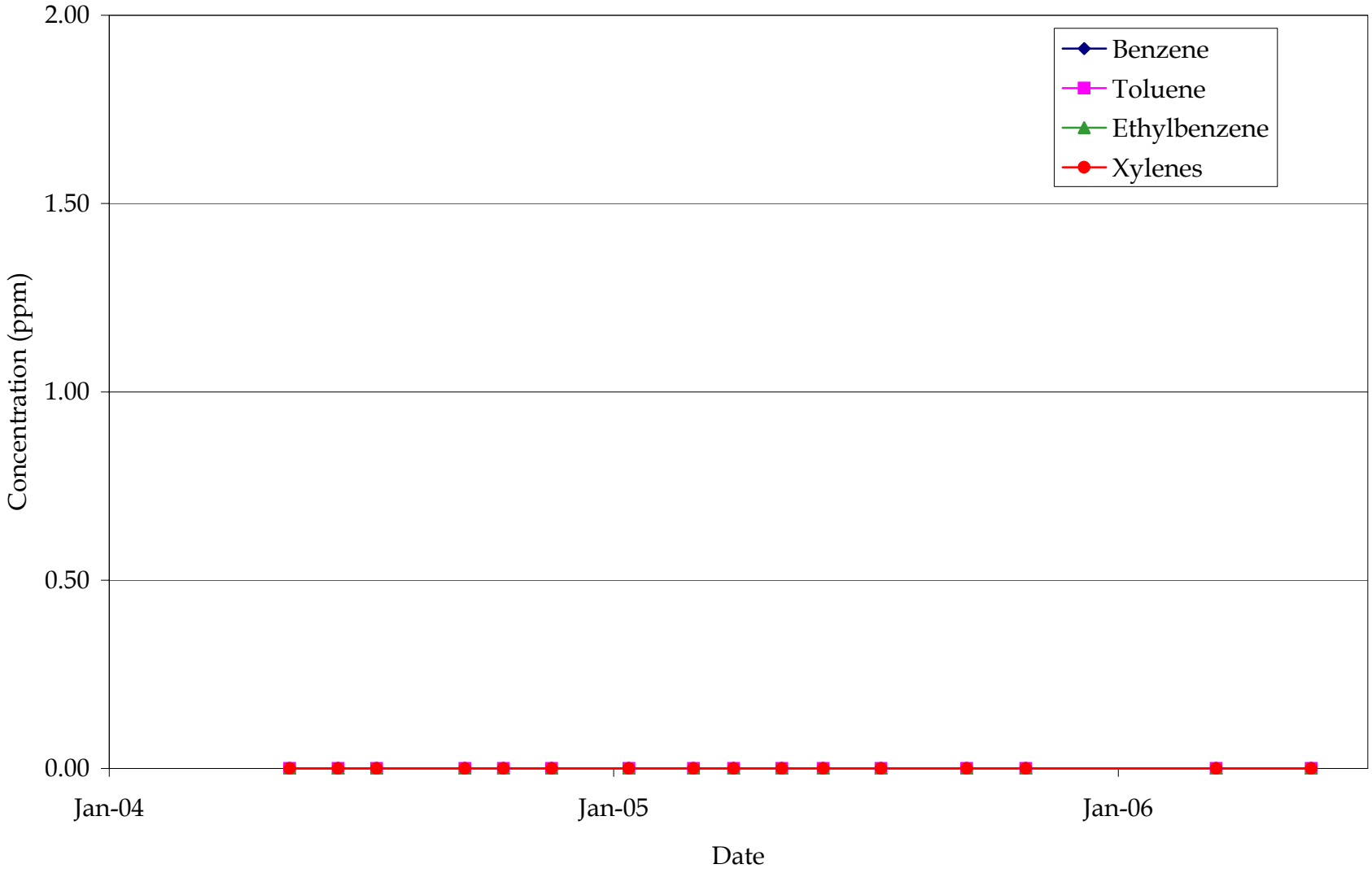
MW-31: Benzene, Toluene, Ethylbenzene, Xylenes



MW-37: TPH-Gasoline, TPH-Diesel



MW-37: Benzene, Toluene, Ethylbenzene, Xylenes



APPENDIX D: MISCELLANEOUS FIELD AND ANALYTICAL INFORMATION

Pre-RI Soil Vapor Analytical Summary (November 2001)

2001 Analytical Results for Soil Vapor Samples
Chelan Chevron Facility No. 9-6590
Analytical units in ppmv

Well/Probe Number	Sample Date	Screen Interval (feet bgs)	C_1-C_4 Hydrocarbons	>C_4-C_{10} Hydrocarbons	MTBE	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW-6	11/14/2001	15 - 35	1.2	4.8	<0.4	<0.5	<0.8	<0.4	6
MW-7	11/14/2001	15 - 35	3.4	910	33	4	1	1	9
MW-9	11/14/2001	15 - 40	4.2	16	2	<0.5	<0.8	10	<0.7
MW-10	11/14/2001	15 - 40	170	4,800	190	28	150	71	260
MW-12	11/15/2001	17 - 37	930	13,000	870	80	230	65	140
P-1	11/15/2001	15 - 25	<1	26	<0.4	<0.5	2	1	6
P-6	11/15/2001	5 - 15	1.3	11	<0.4	<0.5	1	3	5

Reference: Lancaster Laboratory data submitted to Delta Environmental on 11/28/01.

BTEX, MTBE, C_1-C_4 Hydrocarbons, and >C_4-C_{10} hydrocarbons all analyzed by EPA Methods TO-18 and TO-25 mod.

APPENDIX E: SOIL AND VAPOR ANALYTICAL REPORTS

RI Soil Analytical Reports (March 2003)
RI Soil Analytical Reports (June-July 2003)
RI Soil Vapor Analytical Reports (June-July 2003)

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583
925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 857910. Samples arrived at the laboratory on Tuesday, July 01, 2003. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
VW-6A Tedlar Bag Sample	4075399
VW-6B Tedlar Bag Sample	4075400
VW-3A Tedlar Bag Sample	4075401
VW-3B Tedlar Bag Sample	4075402
VW-1A Tedlar Bag Sample	4075403
VW-1B Tedlar Bag Sample	4075404
VW-2A Tedlar Bag Sample	4075405
VW-MW-33 Tedlar Bag Sample	4075406

1 COPY TO SAIC Attn: Tom Dube

Lancaster Laboratories

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Analysis Report

Questions? Contact your Client Services Representative
Danette S Blystone at (717) 656-2300.

Respectfully Submitted,

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. AQ 4075399

Collected: 06/30/2003 09:45 by TD

Account Number: 11255

Submitted: 07/01/2003 09:25
Reported: 07/24/2003 at 13:33
Discard: 08/24/2003
VW-6A Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	2,600.	1.0	ppm(v) hexane	1
07059	BTEX					
07063	Benzene	71-43-2	3.	0.5	ppm(v)	1
07064	Toluene	108-88-3	5.	0.8	ppm(v)	1
07065	Ethylbenzene	100-41-4	9.	0.4	ppm(v)	1
07068	Xylene (total)	1330-20-7	30.	0.7	ppm(v)	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/02/2003 22:43	David I Ressler	1
07059	BTEX	EPA Method 18 modified	1	07/02/2003 22:43	David I Ressler	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. AQ 4075400

Collected: 06/30/2003 10:00 by TD

Account Number: 11255

Submitted: 07/01/2003 09:25
Reported: 07/24/2003 at 13:33
Discard: 08/24/2003
VW-6B Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	7.9	1.0	ppm(v) hexane	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/03/2003 10:05	David I Ressler	1
07869	TO 14 VOA Ext. List Tedlar	EPA Method TO14A	1	07/03/2003 02:46	Douglas Graham	5
07870	TO 14 VOA Ext List cont Tedlar	EPA Method TO14A	1	07/03/2003 02:46	Douglas Graham	5

VOLATILE ORGANICS IN AIR
TEDLAR BAG SAMPLE
ANALYSIS DATA SHEET

Sample No.: VW-6B Date Collected: 06/30/03 Date Received: 07/01/03
Lab Sample ID: 4075400 Date Analyzed: 07/03/03 Time Analyzed: 02:46
Injection Volume: 500 cc Nominal Volume: 250 cc Dilution Factor: 5.0
Instrument ID: HP4224 Lab File ID: C:\HPCHEM\1\DATA\JUL02\1501014.D

CAS RN	COMPOUND NAME	CONCENTRATION UNITS: MDL ppb(v)	Q
71-43-2	Benzene	4	J D
108-88-3	Toluene	5	J D
100-41-4	Ethylbenzene	2	J D
1330-20-7	m/p-Xylene	3	J D
95-47-6	o-Xylene	1	J D

U = Compound was undetected at the specified limit of quantitation.
B = Compound was found in method blank. D = analysis of diluted sample.
J = Compound was detected, but below the limit of quantitation.
NOTE: Limits of detection were raised due to the high concentration of volatile organic compounds in this sample.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. AQ 4075401

Collected: 06/30/2003 11:00 by TD

Account Number: 11255

Submitted: 07/01/2003 09:25
Reported: 07/24/2003 at 13:33
Discard: 08/24/2003
VW-3A Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	13,000.	1.0	ppm(v) hexane	1
07059	BTEX					
07063	Benzene	71-43-2	20.	0.5	ppm(v)	1
07064	Toluene	108-88-3	8.	0.8	ppm(v)	1
07065	Ethylbenzene	100-41-4	2.	0.4	ppm(v)	1
07068	Xylene (total)	1330-20-7	5.	0.7	ppm(v)	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/02/2003 23:13	David I Ressler	1
07059	BTEX	EPA Method 18 modified	1	07/02/2003 23:13	David I Ressler	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. AQ 4075402

Collected:06/30/2003 11:20 by TD

Account Number: 11255

Submitted: 07/01/2003 09:25
Reported: 07/24/2003 at 13:33
Discard: 08/24/2003
VW-3B Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	16.	1.0	ppm(v) hexane	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/03/2003 10:35	David I Ressler	1
07869	TO 14 VOA Ext. List Tedlar	EPA Method TO14A	1	07/03/2003 04:13	Douglas Graham	50
07870	TO 14 VOA Ext List cont Tedlar	EPA Method TO14A	1	07/03/2003 04:13	Douglas Graham	50

VOLATILE ORGANICS IN AIR
TEDLAR BAG SAMPLE
ANALYSIS DATA SHEET

Sample No.: VW-3B Date Collected: 06/30/03 Date Received: 07/01/03
Lab Sample ID: 4075402 Date Analyzed: 07/03/03 Time Analyzed: 04:13
Injection Volume: 500 cc Nominal Volume: 250 cc Dilution Factor: 50.0
Instrument ID: HP4224 Lab File ID: C:\HPCHEM\1\DATA\JUL02\1701016.D

CAS RN	COMPOUND NAME	CONCENTRATION UNITS: MDL ppb(v)	Q
71-43-2	Benzene	10	U
108-88-3	Toluene	31	J D
100-41-4	Ethylbenzene	12	J D
1330-20-7	m/p-Xylene	35	J D
95-47-6	o-Xylene	11	J D

U = Compound was undetected at the specified limit of quantitation.
B = Compound was found in method blank. D = analysis of diluted sample.
J = Compound was detected, but below the limit of quantitation.
NOTE: Limits of detection were raised due to the high concentration of volatile organic compounds in this sample.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. AQ 4075403

Collected: 06/30/2003 11:55 by TD

Account Number: 11255

Submitted: 07/01/2003 09:25
Reported: 07/24/2003 at 13:33
Discard: 08/24/2003
VW-1A Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	1,900.	1.0	ppm(v) hexane	1
07059	BTEX					
07063	Benzene	71-43-2	4.	0.5	ppm(v)	1
07064	Toluene	108-88-3	6.	0.8	ppm(v)	1
07065	Ethylbenzene	100-41-4	1.	0.4	ppm(v)	1
07068	Xylene (total)	1330-20-7	5.	0.7	ppm(v)	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/02/2003 23:43	David I Ressler	1
07059	BTEX	EPA Method 18 modified	1	07/02/2003 23:43	David I Ressler	1

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Analysis Report

Lancaster Laboratories Sample No. AQ 4075404

Collected:06/30/2003 12:10 by TD

Account Number: 11255

Submitted: 07/01/2003 09:25
Reported: 07/24/2003 at 13:33
Discard: 08/24/2003
VW-1B Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	N.D.	1.0	ppm(v) hexane	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	2	07/03/2003 09:27	David I Ressler	1
07869	TO 14 VOA Ext. List Tedlar	EPA Method TO14A	1	07/03/2003 05:39	Douglas Graham	1
07870	TO 14 VOA Ext List cont Tedlar	EPA Method TO14A	1	07/03/2003 05:39	Douglas Graham	1

VOLATILE ORGANICS IN AIR
TEDLAR BAG SAMPLE
ANALYSIS DATA SHEET

Sample No.: VW-1B Date Collected: 06/30/03 Date Received: 07/01/03
Lab Sample ID: 4075404 Date Analyzed: 07/03/03 Time Analyzed: 05:39
Injection Volume: 250 cc Nominal Volume: 250 cc Dilution Factor: 1.0
Instrument ID: HP4224 Lab File ID: C:\HPCHEM\1\DATA\JUL02\1901018.D

CAS RN	COMPOUND NAME	CONCENTRATION UNITS: MDL ppb(v)	Q
71-43-2	Benzene	1	
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	0.5	J
1330-20-7	m/p-Xylene	1	
95-47-6	o-Xylene	0.4	J

U = Compound was undetected at the specified limit of quantitation.
B = Compound was found in method blank. D = analysis of diluted sample.
J = Compound was detected, but below the limit of quantitation.

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Analysis Report

Lancaster Laboratories Sample No. AQ 4075405

Collected:06/30/2003 13:05 by TD

Account Number: 11255

Submitted: 07/01/2003 09:25
Reported: 07/24/2003 at 13:33
Discard: 08/24/2003
VW-2A Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	N.D.	1.0	ppm(v) hexane	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/02/2003 13:43	David I Ressler	1
07869	TO 14 VOA Ext. List Tedlar	EPA Method TO14A	1	07/03/2003 07:05	Douglas Graham	1
07870	TO 14 VOA Ext List cont Tedlar	EPA Method TO14A	1	07/03/2003 07:05	Douglas Graham	1

VOLATILE ORGANICS IN AIR
TEDLAR BAG SAMPLE
ANALYSIS DATA SHEET

Sample No.: VW-2A Date Collected: 06/30/03 Date Received: 07/01/03
Lab Sample ID: 4075405 Date Analyzed: 07/03/03 Time Analyzed: 07:05
Injection Volume: 250 cc Nominal Volume: 250 cc Dilution Factor: 1.0
Instrument ID: HP4224 Lab File ID: C:\HPCHEM\1\DATA\JUL02\2101020.D

CAS RN	COMPOUND NAME	CONCENTRATION UNITS: MDL ppb(v)	Q
71-43-2	Benzene	0.7	J
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	0.4	J
1330-20-7	m/p-Xylene	1	
95-47-6	o-Xylene	0.5	J

U = Compound was undetected at the specified limit of quantitation.
B = Compound was found in method blank. D = analysis of diluted sample.
J = Compound was detected, but below the limit of quantitation.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. AQ 4075406

Collected: 06/30/2003 13:55 by TD

Submitted: 07/01/2003 09:25
Reported: 07/24/2003 at 13:33
Discard: 08/24/2003
VW-MW-33 Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

Account Number: 11255

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	13,000.	1.0	ppm(v) hexane	1
07059	BTEX					
07063	Benzene	71-43-2	20.	0.5	ppm(v)	1
07064	Toluene	108-88-3	60.	0.8	ppm(v)	1
07065	Ethylbenzene	100-41-4	20.	0.4	ppm(v)	1
07068	Xylene (total)	1330-20-7	110.	0.7	ppm(v)	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/03/2003 00:13	David I Ressler	1
07059	BTEX	EPA Method 18 modified	1	07/03/2003 00:13	David I Ressler	1

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 857910
Reported: 07/24/03 at 01:33 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: A031831AA	Sample number(s): 4075400,4075402,4075404-4075405							
Benzene	N.D.	0.20	ppb(v)	103		74-141		
Toluene	N.D.	0.20	ppb(v)					
Ethylbenzene	N.D.	0.20	ppb(v)	122		59-143		
m/p-Xylene	N.D.	0.20	ppb(v)					
o-Xylene	N.D.	0.20	ppb(v)					
Batch number: M031841AA	Sample number(s): 4075399,4075405							
C2-C10 Hydrocarbons	N.D.	1.0	ppm (v) pr					
Benzene	N.D.	0.5	ppm(v)	104		48-169		
Toluene	N.D.	0.8	ppm(v)	110		48-175		
Ethylbenzene	N.D.	0.4	ppm(v)	111		59-152		
Xylene (total)	N.D.	0.7	ppm(v)	127		63-163		
Batch number: M031881AA	Sample number(s): 4075400-4075404,4075406							
C2-C10 Hydrocarbons	N.D.	1.0	ppm(v)					
Benzene	N.D.	0.5	ppm(v)	111		48-169		
Toluene	N.D.	0.8	ppm(v)	112		48-175		
Ethylbenzene	N.D.	0.4	ppm(v)	98		59-152		
Xylene (total)	N.D.	0.7	ppm(v)	96		63-163		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Lancaster Laboratories

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583
925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 843809. Samples arrived at the laboratory on Wednesday, March 05, 2003. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
B21-15 Grab Soil Sample	4006745
B21-20 Grab Soil Sample	4006746
B21-25 Grab Soil Sample	4006747
B21-30 Grab Soil Sample	4006748
B22-25 Grab Soil Sample	4006749
B22-30 Grab Soil Sample	4006750
B23-30 Grab Soil Sample	4006751
B23-35 Grab Soil Sample	4006752
B24-25 Grab Soil Sample	4006753
Trip Blank Water Sample	4006754

1 COPY TO Delta Environmental Attn: Matt Miller

Lancaster Laboratories

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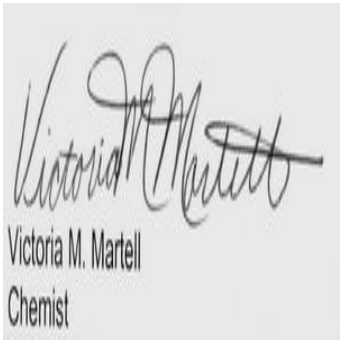
Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,



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Analysis Report

Lancaster Laboratories Sample No. SW 4006745

Collected:03/03/2003 09:30 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B21-15 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2115

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	7.4	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	11,000.	800.	mg/kg	20000

The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	17.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	19.	1.6	mg/kg	20000
08184	Toluene	108-88-3	79.	1.6	mg/kg	20000
08185	Ethylbenzene	100-41-4	54.	1.6	mg/kg	20000
08186	Total Xylenes	1330-20-7	280.	4.0	mg/kg	20000
08187	MTBE	1634-04-4	17.	4.0	mg/kg	20000
08189	Naphthalene	91-20-3	64.	8.0	mg/kg	20000

The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

07804	PAHs in Soil by GC/MS					
03781	Benzo(a)anthracene	56-55-3	N.D.	0.033	mg/kg	1
03782	Chrysene	218-01-9	N.D.	0.033	mg/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	0.033	mg/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	0.033	mg/kg	1
03788	Benzo(a)pyrene	50-32-8	N.D.	0.033	mg/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.033	mg/kg	1
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	0.033	mg/kg	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Lancaster Laboratories Sample No. SW 4006745

Collected:03/03/2003 09:30 by MM

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Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B21-15 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2115

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

The GC/MS semivolatile internal standard peak areas were outside of the QC limits for both the initial injection and the re-injection. The values here are from the initial injection of the sample.

Poor surrogate recoveries were observed for the GC/MS semivolatile compounds. The analysis was repeated and poor surrogate recoveries were again observed, indicating a matrix effect.

06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.13	mg/kg	125.94
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.13	mg/kg	125.94
05461	1,2-Dichloroethane	107-06-2	N.D.	0.13	mg/kg	125.94

The GC/MS volatile analysis was performed according to the medium level soil method due to the level of non-target compounds. Therefore, the reporting limits were raised.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/10/2003 10:56	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/10/2003 02:24	Stephanie A Selis	20000
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/10/2003 14:17	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/10/2003 02:24	Stephanie A Selis	20000
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	03/13/2003 02:08	Linda M Hartenstine	1
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/13/2003 17:11	Susan McMahon-Luu	125.94
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/13/2003 17:11	Susan McMahon-Luu	125.94
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/12/2003 16:45	Susan McMahon-Luu	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/07/2003 02:45	Stephanie A Selis	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/09/2003 20:00	Annamaria Stipkovits	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4006745

Collected:03/03/2003 09:30 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B21-15 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2115

07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/07/2003 19:00	Sally L Appleyard	1
07806	BNA Soil Extraction	SW-846 3550B	1	03/12/2003 18:15	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4006746

Collected:03/03/2003 09:35 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B21-20 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2120

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	3.7	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	190.	20.	mg/kg	500

The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	0.45	0.40	mg/kg	500
08184	Toluene	108-88-3	N.D.	0.40	mg/kg	500
08185	Ethylbenzene	100-41-4	0.40	0.40	mg/kg	500
08186	Total Xylenes	1330-20-7	2.2	0.10	mg/kg	500
08187	MTBE	1634-04-4	0.18	0.10	mg/kg	500
08189	Naphthalene	91-20-3	1.7	0.20	mg/kg	500

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

Due to the nature of the sample matrix, normal reporting limits were not attained for toluene.

06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	0.009	0.001	mg/kg	1
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.001	mg/kg	1
05461	1,2-Dichloroethane	107-06-2	N.D.	0.001	mg/kg	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4006746

Collected:03/03/2003 09:35 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B21-20 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2120

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
	State of Washington Lab Certification No. C259					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/10/2003 11:36	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/10/2003 03:00	Stephanie A Selis	500
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/10/2003 15:07	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/10/2003 03:00	Stephanie A Selis	500
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/12/2003 19:42	David A Hoppman	1
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/12/2003 19:42	David A Hoppman	1
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/12/2003 19:20	David A Hoppman	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/07/2003 02:46	Stephanie A Selis	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/09/2003 20:00	Annamaria Stipkovits	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/07/2003 19:00	Sally L Appleyard	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4006747

Collected:03/03/2003 09:40 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B21-25 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2125

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	4.1	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	4.0	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	0.75	0.0020	mg/kg	25
08184	Toluene	108-88-3	0.030	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	0.099	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	0.11	0.0050	mg/kg	25
08187	MTBE	1634-04-4	0.0085	0.0050	mg/kg	25
08189	Naphthalene	91-20-3	0.12	0.010	mg/kg	25
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	0.006	0.001	mg/kg	0.99
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.001	mg/kg	0.99
05461	1,2-Dichloroethane	107-06-2	N.D.	0.001	mg/kg	0.99

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/10/2003 13:53	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/10/2003 03:37	Stephanie A Selis	25

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Analysis Report

Lancaster Laboratories Sample No. SW 4006747

Collected:03/03/2003 09:40 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B21-25 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
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San Ramon CA 94583

B2125

02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/10/2003 15:32	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/10/2003 03:37	Stephanie A Selis	25
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/12/2003 16:52	Roy R Mellott Jr	0.99
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/12/2003 16:52	Roy R Mellott Jr	0.99
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/12/2003 15:10	Roy R Mellott Jr	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/07/2003 02:47	Stephanie A Selis	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/09/2003 20:00	Annamaria Stipkovits	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/07/2003 19:00	Sally L Appleyard	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4006748

Collected:03/03/2003 09:50 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B21-30 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2130

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	3.8	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	32.	4.0	mg/kg	100
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	3.1	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	0.27	0.0020	mg/kg	25
08184	Toluene	108-88-3	0.16	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	0.10	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	0.51	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.10	mg/kg	25
08189	Naphthalene	91-20-3	0.20	0.010	mg/kg	25
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. MTBE					
07804	PAHs in Soil by GC/MS					
03781	Benzo(a)anthracene	56-55-3	N.D.	0.033	mg/kg	1
03782	Chrysene	218-01-9	N.D.	0.033	mg/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	0.033	mg/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	0.033	mg/kg	1
03788	Benzo(a)pyrene	50-32-8	N.D.	0.033	mg/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.033	mg/kg	1
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	0.033	mg/kg	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

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Analysis Report

Lancaster Laboratories Sample No. SW 4006748

Collected:03/03/2003 09:50 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B21-30 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2130

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.12	mg/kg	124.38
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.12	mg/kg	124.38
05461	1,2-Dichloroethane	107-06-2	N.D.	0.12	mg/kg	124.38

The GC/MS volatile analysis was performed according to the medium level soil method due to the level of non-target compounds. Therefore, the reporting limits were raised.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/10/2003 14:02	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/10/2003 04:13	Stephanie A Selis	100
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/10/2003 15:57	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/08/2003 01:45	Steven A Skiles	25
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	03/13/2003 03:08	Linda M Hartenstine	1
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/13/2003 17:37	Susan McMahon-Luu	124.38
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/13/2003 17:37	Susan McMahon-Luu	124.38
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/12/2003 16:50	Susan McMahon-Luu	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/07/2003 02:48	Stephanie A Selis	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/09/2003 20:00	Annamaria Stipkovits	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/07/2003 19:00	Sally L Appleyard	1
07806	BNA Soil Extraction	SW-846 3550B	1	03/12/2003 18:15	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4006749

Collected:03/03/2003 13:00 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B22-25 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2225

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	4.2	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	8.6	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	9.6	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	0.14	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.020	mg/kg	25
08186	Total Xylenes	1330-20-7	N.D.	0.060	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.020	mg/kg	25
08189	Naphthalene	91-20-3	N.D.	0.15	mg/kg	25
	Due to the nature of the sample matrix, normal reporting limits were not attained.					
07804	PAHs in Soil by GC/MS					
03781	Benzo(a)anthracene	56-55-3	N.D.	0.033	mg/kg	1
03782	Chrysene	218-01-9	N.D.	0.033	mg/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	0.033	mg/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	0.033	mg/kg	1
03788	Benzo(a)pyrene	50-32-8	N.D.	0.033	mg/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.033	mg/kg	1
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	0.033	mg/kg	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.001	mg/kg	0.99

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Analysis Report

Lancaster Laboratories Sample No. SW 4006749

Collected:03/03/2003 13:00 by MM

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B22-25 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

Account Number: 10900

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2225

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.001	mg/kg	0.99
05461	1,2-Dichloroethane	107-06-2	N.D.	0.001	mg/kg	0.99

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/10/2003 14:12	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/08/2003 02:21	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/10/2003 16:22	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/08/2003 02:21	Steven A Skiles	25
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	03/13/2003 04:07	Linda M Hartenstine	1
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/12/2003 16:21	Roy R Mellott Jr	0.99
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/12/2003 16:21	Roy R Mellott Jr	0.99
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/12/2003 15:13	Roy R Mellott Jr	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/07/2003 02:49	Stephanie A Selis	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/09/2003 20:00	Annamaria Stipkovits	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/07/2003 19:00	Sally L Appleyard	1
07806	BNA Soil Extraction	SW-846 3550B	1	03/12/2003 18:15	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4006750

Collected:03/03/2003 13:05 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B22-30 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2230

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	6.6	0.21	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	0.0072	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	N.D.	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/10/2003 14:22	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/07/2003 16:38	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/10/2003 16:47	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/07/2003 16:38	Steven A Skiles	25
01150	GC VOA Soil Prep	SW-846 5035	1	03/07/2003 02:50	Stephanie A Selis	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/09/2003 20:00	Annamaria Stipkovits	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/07/2003 19:00	Sally L Appleyard	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4006751

Collected:03/03/2003 16:10 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:51
Discard: 05/01/2003
B23-30 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2330

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	5.3	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	N.D.	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/10/2003 14:31	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/08/2003 02:58	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/10/2003 17:12	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/08/2003 02:58	Steven A Skiles	25
01150	GC VOA Soil Prep	SW-846 5035	1	03/07/2003 02:55	Stephanie A Selis	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/09/2003 20:00	Annamaria Stipkovits	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/07/2003 19:00	Sally L Appleyard	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4006752

Collected:03/03/2003 16:15 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:52
Discard: 05/01/2003
B23-35 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2335

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	4.1	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	N.D.	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/10/2003 14:51	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/08/2003 03:34	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/10/2003 18:02	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/08/2003 03:34	Steven A Skiles	25
01150	GC VOA Soil Prep	SW-846 5035	1	03/07/2003 02:56	Stephanie A Selis	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/09/2003 20:00	Annamaria Stipkovits	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/07/2003 19:00	Sally L Appleyard	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4006753

Collected:03/04/2003 09:00 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:52
Discard: 05/01/2003
B24-25 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2425

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	7.5	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	9.0	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	99.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	0.18	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	0.055	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	1.2	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.020	mg/kg	25
08189	Naphthalene	91-20-3	0.099	0.010	mg/kg	25
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. MTBE					
07804	PAHs in Soil by GC/MS					
03781	Benzo(a)anthracene	56-55-3	N.D.	0.033	mg/kg	1
03782	Chrysene	218-01-9	N.D.	0.033	mg/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	0.033	mg/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	0.033	mg/kg	1
03788	Benzo(a)pyrene	50-32-8	N.D.	0.033	mg/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.033	mg/kg	1
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	0.033	mg/kg	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

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Analysis Report

Lancaster Laboratories Sample No. SW 4006753

Collected:03/04/2003 09:00 by MM

Account Number: 10900

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:52
Discard: 05/01/2003
B24-25 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2425

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.002	mg/kg	1.99
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.002	mg/kg	1.99
05461	1,2-Dichloroethane	107-06-2	N.D.	0.002	mg/kg	1.99

The reporting limits for the GC/MS volatile compounds were raised due to the level of non-target compounds.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/10/2003 15:00	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/08/2003 04:10	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/10/2003 18:27	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/08/2003 04:10	Steven A Skiles	25
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	03/13/2003 05:07	Linda M Hartenstine	1
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/12/2003 17:22	Roy R Mellott Jr	1.99
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/12/2003 17:22	Roy R Mellott Jr	1.99
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/12/2003 15:15	Roy R Mellott Jr	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/07/2003 02:57	Stephanie A Selis	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/09/2003 20:00	Annamaria Stipkovits	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/07/2003 19:00	Sally L Appleyard	1
07806	BNA Soil Extraction	SW-846 3550B	1	03/12/2003 18:15	Jessica Agosto	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4006754

Collected: n.a.

Submitted: 03/05/2003 09:15
Reported: 03/31/2003 at 15:52
Discard: 05/01/2003
Trip Blank Water Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

Account Number: 10900

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

WACTB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.50	ug/l	1
02164	Toluene	108-88-3	N.D.	0.50	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	03/07/2003 08:48	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	03/07/2003 08:48	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/07/2003 08:48	Melissa D Mann	n.a.

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 843809
Reported: 03/31/03 at 03:52 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 03065A56A	Sample number(s): 4006754							
TPH by NWTPH-Gx waters	N.D.	.048	mg/l	92	106	70-130	14	30
Benzene	N.D.	.5	ug/l	106	103	80-118	3	30
Toluene	N.D.	.5	ug/l	107	108	82-119	0	30
Ethylbenzene	N.D.	.5	ug/l	106	105	81-119	1	30
Total Xylenes	N.D.	1.5	ug/l	106	104	82-120	2	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	110	104	79-127	6	30
Batch number: 030660000A	Sample number(s): 4006745-4006753							
Diesel Range Organics	N.D.	3.	mg/kg	91		60-120		
Heavy Range Organics	N.D.	10.	mg/kg					
Batch number: 03066A31A	Sample number(s): 4006748-4006753							
TPH by NWTPH-Gx soils	N.D.	1.	mg/kg	93		70-130		
Benzene	N.D.	2.	ug/kg	98		86-121		
Toluene	N.D.	2.	ug/kg	103		93-122		
Ethylbenzene	N.D.	2.	ug/kg	101		88-120		
Total Xylenes	N.D.	5.	ug/kg	103		88-120		
MTBE	N.D.	5.	ug/kg	105		80-132		
Naphthalene	N.D.	10.	ug/kg	109		74-121		
Batch number: 03066A31B	Sample number(s): 4006745-4006748							
TPH by NWTPH-Gx soils	N.D.	1.	mg/kg	93		70-130		
Benzene	N.D.	2.	ug/kg	98		86-121		
Toluene	N.D.	2.	ug/kg	103		93-122		
Ethylbenzene	N.D.	2.	ug/kg	101		88-120		
Total Xylenes	N.D.	5.	ug/kg	103		88-120		
MTBE	N.D.	5.	ug/kg	105		80-132		
Naphthalene	N.D.	10.	ug/kg	109		74-121		
Batch number: 030685710001	Sample number(s): 4006745-4006753							
Lead (furnace method)	N.D.	.11	mg/kg	94		74-126		
Batch number: 03071SLB026	Sample number(s): 4006745,4006748-4006749,4006753							
Benzo(a)anthracene	N.D.	33.	ug/kg	80	90	69-115	12	30
Chrysene	N.D.	33.	ug/kg	78	88	67-119	11	30
Benzo(b)fluoranthene	N.D.	33.	ug/kg	76	87	66-122	13	30
Benzo(k)fluoranthene	N.D.	33.	ug/kg	80	89	66-122	11	30
Benzo(a)pyrene	N.D.	33.	ug/kg	83	94	79-111	13	30
Indeno(1,2,3-cd)pyrene	N.D.	33.	ug/kg	81	90	73-118	11	30
Dibenz(a,h)anthracene	N.D.	33.	ug/kg	87	97	78-126	11	30
Batch number: D030691AB	Sample number(s): 4006746-4006747,4006749,4006753							
Methyl Tertiary Butyl Ether	N.D.	1.	ug/kg	106		75-125		
1,2-Dichloroethane	N.D.	1.	ug/kg	78		76-126		
1,2-Dibromoethane	N.D.	1.	ug/kg	91		77-114		
Batch number: Q030711AB	Sample number(s): 4006745,4006748							
Methyl Tertiary Butyl Ether	N.D.	125.	ug/kg	98		75-125		
1,2-Dichloroethane	N.D.	125.	ug/kg	100		76-126		
1,2-Dibromoethane	N.D.	125.	ug/kg	96		77-114		

Sample Matrix Quality Control

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 843809
Reported: 03/31/03 at 03:52 PM

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 03065A56A	Sample number(s): 4006754								
TPH by NWTPH-Gx waters	101		70-130						
Benzene	116		67-136						
Toluene	118		78-129						
Ethylbenzene	118		75-133						
Total Xylenes	117		86-132						
Methyl tert-Butyl Ether	110		66-136						
Batch number: 030660000A	Sample number(s): 4006745-4006753								
Diesel Range Organics						17.	23.	27* (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 03066A31A	Sample number(s): 4006748-4006753								
TPH by NWTPH-Gx soils	76	75	70-130	1	30				
Benzene	76	76	70-130	1	30				
Toluene	80	82	70-130	2	30				
Ethylbenzene	79	81	70-130	2	30				
Total Xylenes	81	83	70-130	1	30				
MTBE	84	81	70-130	3	30				
Naphthalene	95	92	70-130	3	30				
Batch number: 03066A31B	Sample number(s): 4006745-4006748								
TPH by NWTPH-Gx soils	76	75	70-130	1	30				
Benzene	76	76	70-130	1	30				
Toluene	80	82	70-130	2	30				
Ethylbenzene	79	81	70-130	2	30				
Total Xylenes	81	83	70-130	1	30				
MTBE	84	81	70-130	3	30				
Naphthalene	95	92	70-130	3	30				
Batch number: 030685710001	Sample number(s): 4006745-4006753								
Lead (furnace method)	126*	150*	80-120	5	20	7.4	6.8	8 (1)	20
Batch number: D030691AB	Sample number(s): 4006746-4006747,4006749,4006753								
Methyl Tertiary Butyl Ether	100	95	57-136	4	30				
1,2-Dichloroethane	75	73	57-137	3	30				
1,2-Dibromoethane	85	87	61-125	3	30				
Batch number: Q030711AB	Sample number(s): 4006745,4006748								
Methyl Tertiary Butyl Ether	85	90	57-136	7	30				
1,2-Dichloroethane	81	83	57-137	2	30				
1,2-Dibromoethane	93	94	61-125	2	30				

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 03065A56A

	Trifluorotoluene-P	Trifluorotoluene-F
4006754	108	90
Blank	107	88
LCS	109	90
LCSD	109	87
MS	109	83

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 843809
Reported: 03/31/03 at 03:52 PM

Surrogate Quality Control

Limits: 66-136 57-146

Analysis Name: TPH by NWTPH-Dx(soils) w/SiGel
Batch number: 030660000A

	Orthoterphenyl
4006745	104
4006746	93
4006747	96
4006748	88
4006749	90
4006750	84
4006751	81
4006752	91
4006753	127
Blank	96
LCS	124

Limits: 20-149

Analysis Name: BTEX/MTBE/Isopropylbenz/Napht.
Batch number: 03066A31A

	Trifluorotoluene-F	Trifluorotoluene-P
4006748		95
4006749	85	67*
4006750	78	89
4006751	80	89
4006752	78	87
4006753	87	94
Blank	104	111
LCS	110	107
MS	78	78
MSD	85	84

Limits: 66-117 72-122

Analysis Name: BTEX/MTBE/Isopropylbenz/Napht.
Batch number: 03066A31B

	Trifluorotoluene-F	Trifluorotoluene-P
4006745	11*	2*
4006746	9*	6*
4006747	81	83
4006748	30*	
Blank	96	109
LCS	110	107
MS	78	78
MSD	85	84

Limits: 66-117 72-122

Analysis Name: PAHs in Soil by GC/MS
Batch number: 03071SLB026

	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
4006745	140*	84	79
4006748	91	87	80

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 843809
Reported: 03/31/03 at 03:52 PM

Surrogate Quality Control

4006749	82	84	76	
4006753	86	87	80	
Blank	86	91	79	
LCS	74	77	76	
LCSD	83	84	84	
Limits:	47-128	55-123	39-128	

Analysis Name: 8260 Special Cmpds for Soils
Batch number: D030691AB

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4006746	90	93	89	89
4006747	90	79	91	89
4006749	90	85	96	92
4006753	92	88	91	91
Blank	96	94	88	92
LCS	91	91	92	89
MS	90	90	95	88
MSD	91	89	94	87
Limits:	65-129	67-121	57-133	55-128

Analysis Name: 8260 Special Cmpds for Soils
Batch number: Q030711AB

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4006745	96	97	92	96
4006748	90	94	86	90
Blank	101	100	94	91
LCS	104	101	99	102
MS	96	99	95	91
MSD	95	99	95	91
Limits:	65-129	67-121	57-133	55-128

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583
925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 844049. Samples arrived at the laboratory on Saturday, March 08, 2003. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
B29-15 Soil Sample	4008024
B29-25 Soil Sample	4008025
B30-25 Soil Sample	4008026
B30-30 Soil Sample	4008027
B30-80 Soil Sample	4008028
B30-85 Soil Sample	4008029
3603001 Soil Sample	4008030
B31-80 Soil Sample	4008031
B31-85 Soil Sample	4008032
3703003 Soil Sample	4008033
Trip Blank Water Sample	4008034

1 COPY TO Delta Environmental Attn: Matt Miller

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,

Robert E. Mellinger
Senior Chemist, Coordinator

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Analysis Report

Lancaster Laboratories Sample No. SW 4008024

Collected: 03/06/2003 08:30 by MM

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:48
Discard: 04/28/2003
B29-15 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

Account Number: 10900

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2915

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	3.6	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.0050	mg/kg	25
08186	Total Xylenes	1330-20-7	N.D.	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 16:49	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 02:20	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 09:40	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 02:20	Steven A Skiles	25
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:56	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 23:35	Karen L Beyer	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4008025

Collected:03/06/2003 08:50 by MM

Account Number: 10900

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:48
Discard: 04/28/2003
B29-25 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2925

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	4.4	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	N.D.	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 17:08	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 02:57	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 10:04	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 02:57	Steven A Skiles	25
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:57	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 23:35	Karen L Beyer	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4008026

Collected:03/06/2003 11:25 by MM

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:48
Discard: 04/28/2003
B30-25 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

B3025

Account Number: 10900

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	8.9	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	16.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	0.14	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	0.16	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	1.6	0.0050	mg/kg	25
08187	MTBE	1634-04-4	0.12	0.0050	mg/kg	25
08189	Naphthalene	91-20-3	0.12	0.010	mg/kg	25
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.005	mg/kg	5.05
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.005	mg/kg	5.05
05461	1,2-Dichloroethane	107-06-2	N.D.	0.005	mg/kg	5.05

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 17:18	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 03:34	Steven A Skiles	25

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Analysis Report

Lancaster Laboratories Sample No. SW 4008026

Collected:03/06/2003 11:25 by MM

Account Number: 10900

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:48
Discard: 04/28/2003
B30-25 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B3025

02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 10:29	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 03:34	Steven A Skiles	25
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/19/2003 19:48	Roy R Mellott Jr	5.05
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/19/2003 19:48	Roy R Mellott Jr	5.05
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/19/2003 16:12	Roy R Mellott Jr	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:58	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 23:35	Karen L Beyer	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4008027

Collected:03/06/2003 11:30 by MM

Account Number: 10900

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:48
Discard: 04/28/2003
B30-30 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B3030

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	6.8	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	32.	4.0	mg/kg	100

The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.020	mg/kg	100
08184	Toluene	108-88-3	0.27	0.0080	mg/kg	100
08185	Ethylbenzene	100-41-4	0.24	0.0080	mg/kg	100
08186	Total Xylenes	1330-20-7	2.4	0.020	mg/kg	100
08187	MTBE	1634-04-4	0.050	0.020	mg/kg	100
08189	Naphthalene	91-20-3	0.19	0.040	mg/kg	100

The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent.
benzene

06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.005	mg/kg	4.95
07584	PPL + Xylene (total) by 8260					

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Analysis Report

Lancaster Laboratories Sample No. SW 4008027

Collected:03/06/2003 11:30 by MM

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:48
Discard: 04/28/2003
B30-30 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

Account Number: 10900

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B3030

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.005	mg/kg	4.95
05461	1,2-Dichloroethane	107-06-2	N.D.	0.005	mg/kg	4.95

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 17:28	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 22:14	Deborah S Garrison	100
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 10:54	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 22:14	Deborah S Garrison	100
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/19/2003 20:19	Roy R Mellott Jr	4.95
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/19/2003 20:19	Roy R Mellott Jr	4.95
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/19/2003 16:14	Roy R Mellott Jr	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/10/2003 11:01	K. Robert Caulfeild-James	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 23:35	Karen L Beyer	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4008028

Collected:03/06/2003 13:10 by MM

Account Number: 10900

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:48
Discard: 04/28/2003
B30-80 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B3080

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	2.3	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	0.0090	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 17:37	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 04:11	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 11:19	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 04:11	Steven A Skiles	25
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:59	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 23:35	Karen L Beyer	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4008029

Collected:03/06/2003 13:12 by MM

Account Number: 10900

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:48
Discard: 04/28/2003
B30-85 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B3085

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	1.7	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	0.0066	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 17:47	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 04:48	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 11:44	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 04:48	Steven A Skiles	25
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 10:00	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 23:35	Karen L Beyer	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4008030

Collected:03/06/2003 00:00 by MM

Account Number: 10900

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:48
Discard: 04/28/2003
3603001 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

03001

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	6.5	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	32.	4.0	mg/kg	100

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	120.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.020	mg/kg	100
08184	Toluene	108-88-3	0.081	0.0080	mg/kg	100
08185	Ethylbenzene	100-41-4	0.19	0.0080	mg/kg	100
08186	Total Xylenes	1330-20-7	1.3	0.020	mg/kg	100
08187	MTBE	1634-04-4	0.047	0.020	mg/kg	100
08189	Naphthalene	91-20-3	0.29	0.040	mg/kg	100

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent.
benzene

07804	PAHs in Soil by GC/MS					
03781	Benzo(a)anthracene	56-55-3	N.D.	0.033	mg/kg	1
03782	Chrysene	218-01-9	N.D.	0.033	mg/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	0.033	mg/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	0.033	mg/kg	1
03788	Benzo(a)pyrene	50-32-8	N.D.	0.033	mg/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.033	mg/kg	1
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	0.033	mg/kg	1

Lancaster Laboratories Sample No. SW 4008030

Collected:03/06/2003 00:00 by MM

Account Number: 10900

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:48
Discard: 04/28/2003
3603001 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

03001

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.13	mg/kg	125.94
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.13	mg/kg	125.94
05461	1,2-Dichloroethane	107-06-2	N.D.	0.13	mg/kg	125.94
	The GC/MS volatile analysis was performed according to the medium level soil method due to the level of non-target compounds. Therefore, the reporting limits were raised.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 18:06	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 22:51	Deborah S Garrison	100
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/14/2003 15:42	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 22:51	Deborah S Garrison	100
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	03/19/2003 12:56	Brian K Graham	1
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/19/2003 12:46	Susan McMahon-Luu	125.94
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/19/2003 12:46	Susan McMahon-Luu	125.94
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/18/2003 19:13	Parker D Lindstrom	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/10/2003 11:03	K. Robert Caulfeild-James	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	2	03/13/2003 17:40	Kelly E Brickley	1
07806	BNA Soil Extraction	SW-846 3550B	1	03/18/2003 22:25	Karen L Beyer	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4008031

Collected:03/07/2003 10:00 by MM

Account Number: 10900

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:48
Discard: 04/28/2003
B31-80 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B3180

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	1.4	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	N.D.	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 18:16	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 05:25	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 06:45	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 05:25	Steven A Skiles	25
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 10:01	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/11/2003 10:30	Olivia Arosemena	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4008032

Collected:03/07/2003 10:05 by MM

Account Number: 10900

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:49
Discard: 04/28/2003
B31-85 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B3185

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	2.5	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	N.D.	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 18:26	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 06:02	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 07:35	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 06:02	Steven A Skiles	25
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 10:02	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/11/2003 10:30	Olivia Arosemena	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4008033

Collected:03/07/2003 00:00 by MM

Account Number: 10900

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:49
Discard: 04/28/2003
3703003 Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

03003

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	2.5	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	N.D.	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 14:13	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 14:43	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 08:25	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 14:43	Steven A Skiles	25
01150	GC VOA Soil Prep	SW-846 5035	1	03/10/2003 11:04	K. Robert Caulfeild-James	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/11/2003 10:30	Olivia Arosemena	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4008034

Collected: n.a.

Submitted: 03/08/2003 10:10
Reported: 03/28/2003 at 11:49
Discard: 04/28/2003
Trip Blank Water Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

Account Number: 10900

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

WATBL

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.50	ug/l	1
02164	Toluene	108-88-3	N.D.	0.50	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	Site-specific MS/MSD samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	Site-specific MS/MSD samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	03/11/2003 09:45	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 09:45	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/11/2003 09:45	Melissa D Mann	n.a.

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 844049
Reported: 03/28/03 at 11:49 AM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 03066A31C	Sample number(s): 4008027,4008030							
TPH by NWTPH-Gx soils	N.D.	1.	mg/kg	93		70-130		
Benzene	N.D.	2.	ug/kg	98		86-121		
Toluene	N.D.	2.	ug/kg	103		93-122		
Ethylbenzene	N.D.	2.	ug/kg	101		88-120		
Total Xylenes	N.D.	5.	ug/kg	103		88-120		
MTBE	N.D.	5.	ug/kg	105		80-132		
Naphthalene	N.D.	10.	ug/kg	109		74-121		
Batch number: 03068A33A	Sample number(s): 4008024-4008026,4008028-4008029,4008031-4008032							
TPH by NWTPH-Gx soils	N.D.	1.	mg/kg	99		70-130		
Benzene	N.D.	2.	ug/kg	99		86-121		
Toluene	N.D.	2.	ug/kg	97		93-122		
Ethylbenzene	N.D.	2.	ug/kg	96		88-120		
Total Xylenes	N.D.	5.	ug/kg	97		88-120		
MTBE	N.D.	5.	ug/kg	106		80-132		
Naphthalene	N.D.	10.	ug/kg	106		74-121		
Batch number: 03068A33B	Sample number(s): 4008033							
TPH by NWTPH-Gx soils	N.D.	1.	mg/kg	99		70-130		
Benzene	N.D.	2.	ug/kg	99		86-121		
Toluene	N.D.	2.	ug/kg	97		93-122		
Ethylbenzene	N.D.	2.	ug/kg	96		88-120		
Total Xylenes	N.D.	5.	ug/kg	97		88-120		
MTBE	N.D.	5.	ug/kg	106		80-132		
Batch number: 030690018A	Sample number(s): 4008024-4008029							
Diesel Range Organics	N.D.	3.	mg/kg	97		60-120		
Heavy Range Organics	N.D.	10.	mg/kg					
Batch number: 030690025A	Sample number(s): 4008031-4008033							
Diesel Range Organics	N.D.	3.	mg/kg	90		60-120		
Heavy Range Organics	N.D.	10.	mg/kg					
Batch number: 030695710001	Sample number(s): 4008024-4008033							
Lead (furnace method)	N.D.	.11	mg/kg	101		74-126		
Batch number: 03070A51A	Sample number(s): 4008034							
TPH by NWTPH-Gx waters	N.D.	.048	mg/l	98	96	70-130	2	30
Benzene	N.D.	.5	ug/l	114	106	80-118	7	30
Toluene	N.D.	.5	ug/l	112	105	82-119	7	30
Ethylbenzene	N.D.	.5	ug/l	105	98	81-119	7	30
Total Xylenes	N.D.	1.5	ug/l	107	100	82-120	7	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	112	105	79-127	7	30
Batch number: 030720025A	Sample number(s): 4008030							
Diesel Range Organics	N.D.	3.	mg/kg	72		60-120		
Heavy Range Organics	N.D.	10.	mg/kg					
Batch number: 03077SLF026	Sample number(s): 4008030							
Benzo(a)anthracene	N.D.	33.	ug/kg	99	97	69-115	3	30
Chrysene	N.D.	33.	ug/kg	99	96	67-119	3	30
Benzo(b)fluoranthene	N.D.	33.	ug/kg	97	91	66-122	7	30
Benzo(k)fluoranthene	N.D.	33.	ug/kg	101	94	66-122	6	30
Benzo(a)pyrene	N.D.	33.	ug/kg	102	98	79-111	4	30

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 844049
Reported: 03/28/03 at 11:49 AM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Indeno(1,2,3-cd)pyrene	N.D.	33.	ug/kg	107	102	73-118	5	30
Dibenz(a,h)anthracene	N.D.	33.	ug/kg	114	107	78-126	6	30
Batch number: D030781AA	Sample number(s): 4008026-4008027							
Methyl Tertiary Butyl Ether	N.D.	1.	ug/kg	97		75-125		
1,2-Dichloroethane	N.D.	1.	ug/kg	98		76-126		
1,2-Dibromoethane	N.D.	1.	ug/kg	100		77-114		
Batch number: Q030731AE	Sample number(s): 4008030							
Methyl Tertiary Butyl Ether	N.D.	125.	ug/kg	90		75-125		
1,2-Dichloroethane	N.D.	125.	ug/kg	89		76-126		
1,2-Dibromoethane	N.D.	125.	ug/kg	96		77-114		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 03066A31C	Sample number(s): 4008027,4008030								
TPH by NWTPH-Gx soils	76	75	70-130	1	30				
Benzene	76	76	70-130	1	30				
Toluene	80	82	70-130	2	30				
Ethylbenzene	79	81	70-130	2	30				
Total Xylenes	81	83	70-130	1	30				
MTBE	84	81	70-130	3	30				
Naphthalene	95	92	70-130	3	30				
Batch number: 03068A33A	Sample number(s): 4008024-4008026,4008028-4008029,4008031-4008032								
TPH by NWTPH-Gx soils	61*	64*	70-130	5	30				
Benzene	77	80	70-130	4	30				
Toluene	80	83	70-130	3	30				
Ethylbenzene	82	85	70-130	4	30				
Total Xylenes	83	86	70-130	4	30				
MTBE	94	96	70-130	2	30				
Naphthalene	101	106	70-130	5	30				
Batch number: 03068A33B	Sample number(s): 4008033								
TPH by NWTPH-Gx soils	61*	64*	70-130	5	30				
Benzene	77	80	70-130	4	30				
Toluene	80	83	70-130	3	30				
Ethylbenzene	82	85	70-130	4	30				
Total Xylenes	83	86	70-130	4	30				
MTBE	94	96	70-130	2	30				
Batch number: 030690018A	Sample number(s): 4008024-4008029								
Diesel Range Organics						1,400.	1,700.	15	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 030690025A	Sample number(s): 4008031-4008033								
Diesel Range Organics						N.D.	N.D.	0 (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 030695710001	Sample number(s): 4008024-4008033								
Lead (furnace method)	119	138*	80-120	8	20	2.5	2.8	11 (1)	20

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 844049
Reported: 03/28/03 at 11:49 AM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 030720025A	Sample number(s): 4008030								
Diesel Range Organics						N.D.	N.D.	0 (1)	0
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: D030781AA	Sample number(s): 4008026-4008027								
Methyl Tertiary Butyl Ether	94	91	57-136	3	30				
1,2-Dichloroethane	93	88	57-137	5	30				
1,2-Dibromoethane	92	84	61-125	9	30				
Batch number: Q030731AE	Sample number(s): 4008030								
Methyl Tertiary Butyl Ether	86	89	57-136	4	30				
1,2-Dichloroethane	85	81	57-137	5	30				
1,2-Dibromoethane	97	93	61-125	5	30				

Surrogate Quality Control

Analysis Name: BTEX/MTBE/Isopropylbenz/Napht.
Batch number: 03066A31C

	Trifluorotoluene-F	Trifluorotoluene-P
4008027	27*	23*
4008030	7*	5*
Blank	103	109
LCS	110	107
MS	78	78
MSD	85	84
Limits:	66-117	72-122

Analysis Name: BTEX/MTBE/Isopropylbenz/Napht.
Batch number: 03068A33A

	Trifluorotoluene-F	Trifluorotoluene-P
4008024	91	89
4008025	94	91
4008026	101	93
4008028	89	87
4008029	87	86
4008031	85	81
4008032	91	87
Blank	109	101
LCS	110	98
MS	93	92
MSD	100	93
Limits:	66-117	72-122

Analysis Name: BTEX/MTBE/Isopropylbenz/Napht.
Batch number: 03068A33B

	Trifluorotoluene-F	Trifluorotoluene-P

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 844049
Reported: 03/28/03 at 11:49 AM

Surrogate Quality Control

4008033	85	79
Blank	111	100
LCS	110	98
MS	93	92
MSD	100	93
Limits:	66-117	72-122

Analysis Name: TPH by NWTPH-Dx(soils) w/SiGel
Batch number: 030690018A

	Orthoterphenyl
4008024	106
4008025	102
4008026	97
4008027	115
4008028	102
4008029	104
Blank	109
LCS	139
Limits:	20-149

Analysis Name: TPH by NWTPH-Dx(soils) w/SiGel
Batch number: 030690025A

	Orthoterphenyl
4008031	99
4008032	93
4008033	102
Blank	101
LCS	124
Limits:	20-149

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 03070A51A

	Trifluorotoluene-P	Trifluorotoluene-F
4008034	91	96
Blank	92	97
LCS	93	95
LCSD	93	94
Limits:	66-136	57-146

Analysis Name: TPH by NWTPH-Dx(soils) w/SiGel
Batch number: 030720025A

	Orthoterphenyl
4008030	142
Blank	82
LCS	100
Limits:	50-150

Analysis Name: PAHs in Soil by GC/MS
Batch number: 03077SLF026

	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 844049
Reported: 03/28/03 at 11:49 AM

Surrogate Quality Control

4008030	79	86	85	
Blank	80	91	84	
LCS	82	94	91	
LCSD	80	93	86	
Limits:	47-128	55-123	39-128	

Analysis Name: 8260 Special Cmpds for Soils
Batch number: D030781AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4008026	94	89	92	90
4008027	95	94	91	91
Blank	97	96	90	86
LCS	92	89	96	93
MS	92	89	98	87
MSD	93	88	97	86
Limits:	65-129	67-121	57-133	55-128

Analysis Name: 8260 Special Cmpds for Soils
Batch number: Q030731AE

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4008030	93	95	93	94
Blank	93	95	91	85
LCS	98	100	97	94
MS	94	96	99	99
MSD	90	91	93	92
Limits:	65-129	67-121	57-133	55-128

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583
925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 843916. Samples arrived at the laboratory on Friday, March 07, 2003. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
B25-20 Grab Soil Sample	4007210
B25-25 Grab Soil Sample	4007211
B25-40 Grab Soil Sample	4007212
B26-30 Grab Soil Sample	4007213
B26-35 Grab Soil Sample	4007214
B27-15 Grab Soil Sample	4007215
B27-20 Grab Soil Sample	4007216
B27-30 Grab Soil Sample	4007217
B28-25 Grab Soil Sample	4007218
B28-40 Grab Soil Sample	4007219
Trip Blank Water Sample	4007220

1 COPY TO Delta Environmental Attn: Matt Miller

Lancaster Laboratories

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Analysis Report

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,

Robert E. Mellinger
Senior Chemist, Coordinator

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4007210

Collected:03/04/2003 13:45 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:25
Discard: 04/25/2003
B25-20 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2520

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	5.2	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	360.	20.	mg/kg	500

The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.040	mg/kg	500
08184	Toluene	108-88-3	N.D.	0.040	mg/kg	500
08185	Ethylbenzene	100-41-4	N.D.	0.25	mg/kg	500
08186	Total Xylenes	1330-20-7	1.4	0.10	mg/kg	500
08187	MTBE	1634-04-4	N.D.	0.10	mg/kg	500
08189	Naphthalene	91-20-3	N.D.	1.5	mg/kg	500

The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.

Due to the nature of the sample matrix, normal reporting limits were not attained.

Due to the presence of interferents near their retention time, normal reporting limits were not attained for the compounds listed below. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.
naphthalene
ethylbenzene

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

06373	8260 Special Cmpds for Soils					

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4007210

Collected:03/04/2003 13:45 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:25
Discard: 04/25/2003
B25-20 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2520

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05677	1,2-Dibromoethane	106-93-4	0.13	0.12	mg/kg	124.69
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.12	mg/kg	124.69
05461	1,2-Dichloroethane	107-06-2	N.D.	0.12	mg/kg	124.69

The GC/MS volatile analysis was performed according to the medium level soil method due to the level of non-target compounds. Therefore, the reporting limits were raised.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 14:52	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 09:49	Steven A Skiles	500
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/11/2003 21:12	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 09:49	Steven A Skiles	500
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/17/2003 23:15	Susan McMahon-Luu	124.69
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/17/2003 23:15	Susan McMahon-Luu	124.69
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/17/2003 16:46	Susan McMahon-Luu	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:46	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 19:30	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4007211

Collected:03/04/2003 14:00 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:25
Discard: 04/25/2003
B25-25 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2525

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	4.6	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	790.	100.	mg/kg	2500

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	120.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.040	mg/kg	500
08184	Toluene	108-88-3	N.D.	0.20	mg/kg	500
08185	Ethylbenzene	100-41-4	1.7	0.040	mg/kg	500
08186	Total Xylenes	1330-20-7	6.5	0.10	mg/kg	500
08187	MTBE	1634-04-4	0.18	0.10	mg/kg	500
08189	Naphthalene	91-20-3	N.D.	5.0	mg/kg	500

Due to the nature of the sample matrix, normal reporting limits were not attained.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent.
naphthalene

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

07804	PAHs in Soil by GC/MS					
03781	Benzo(a)anthracene	56-55-3	N.D.	0.033	mg/kg	1
03782	Chrysene	218-01-9	N.D.	0.033	mg/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	0.033	mg/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	0.033	mg/kg	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4007211

Collected:03/04/2003 14:00 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:25
Discard: 04/25/2003
B25-25 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2525

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
03788	Benzo(a)pyrene	50-32-8	N.D.	0.033	mg/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.033	mg/kg	1
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	0.033	mg/kg	1
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.12	mg/kg	124.07
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.12	mg/kg	124.07
05461	1,2-Dichloroethane	107-06-2	N.D.	0.12	mg/kg	124.07

The GC/MS volatile analysis was performed according to the medium level soil method due to the level of non-target compounds. Therefore, the reporting limits were raised.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 15:11	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 10:26	Steven A Skiles	2500
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/11/2003 22:02	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 15:57	Steven A Skiles	500
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	03/18/2003 01:29	Linda M Hartenstine	1
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/17/2003 23:41	Susan McMahon-Luu	124.07
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/17/2003 23:41	Susan McMahon-Luu	124.07
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/17/2003 16:49	Susan McMahon-Luu	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:47	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 19:30	Kelly E Brickley	1
07806	BNA Soil Extraction	SW-846 3550B	1	03/17/2003 09:00	Olivia Arosemena	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4007212

Collected:03/04/2003 14:15 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:25
Discard: 04/25/2003
B25-40 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2540

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	7.6	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	21.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	0.010	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	0.059	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	0.23	0.0050	mg/kg	25
08187	MTBE	1634-04-4	0.0064	0.0050	mg/kg	25
08189	Naphthalene	91-20-3	N.D.	0.080	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. naphthalene					
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.001	mg/kg	0.99
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.001	mg/kg	0.99
05461	1,2-Dichloroethane	107-06-2	N.D.	0.001	mg/kg	0.99

State of Washington Lab Certification No. C259

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Analysis Report

Lancaster Laboratories Sample No. SW 4007212

Collected:03/04/2003 14:15 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:25
Discard: 04/25/2003
B25-40 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2540

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 15:21	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/10/2003 20:46	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/11/2003 22:27	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/10/2003 20:46	Steven A Skiles	25
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/17/2003 19:24	Roy R Mellott Jr	0.99
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/17/2003 19:24	Roy R Mellott Jr	0.99
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/17/2003 15:20	Roy R Mellott Jr	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:48	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 19:30	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4007213

Collected:03/05/2003 09:02 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:25
Discard: 04/25/2003
B26-30 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2630

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	6.3	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	1.5	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	340.	15.	mg/kg	5
02098	Heavy Range Organics	n.a.	19.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	0.0087	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	0.0048	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	0.043	0.0050	mg/kg	25
08187	MTBE	1634-04-4	0.010	0.0050	mg/kg	25
08189	Naphthalene	91-20-3	N.D.	0.010	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
01216	PCBs in Solids					
01495	PCB-1016	12674-11-2	N.D.	0.0033	mg/kg	1
01496	PCB-1221	11104-28-2	N.D.	0.0033	mg/kg	1
01497	PCB-1232	11141-16-5	N.D.	0.0033	mg/kg	1
01498	PCB-1242	53469-21-9	N.D.	0.0033	mg/kg	1
01499	PCB-1248	12672-29-6	N.D.	0.0033	mg/kg	1
01500	PCB-1254	11097-69-1	0.046	0.0033	mg/kg	1
01501	PCB-1260	11096-82-5	N.D.	0.0033	mg/kg	1
07804	PAHs in Soil by GC/MS					
03781	Benzo(a)anthracene	56-55-3	N.D.	0.033	mg/kg	1
03782	Chrysene	218-01-9	N.D.	0.033	mg/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	0.033	mg/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	0.033	mg/kg	1
03788	Benzo(a)pyrene	50-32-8	N.D.	0.033	mg/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.033	mg/kg	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4007213

Collected:03/05/2003 09:02 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:25
Discard: 04/25/2003
B26-30 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2630

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	0.033	mg/kg	1
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.001	mg/kg	1.01
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.001	mg/kg	1.01
05461	1,2-Dichloroethane	107-06-2	N.D.	0.001	mg/kg	1.01

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 15:31	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/10/2003 21:23	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/11/2003 23:16	Devin M Hetrick	1
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/13/2003 08:53	Devin M Hetrick	5
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/10/2003 21:23	Steven A Skiles	25
01216	PCBs in Solids	SW-846 8082	1	03/19/2003 17:39	Tiffany A George	1
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	03/18/2003 05:08	Linda M Hartenstine	1
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/17/2003 19:56	Roy R Mellott Jr	1.01
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/17/2003 19:56	Roy R Mellott Jr	1.01
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/17/2003 15:22	Roy R Mellott Jr	n.a.
00819	Solid Sample Pesticide Extract	SW-846 3550B	1	03/17/2003 17:45	Luis E Villamil	1
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:49	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 19:30	Kelly E Brickley	1
07806	BNA Soil Extraction	SW-846 3550B	1	03/17/2003 09:00	Olivia Arosemena	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4007214

Collected:03/05/2003 09:05 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B26-35 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2635

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	4.5	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	1.8	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	14.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	0.0071	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	0.0021	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	0.089	0.0050	mg/kg	25
08187	MTBE	1634-04-4	0.011	0.0050	mg/kg	25
08189	Naphthalene	91-20-3	N.D.	0.020	mg/kg	25
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. naphthalene					
07804	PAHs in Soil by GC/MS					
03781	Benzo(a)anthracene	56-55-3	N.D.	0.033	mg/kg	1
03782	Chrysene	218-01-9	N.D.	0.033	mg/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	0.033	mg/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	0.033	mg/kg	1
03788	Benzo(a)pyrene	50-32-8	N.D.	0.033	mg/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.033	mg/kg	1
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	0.033	mg/kg	1
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.002	mg/kg	1.98

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Analysis Report

Lancaster Laboratories Sample No. SW 4007214

Collected:03/05/2003 09:05 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B26-35 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2635

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.002	mg/kg	1.98
05461	1,2-Dichloroethane	107-06-2	N.D.	0.002	mg/kg	1.98

The reporting limits for the GC/MS volatile compounds were raised due to the level of non-target compounds.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 15:41	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/10/2003 22:00	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/11/2003 23:41	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/10/2003 22:00	Steven A Skiles	25
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	03/18/2003 06:02	Linda M Hartenstine	1
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/17/2003 20:29	Roy R Mellott Jr	1.98
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/17/2003 20:29	Roy R Mellott Jr	1.98
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/17/2003 15:25	Roy R Mellott Jr	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:50	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 19:30	Kelly E Brickley	1
07806	BNA Soil Extraction	SW-846 3550B	1	03/17/2003 09:00	Olivia Arosemena	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4007215

Collected:03/05/2003 12:55 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B27-15 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2715

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	5.5	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	3,100.	200.	mg/kg	5000

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	22,000.	1,500.	mg/kg	500
02098	Heavy Range Organics	n.a.	N.D.	5,000.	mg/kg	500

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	350.	0.40	mg/kg	5000
08184	Toluene	108-88-3	220.	0.40	mg/kg	5000
08185	Ethylbenzene	100-41-4	1,600.	0.40	mg/kg	5000
08186	Total Xylenes	1330-20-7	7,700.	1.0	mg/kg	5000
08187	MTBE	1634-04-4	N.D.	1.0	mg/kg	5000
08189	Naphthalene	91-20-3	N.D.	90.	mg/kg	5000

Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

Due to dilution of the sample made necessary by the high level of non-target compounds, normal reporting limits were not attained.

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent.
naphthalene

07804	PAHs in Soil by GC/MS					
03781	Benzo(a)anthracene	56-55-3	N.D.	0.67	mg/kg	10

Lancaster Laboratories Sample No. SW 4007215

Collected:03/05/2003 12:55 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B27-15 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2715

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
03782	Chrysene	218-01-9	N.D.	0.67	mg/kg	10
03786	Benzo(b)fluoranthene	205-99-2	N.D.	0.67	mg/kg	10
03787	Benzo(k)fluoranthene	207-08-9	N.D.	0.67	mg/kg	10
03788	Benzo(a)pyrene	50-32-8	N.D.	0.67	mg/kg	10
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.67	mg/kg	10
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	0.67	mg/kg	10

Due to sample matrix interferences observed during the extraction, the normal reporting limits could not be obtained.

Due to the sample matrix an initial dilution was necessary to perform the analysis. Therefore, the reporting limits for the GC/MS semivolatile compounds were raised.

Surrogate recoveries were outside of QC limits for the GC/MS semivolatile compounds due to the dilution needed to perform the analysis.

06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.12	mg/kg	124.07
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.12	mg/kg	124.07
05461	1,2-Dichloroethane	107-06-2	N.D.	0.12	mg/kg	124.07

The GC/MS volatile analysis was performed according to the medium level soil method due to the level of non-target compounds. Therefore, the reporting limits were raised.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 15:50	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 08:30	Steven A Skiles	5000
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/13/2003 09:43	Devin M Hetrick	500
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 08:30	Steven A Skiles	5000

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Analysis Report

Lancaster Laboratories Sample No. SW 4007215

Collected:03/05/2003 12:55 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B27-15 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2715

07804	PAHs in Soil by GC/MS	SW-846 8270C	1	03/19/2003 04:59	Linda M Hartenstine	10
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/18/2003 15:44	Susan McMahon-Luu	124.07
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/18/2003 15:44	Susan McMahon-Luu	124.07
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/18/2003 14:42	Susan McMahon-Luu	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:51	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 19:30	Kelly E Brickley	1
07806	BNA Soil Extraction	SW-846 3550B	1	03/17/2003 09:00	Olivia Arosemena	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4007216

Collected:03/05/2003 13:00 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B27-20 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2720

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	5.6	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	1,800.	200.	mg/kg	5000
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	9,200.	300.	mg/kg	100
02098	Heavy Range Organics	n.a.	N.D.	1,000.	mg/kg	100
	Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.					
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.080	mg/kg	1000
08184	Toluene	108-88-3	N.D.	0.080	mg/kg	1000
08185	Ethylbenzene	100-41-4	1.1	0.080	mg/kg	1000
08186	Total Xylenes	1330-20-7	5.1	0.20	mg/kg	1000
08187	MTBE	1634-04-4	N.D.	0.20	mg/kg	1000
08189	Naphthalene	91-20-3	N.D.	32.	mg/kg	1000
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.					
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. naphthalene					
	Due to dilution of the sample made necessary by the high level of non-target compounds, normal reporting limits were not attained.					
07804	PAHs in Soil by GC/MS					
03781	Benzo(a)anthracene	56-55-3	N.D.	0.33	mg/kg	10

Lancaster Laboratories Sample No. SW 4007216

Collected:03/05/2003 13:00 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B27-20 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2720

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
03782	Chrysene	218-01-9	N.D.	0.33	mg/kg	10
03786	Benzo(b)fluoranthene	205-99-2	N.D.	0.33	mg/kg	10
03787	Benzo(k)fluoranthene	207-08-9	N.D.	0.33	mg/kg	10
03788	Benzo(a)pyrene	50-32-8	N.D.	0.33	mg/kg	10
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.33	mg/kg	10
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	0.33	mg/kg	10

Due to the sample matrix an initial dilution was necessary to perform the analysis. Therefore, the reporting limits for the GC/MS semivolatile compounds were raised.

Surrogate recoveries were outside of QC limits for the GC/MS semivolatile compounds due to the dilution needed to perform the analysis.

06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.005	mg/kg	5.05
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.005	mg/kg	5.05
05461	1,2-Dichloroethane	107-06-2	N.D.	0.005	mg/kg	5.05

The reporting limits for the GC/MS volatile compounds were raised due to the level of non-target compounds.

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 16:10	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 09:07	Steven A Skiles	5000
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/13/2003 09:18	Devin M Hetrick	100
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 16:35	Steven A Skiles	1000
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	03/19/2003 03:09	Linda M Hartenstine	10
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/19/2003 18:47	Roy R Mellott Jr	5.05
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/19/2003 18:47	Roy R Mellott Jr	5.05

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Analysis Report

Lancaster Laboratories Sample No. SW 4007216

Collected:03/05/2003 13:00 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B27-20 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

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6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2720

00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/19/2003 06:20	Kelly L Hoffer	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:52	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 19:30	Kelly E Brickley	1
07806	BNA Soil Extraction	SW-846 3550B	1	03/17/2003 09:00	Olivia Arosemena	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4007217

Collected:03/05/2003 13:15 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B27-30 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2730

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	5.5	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	6.9	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	120.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	0.0021	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	0.012	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25
08189	Naphthalene	91-20-3	N.D.	0.25	mg/kg	25
	Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for the compound listed below. The presence or concentration of this compound cannot be determined due to the presence of this interferent. naphthalene					
07804	PAHs in Soil by GC/MS					
03781	Benzo(a)anthracene	56-55-3	N.D.	0.033	mg/kg	1
03782	Chrysene	218-01-9	N.D.	0.033	mg/kg	1
03786	Benzo(b)fluoranthene	205-99-2	N.D.	0.033	mg/kg	1
03787	Benzo(k)fluoranthene	207-08-9	N.D.	0.033	mg/kg	1
03788	Benzo(a)pyrene	50-32-8	N.D.	0.033	mg/kg	1
03789	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.033	mg/kg	1
03790	Dibenz(a,h)anthracene	53-70-3	N.D.	0.033	mg/kg	1
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.001	mg/kg	0.99

Lancaster Laboratories Sample No. SW 4007217

Collected:03/05/2003 13:15 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B27-30 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2730

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.001	mg/kg	0.99
05461	1,2-Dichloroethane	107-06-2	N.D.	0.001	mg/kg	0.99

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 16:19	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 00:29	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 00:06	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 00:29	Steven A Skiles	25
07804	PAHs in Soil by GC/MS	SW-846 8270C	1	03/20/2003 03:27	Linda M Hartenstine	1
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/19/2003 13:35	Kelly L Hoffer	0.99
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/19/2003 13:35	Kelly L Hoffer	0.99
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/19/2003 06:19	Kelly L Hoffer	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:53	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 19:30	Kelly E Brickley	1
07806	BNA Soil Extraction	SW-846 3550B	1	03/17/2003 09:00	Olivia Arosemena	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4007218

Collected:03/05/2003 15:52 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B28-25 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2825

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	4.2	0.11	mg/kg	1
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	N.D.	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	N.D.	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	N.D.	0.0050	mg/kg	25
08187	MTBE	1634-04-4	N.D.	0.0050	mg/kg	25

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 16:29	Jessica L Boyd	1
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 01:06	Steven A Skiles	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 00:31	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 01:06	Steven A Skiles	25
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:54	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 19:30	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4007219

Collected:03/05/2003 16:05 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B28-40 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2840

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01155	Lead (furnace method)	7439-92-1	7.8	0.22	mg/kg	2
02005	TPH by NWTPH-Gx soils					
01659	TPH by NWTPH-Gx soils	n.a.	4.5	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1
08179	BTEX/MTBE/Isopropylbenz/Napht.					
08183	Benzene	71-43-2	N.D.	0.0020	mg/kg	25
08184	Toluene	108-88-3	0.0037	0.0020	mg/kg	25
08185	Ethylbenzene	100-41-4	0.0027	0.0020	mg/kg	25
08186	Total Xylenes	1330-20-7	0.54	0.0050	mg/kg	25
08187	MTBE	1634-04-4	0.044	0.0050	mg/kg	25
08189	Naphthalene	91-20-3	0.087	0.010	mg/kg	25
06373	8260 Special Cmpds for Soils					
05677	1,2-Dibromoethane	106-93-4	N.D.	0.001	mg/kg	0.99
07584	PPL + Xylene (total) by 8260					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.001	mg/kg	0.99
05461	1,2-Dichloroethane	107-06-2	N.D.	0.001	mg/kg	0.99

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01155	Lead (furnace method)	SW-846 7421 modified	1	03/11/2003 16:39	Jessica L Boyd	2
02005	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 01:43	Steven A Skiles	25

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Analysis Report

Lancaster Laboratories Sample No. SW 4007219

Collected:03/05/2003 16:05 by MM

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
B28-40 Grab Soil Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

B2840

02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	03/12/2003 00:56	Devin M Hetrick	1
08179	BTEX/MTBE/Isopropylbenz/Napht.	SW-846 8021B	1	03/11/2003 01:43	Steven A Skiles	25
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	03/19/2003 19:17	Roy R Mellott Jr	0.99
07584	PPL + Xylene (total) by 8260	SW-846 8260B	1	03/19/2003 19:17	Roy R Mellott Jr	0.99
00374	GC/MS VOA Soil Prep	SW-846 5030A	1	03/19/2003 16:06	Roy R Mellott Jr	n.a.
01150	GC VOA Soil Prep	SW-846 5035	1	03/09/2003 09:55	Steven A Skiles	n.a.
05710	SW SW846 GFAA Digest	SW-846 3050B	1	03/10/2003 14:05	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	03/10/2003 19:30	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4007220

Collected: n.a.

Account Number: 10900

Submitted: 03/07/2003 09:10
Reported: 03/25/2003 at 10:26
Discard: 04/25/2003
Trip Blank Water Sample
Facility# 96590
232 Woodin Ave.; Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

WCTRB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.50	ug/l	1
02164	Toluene	108-88-3	N.D.	0.50	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	Site-specific MS/MSD samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	Site-specific MS/MSD samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	03/11/2003 09:12	Linda C Pape	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	03/11/2003 09:12	Linda C Pape	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/11/2003 09:12	Linda C Pape	n.a.

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 843916
Reported: 03/25/03 at 10:26 AM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 03068A33A	Sample number(s): 4007212-4007214,4007217-4007219							
TPH by NWTPH-Gx soils	N.D.	1.	mg/kg	99		70-130		
Benzene	N.D.	2.	ug/kg	99		86-121		
Toluene	N.D.	2.	ug/kg	97		93-122		
Ethylbenzene	N.D.	2.	ug/kg	96		88-120		
Total Xylenes	N.D.	5.	ug/kg	97		88-120		
MTBE	N.D.	5.	ug/kg	106		80-132		
Naphthalene	N.D.	10.	ug/kg	106		74-121		
Batch number: 03068A33B	Sample number(s): 4007210-4007211,4007215-4007216							
TPH by NWTPH-Gx soils	N.D.	1.	mg/kg	99		70-130		
Benzene	N.D.	2.	ug/kg	99		86-121		
Toluene	N.D.	2.	ug/kg	97		93-122		
Ethylbenzene	N.D.	2.	ug/kg	96		88-120		
Total Xylenes	N.D.	5.	ug/kg	97		88-120		
MTBE	N.D.	5.	ug/kg	106		80-132		
Naphthalene	N.D.	10.	ug/kg	106		74-121		
Batch number: 030690005A	Sample number(s): 4007210-4007219							
Diesel Range Organics	N.D.	3.	mg/kg	93		60-120		
Heavy Range Organics	N.D.	10.	mg/kg					
Batch number: 030695710001	Sample number(s): 4007210-4007219							
Lead (furnace method)	N.D.	.11	mg/kg	101		74-126		
Batch number: 03070A51A	Sample number(s): 4007220							
TPH by NWTPH-Gx waters	N.D.	.048	mg/l	98	96	70-130	2	30
Benzene	N.D.	.5	ug/l	114	106	80-118	7	30
Toluene	N.D.	.5	ug/l	112	105	82-119	7	30
Ethylbenzene	N.D.	.5	ug/l	105	98	81-119	7	30
Total Xylenes	N.D.	1.5	ug/l	107	100	82-120	7	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	112	105	79-127	7	30
Batch number: 03074SLB026	Sample number(s): 4007211,4007213-4007217							
Benzo(a)anthracene	N.D.	33.	ug/kg	93		69-115		
Chrysene	N.D.	33.	ug/kg	89		67-119		
Benzo(b)fluoranthene	N.D.	33.	ug/kg	86		66-122		
Benzo(k)fluoranthene	N.D.	33.	ug/kg	86		66-122		
Benzo(a)pyrene	N.D.	33.	ug/kg	90		79-111		
Indeno(1,2,3-cd)pyrene	N.D.	33.	ug/kg	92		73-118		
Dibenz(a,h)anthracene	N.D.	33.	ug/kg	93		78-126		
Batch number: 030760006A	Sample number(s): 4007213							
PCB-1016	N.D.	3.3	ug/kg	85		72-120		
PCB-1221	N.D.	3.3	ug/kg					
PCB-1232	N.D.	3.3	ug/kg					
PCB-1242	N.D.	3.3	ug/kg					
PCB-1248	N.D.	3.3	ug/kg					
PCB-1254	N.D.	3.3	ug/kg					
PCB-1260	N.D.	3.3	ug/kg	93		76-122		
Batch number: D030781AA	Sample number(s): 4007216,4007219							
Methyl Tertiary Butyl Ether	N.D.	1.	ug/kg	97		75-125		
1,2-Dichloroethane	N.D.	1.	ug/kg	98		76-126		
1,2-Dibromoethane	N.D.	1.	ug/kg	100		77-114		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 843916
Reported: 03/25/03 at 10:26 AM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: K030761AA	Sample number(s): 4007212-4007214							
Methyl Tertiary Butyl Ether	N.D.	1.	ug/kg	87		75-125		
1,2-Dichloroethane	N.D.	1.	ug/kg	95		76-126		
1,2-Dibromoethane	N.D.	1.	ug/kg	77		77-114		
Batch number: K030761AC	Sample number(s): 4007217							
Methyl Tertiary Butyl Ether	N.D.	1.	ug/kg	87		75-125		
1,2-Dichloroethane	N.D.	1.	ug/kg	95		76-126		
1,2-Dibromoethane	N.D.	1.	ug/kg	77		77-114		
Batch number: Q030731AC	Sample number(s): 4007210-4007211							
Methyl Tertiary Butyl Ether	N.D.	125.	ug/kg	90		75-125		
1,2-Dichloroethane	N.D.	125.	ug/kg	89		76-126		
1,2-Dibromoethane	N.D.	125.	ug/kg	96		77-114		
Batch number: Q030731AD	Sample number(s): 4007215							
Methyl Tertiary Butyl Ether	N.D.	125.	ug/kg	90		75-125		
1,2-Dichloroethane	N.D.	125.	ug/kg	89		76-126		
1,2-Dibromoethane	N.D.	125.	ug/kg	96		77-114		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 03068A33A	Sample number(s): 4007212-4007214,4007217-4007219								
TPH by NWTPH-Gx soils	61*	64*	70-130	5	30				
Benzene	77	80	70-130	4	30				
Toluene	80	83	70-130	3	30				
Ethylbenzene	82	85	70-130	4	30				
Total Xylenes	83	86	70-130	4	30				
MTBE	94	96	70-130	2	30				
Naphthalene	101	106	70-130	5	30				
Batch number: 03068A33B	Sample number(s): 4007210-4007211,4007215-4007216								
TPH by NWTPH-Gx soils	61*	64*	70-130	5	30				
Benzene	77	80	70-130	4	30				
Toluene	80	83	70-130	3	30				
Ethylbenzene	82	85	70-130	4	30				
Total Xylenes	83	86	70-130	4	30				
MTBE	94	96	70-130	2	30				
Naphthalene	101	106	70-130	5	30				
Batch number: 030690005A	Sample number(s): 4007210-4007219								
Diesel Range Organics						N.D.	N.D.	0 (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 030695710001	Sample number(s): 4007210-4007219								
Lead (furnace method)	119	138*	80-120	8	20	2.5	2.8	11 (1)	20
Batch number: 03074SLB026	Sample number(s): 4007211,4007213-4007217								
Benzo(a)anthracene	92	94	26-144	2	30				
Chrysene	90	94	23-150	4	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 843916
Reported: 03/25/03 at 10:26 AM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Benzo(b)fluoranthene	84	85	32-140	1	30				
Benzo(k)fluoranthene	85	84	36-143	1	30				
Benzo(a)pyrene	90	90	23-154	0	30				
Indeno(1,2,3-cd)pyrene	92	91	13-155	2	30				
Dibenz(a,h)anthracene	94	94	19-163	0	30				
Batch number: 030760006A	Sample number(s): 4007213								
PCB-1016	121	103	51-122	16	50				
PCB-1260	88	37*	40-142	13	50				
Batch number: D030781AA	Sample number(s): 4007216,4007219								
Methyl Tertiary Butyl Ether	94	91	57-136	3	30				
1,2-Dichloroethane	93	88	57-137	5	30				
1,2-Dibromoethane	92	84	61-125	9	30				
Batch number: K030761AA	Sample number(s): 4007212-4007214								
Methyl Tertiary Butyl Ether	78	79	57-136	1	30				
1,2-Dichloroethane	87	88	57-137	0	30				
1,2-Dibromoethane	83	85	61-125	2	30				
Batch number: K030761AC	Sample number(s): 4007217								
Methyl Tertiary Butyl Ether	78	79	57-136	1	30				
1,2-Dichloroethane	87	88	57-137	0	30				
1,2-Dibromoethane	83	85	61-125	2	30				
Batch number: Q030731AC	Sample number(s): 4007210-4007211								
Methyl Tertiary Butyl Ether	86	89	57-136	4	30				
1,2-Dichloroethane	85	81	57-137	5	30				
1,2-Dibromoethane	97	93	61-125	5	30				
Batch number: Q030731AD	Sample number(s): 4007215								
Methyl Tertiary Butyl Ether	86	89	57-136	4	30				
1,2-Dichloroethane	85	81	57-137	5	30				
1,2-Dibromoethane	97	93	61-125	5	30				

Surrogate Quality Control

Analysis Name: BTEX/MTBE/Isopropylbenz/Napht.
Batch number: 03068A33A

	Trifluorotoluene-F	Trifluorotoluene-P
4007212	94	78
4007213	94	96
4007214	80	81
4007217	94	96
4007218	88	88
4007219	94	96
Blank	109	101
LCS	110	98
MS	93	92
MSD	100	93

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 843916
Reported: 03/25/03 at 10:26 AM

Surrogate Quality Control

Limits: 66-117 72-122

Analysis Name: BTEX/MTBE/Isopropylbenz/Napht.
Batch number: 03068A33B

	Trifluorotoluene-F	Trifluorotoluene-P
4007210	6*	4*
4007211	2*	5*
4007215	1*	1*
4007216	0*	2*
Blank	111	100
LCS	110	98
MS	93	92
MSD	100	93
Limits:	66-117	72-122

Analysis Name: TPH by NWTPH-Dx(soils) w/SiGel
Batch number: 030690005A

	Orthoterphenyl
4007210	98
4007211	139
4007212	93
4007213	131
4007214	105
4007215	2891*
4007216	969*
4007217	121
4007218	110
4007219	89
Blank	63
LCS	134
Limits:	20-149

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 03070A51A

	Trifluorotoluene-P	Trifluorotoluene-F
4007220	91	95
Blank	92	97
LCS	93	95
LCSD	93	94
Limits:	66-136	57-146

Analysis Name: PAHs in Soil by GC/MS
Batch number: 03074SLB026

	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
4007211	81	73	78
4007213	78	83	81
4007214	78	85	82
4007215	236*	114	93
4007216	175*	92	77
4007217	74	73	70
Blank	70	71	70
LCS	83	81	79

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 843916
Reported: 03/25/03 at 10:26 AM

Surrogate Quality Control

MS	84	82	84	
MSD	86	81	83	
Limits:	47-128	55-123	39-128	

Analysis Name: PCBs in Solids
Batch number: 030760006A

	Tetrachloro-m-xylene	Decachlorobiphenyl
4007213	85	110
Blank	83	105
LCS	89	111
MS	99	141*
MSD	101	140*
Limits:	53-139	41-132

Analysis Name: 8260 Special Cmpds for Soils
Batch number: D030781AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4007216	92	88	97	90
4007219	91	88	89	84
Blank	97	96	90	86
LCS	92	89	96	93
MS	92	89	98	87
MSD	93	88	97	86
Limits:	65-129	67-121	57-133	55-128

Analysis Name: 8260 Special Cmpds for Soils
Batch number: K030761AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4007212	99	83	123	114
4007213	97	82	95	94
4007214	97	82	102	97
Blank	97	85	92	93
LCS	97	87	97	94
MS	98	83	108	81
MSD	97	85	109	91
Limits:	65-129	67-121	57-133	55-128

Analysis Name: 8260 Special Cmpds for Soils
Batch number: K030761AC

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4007217	94	80	94	90
Blank	92	85	93	87
LCS	97	87	97	94
MS	98	83	108	81
MSD	97	85	109	91
Limits:	65-129	67-121	57-133	55-128

Analysis Name: 8260 Special Cmpds for Soils
Batch number: Q030731AC

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 843916
Reported: 03/25/03 at 10:26 AM

Surrogate Quality Control

4007210	92	93	116	120
4007211	90	92	100	96
Blank	103	100	100	94
LCS	98	100	97	94
MS	94	96	99	99
MSD	90	91	93	92
Limits:	65-129	67-121	57-133	55-128

Analysis Name: 8260 Special Cmpds for Soils
Batch number: Q030731AD

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4007215	89	92	93	106
Blank	102	102	97	92
LCS	98	100	97	94
MS	94	96	99	99
MSD	90	91	93	92
Limits:	65-129	67-121	57-133	55-128

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Lancaster Laboratories

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583
925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

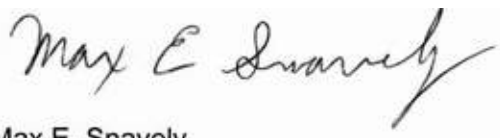
The sample group for this submittal is 844179. Samples arrived at the laboratory on Tuesday, March 11, 2003. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
37030004 Grab Water Sample	4008613
37030005 Grab Water Sample	4008614

1 COPY TO Delta Environmental Attn: Matt Miller

Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,



Max E. Snavely
Senior Chemist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4008613

Collected:03/07/2003 14:30 by MM

Account Number: 10900

Submitted: 03/11/2003 09:35
Reported: 03/17/2003 at 15:58
Discard: 04/17/2003
37030004 Grab Water Sample
Facility# 96590
232 W. Woodin Ave - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

30004

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01755	Lead	7439-92-1	N.D.	8.9	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.50	ug/l	1
02164	Toluene	108-88-3	N.D.	0.50	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	Site-specific MS/MSD samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08227	Naphthalene					
00781	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
	Site-specific MS/MSD samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	Site-specific MS/MSD samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00173	PCBs in Water					
00639	PCB-1016	12674-11-2	N.D.	0.099	ug/l	1
00640	PCB-1221	11104-28-2	N.D.	0.099	ug/l	1
00641	PCB-1232	11141-16-5	N.D.	0.099	ug/l	1
00642	PCB-1242	53469-21-9	N.D.	0.099	ug/l	1
00643	PCB-1248	12672-29-6	N.D.	0.099	ug/l	1
00644	PCB-1254	11097-69-1	N.D.	0.099	ug/l	1
00645	PCB-1260	11096-82-5	N.D.	0.099	ug/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
07805	PAHs in Water by GC/MS					
03947	Naphthalene	91-20-3	N.D.	1.	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1

Lancaster Laboratories Sample No. WW 4008613

Collected:03/07/2003 14:30 by MM

Account Number: 10900

Submitted: 03/11/2003 09:35
Reported: 03/17/2003 at 15:58
Discard: 04/17/2003
37030004 Grab Water Sample
Facility# 96590
232 W. Woodin Ave - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

30004

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
03954	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
03956	Fluorene	86-73-7	N.D.	1.	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	1.	ug/l	1
03964	Anthracene	120-12-7	N.D.	1.	ug/l	1
03966	Fluoranthene	206-44-0	N.D.	1.	ug/l	1
03967	Pyrene	129-00-0	N.D.	1.	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	1.	ug/l	1
03971	Chrysene	218-01-9	N.D.	1.	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	1.	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	1.	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	1.	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	1.	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	1.	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	1.	ug/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
01595	Oxygenates by 8260B					
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01755	Lead	SW-846 6010B	1	03/14/2003 06:28	Joanne M Gates	1
02159	BTEX, MTBE	SW-846 8021B	1	03/12/2003 17:23	Melissa D Mann	1
08227	Naphthalene	SW-846 8021B	1	03/12/2003 17:23	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	03/12/2003 17:23	Melissa D Mann	1
00173	PCBs in Water	SW-846 8082	1	03/13/2003 10:40	Douglas D Seitz	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	03/14/2003 01:34	Jolene M Graham	1
01595	Oxygenates by 8260B	SW-846 8260B	1	03/12/2003 08:39	Marla S Lord	1
00817	Water Sample Pest. Extraction	SW-846 3510C	1	03/12/2003 23:50	Karen L Beyer	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/12/2003 17:23	Melissa D Mann	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	03/12/2003 08:39	Marla S Lord	n.a.

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Analysis Report

Lancaster Laboratories Sample No. WW 4008613

Collected:03/07/2003 14:30 by MM

Account Number: 10900

Submitted: 03/11/2003 09:35
Reported: 03/17/2003 at 15:58
Discard: 04/17/2003
37030004 Grab Water Sample
Facility# 96590
232 W. Woodin Ave - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

30004

01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	03/12/2003 20:30	James L Mertz	1
07807	BNA Water Extraction	SW-846 3510C	1	03/13/2003 10:30	Jennytza L Marcano	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4008614

Collected:03/07/2003 14:40 by MM

Account Number: 10900

Submitted: 03/11/2003 09:35
Reported: 03/17/2003 at 15:58
Discard: 04/17/2003
37030005 Grab Water Sample
Facility# 96590
232 W. Woodin Ave - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

30005

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01755	Lead	7439-92-1	N.D.	8.9	ug/l	1
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.50	ug/l	1
02164	Toluene	108-88-3	N.D.	0.50	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.50	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
	Site-specific MS/MSD samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08227	Naphthalene					
00781	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
	Site-specific MS/MSD samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1
	Site-specific MS/MSD samples were not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00173	PCBs in Water					
00639	PCB-1016	12674-11-2	N.D.	0.096	ug/l	1
00640	PCB-1221	11104-28-2	N.D.	0.096	ug/l	1
00641	PCB-1232	11141-16-5	N.D.	0.096	ug/l	1
00642	PCB-1242	53469-21-9	N.D.	0.096	ug/l	1
00643	PCB-1248	12672-29-6	N.D.	0.096	ug/l	1
00644	PCB-1254	11097-69-1	N.D.	0.096	ug/l	1
00645	PCB-1260	11096-82-5	N.D.	0.096	ug/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
07805	PAHs in Water by GC/MS					
03947	Naphthalene	91-20-3	N.D.	1.	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1

Lancaster Laboratories Sample No. WW 4008614

Collected:03/07/2003 14:40 by MM

Account Number: 10900

Submitted: 03/11/2003 09:35
Reported: 03/17/2003 at 15:58
Discard: 04/17/2003
37030005 Grab Water Sample
Facility# 96590
232 W. Woodin Ave - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

30005

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
03954	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
03956	Fluorene	86-73-7	N.D.	1.	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	1.	ug/l	1
03964	Anthracene	120-12-7	N.D.	1.	ug/l	1
03966	Fluoranthene	206-44-0	N.D.	1.	ug/l	1
03967	Pyrene	129-00-0	N.D.	1.	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	1.	ug/l	1
03971	Chrysene	218-01-9	N.D.	1.	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	1.	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	1.	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	1.	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	1.	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	1.	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	1.	ug/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
01595	Oxygenates by 8260B					
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01755	Lead	SW-846 6010B	1	03/14/2003 06:34	Joanne M Gates	1
02159	BTEX, MTBE	SW-846 8021B	1	03/12/2003 17:56	Melissa D Mann	1
08227	Naphthalene	SW-846 8021B	1	03/12/2003 17:56	Melissa D Mann	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	03/12/2003 17:56	Melissa D Mann	1
00173	PCBs in Water	SW-846 8082	1	03/13/2003 11:01	Douglas D Seitz	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	03/14/2003 02:13	Jolene M Graham	1
01595	Oxygenates by 8260B	SW-846 8260B	1	03/12/2003 08:13	Marla S Lord	1
00817	Water Sample Pest. Extraction	SW-846 3510C	1	03/12/2003 23:50	Karen L Beyer	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/12/2003 17:56	Melissa D Mann	n.a.
01163	GC/MS VOA Water Prep	SW-846 5030B	1	03/12/2003 08:13	Marla S Lord	n.a.

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Analysis Report

Lancaster Laboratories Sample No. WW 4008614

Collected:03/07/2003 14:40 by MM

Account Number: 10900

Submitted: 03/11/2003 09:35
Reported: 03/17/2003 at 15:58
Discard: 04/17/2003
37030005 Grab Water Sample
Facility# 96590
232 W. Woodin Ave - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

30005

01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	03/12/2003 20:30	James L Mertz	1
07807	BNA Water Extraction	SW-846 3510C	1	03/13/2003 10:30	Jennytza L Marcano	1

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 844179
Reported: 03/17/03 at 03:58 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 03070A51B	Sample number(s): 4008613-4008614							
Naphthalene	N.D.	1.	ug/l	82	81	44-139	1	30
TPH by NWTPH-Gx waters	N.D.	.048	mg/l	98	96	70-130	2	30
Benzene	N.D.	.5	ug/l	114	106	80-118	7	30
Toluene	N.D.	.5	ug/l	112	105	82-119	7	30
Ethylbenzene	N.D.	.5	ug/l	105	98	81-119	7	30
Total Xylenes	N.D.	1.5	ug/l	107	100	82-120	7	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	112	105	79-127	7	30
Batch number: 030710011A	Sample number(s): 4008613-4008614							
PCB-1016	N.D.	.1	ug/l	90	90	52-123	0	30
PCB-1221	N.D.	.1	ug/l					
PCB-1232	N.D.	.1	ug/l					
PCB-1242	N.D.	.1	ug/l					
PCB-1248	N.D.	.1	ug/l					
PCB-1254	N.D.	.1	ug/l					
PCB-1260	N.D.	.1	ug/l	98	100	70-125	2	30
Batch number: 030711848005	Sample number(s): 4008613-4008614							
Lead	N.D.	.0089	mg/l	104		94-110		
Batch number: 03072WAA026	Sample number(s): 4008613-4008614							
Naphthalene	N.D.	1.	ug/l	92	83	62-104	10	30
Acenaphthylene	N.D.	1.	ug/l	104	94	68-106	10	30
Acenaphthene	N.D.	1.	ug/l	107	95	73-108	11	30
Fluorene	N.D.	1.	ug/l	104	93	65-115	10	30
Phenanthrene	N.D.	1.	ug/l	96	87	72-106	10	30
Anthracene	N.D.	1.	ug/l	95	88	73-105	8	30
Fluoranthene	N.D.	1.	ug/l	96	87	72-105	9	30
Pyrene	N.D.	1.	ug/l	94	81	71-111	15	30
Benzo(a)anthracene	N.D.	1.	ug/l	99	86	75-107	14	30
Chrysene	N.D.	1.	ug/l	97	88	75-108	10	30
Benzo(b)fluoranthene	N.D.	1.	ug/l	99	89	74-110	11	30
Benzo(k)fluoranthene	N.D.	1.	ug/l	110	98	75-111	12	30
Benzo(a)pyrene	N.D.	1.	ug/l	100	91	79-110	10	30
Indeno(1,2,3-cd)pyrene	N.D.	1.	ug/l	96	91	79-111	5	30
Dibenz(a,h)anthracene	N.D.	1.	ug/l	103	96	84-117	6	30
Benzo(g,h,i)perylene	N.D.	1.	ug/l	90	84	79-110	6	30
Batch number: N030701AB	Sample number(s): 4008613-4008614							
1,2-Dichloroethane	N.D.	.5	ug/l	110		77-132		
1,2-Dibromoethane	N.D.	.5	ug/l	100		81-114		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 030711848005	Sample number(s): 4008613-4008614								
Lead	104	104	75-125	0	20	N.D.	N.D.	0 (1)	20
Batch number: N030701AB	Sample number(s): 4008613-4008614								
1,2-Dichloroethane	112	111	73-136	1	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 844179
Reported: 03/17/03 at 03:58 PM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
1,2-Dibromoethane	98	96	78-120	2	30				

Surrogate Quality Control

Analysis Name: TPH by NWTPH-Gx waters
Batch number: 03070A51B

	Trifluorotoluene-P	Trifluorotoluene-F
4008613	90	94
4008614	89	94
Blank	89	95
LCS	93	95
LCSD	93	94
Limits:	66-136	57-146

Analysis Name: PCBs in Water
Batch number: 030710011A

	Tetrachloro-m-xylene	Decachlorobiphenyl
4008613	96	106
4008614	95	92
Blank	94	90
LCS	91	81
LCSD	91	94
Limits:	43-122	13-130

Analysis Name: PAHs in Water by GC/MS
Batch number: 03072WAA026

	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
4008613	97	105	93
4008614	86	97	77
Blank	91	97	89
LCS	97	106	94
LCSD	88	96	83
Limits:	54-124	64-112	43-116

Analysis Name: Oxygenates by 8260B
Batch number: N030701AB

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4008613	113	105	102	103
4008614	112	103	103	103
Blank	110	103	103	101
LCS	106	103	106	107
MS	107	104	106	108
MSD	108	106	106	108
Limits:	81-120	82-112	85-112	83-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 844179
Reported: 03/17/03 at 03:58 PM

Surrogate Quality Control

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 896133. Samples arrived at the laboratory on Friday, May 14, 2004. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
MW-37-25 Grab Soil Sample	4273913
MW-37-35 Grab Soil Sample	4273914
MW-37-50 Grab Soil Sample	4273915
TB-051004 Water Sample	4273916

1 COPY TO SAIC Attn: Tom Dube

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Questions? Contact your Client Services Representative
Teresa L Cunningham at (717) 656-2300.

Respectfully Submitted,

Victoria M. Martell
Chemist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4273913

MW-37-25 Grab Soil Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:05/10/2004 11:11

Account Number: 11255

Submitted: 05/14/2004 09:35
Reported: 05/26/2004 at 09:04
Discard: 06/26/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

EWA25

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02006	TPH by NWTPH-Gx soils					
02007	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02160	BTEX/MTBE					
02174	Benzene	71-43-2	N.D.	0.005	mg/kg	25
02177	Toluene	108-88-3	N.D.	0.005	mg/kg	25
02178	Ethylbenzene	100-41-4	N.D.	0.005	mg/kg	25
02182	Total Xylenes	1330-20-7	N.D.	0.02	mg/kg	25
02199	MTBE	1634-04-4	N.D.	0.05	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02006	TPH by NWTPH-Gx soils	NWTPH-Gx - 8015B Mod.	1	05/18/2004 16:47	K. Robert Caulfeild-James	25
02160	BTEX/MTBE	SW-846 8021B	1	05/18/2004 16:47	K. Robert Caulfeild-James	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/20/2004 02:40	Robert T Vincent	1
01150	GC VOA Soil Prep	SW-846 5035	1	05/17/2004 15:42	Eric L Vera	n.a.
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	05/18/2004 19:00	Sally L Appleyard	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4273914

MW-37-35 Grab Soil Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:05/10/2004 11:20

Account Number: 11255

Submitted: 05/14/2004 09:35
Reported: 05/26/2004 at 09:04
Discard: 06/26/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

EWA35

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
06955	Lead	7439-92-1	5.65	0.912	mg/kg	1
02006	TPH by NWTPH-Gx soils					
02007	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02160	BTEX/MTBE					
02174	Benzene	71-43-2	N.D.	0.005	mg/kg	25
02177	Toluene	108-88-3	N.D.	0.005	mg/kg	25
02178	Ethylbenzene	100-41-4	N.D.	0.005	mg/kg	25
02182	Total Xylenes	1330-20-7	N.D.	0.02	mg/kg	25
02199	MTBE	1634-04-4	N.D.	0.05	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
06955	Lead	SW-846 6010B	1	05/19/2004 23:02	Donna R Sackett	1
02006	TPH by NWTPH-Gx soils	NWTPH-Gx - 8015B Mod.	1	05/18/2004 16:00	K. Robert Caulfeild-James	25
02160	BTEX/MTBE	SW-846 8021B	1	05/18/2004 16:00	K. Robert Caulfeild-James	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/20/2004 03:30	Robert T Vincent	1
01150	GC VOA Soil Prep	SW-846 5035	1	05/17/2004 15:45	Eric L Vera	n.a.
05708	SW SW846 ICP Digest	SW-846 3050B	1	05/19/2004 11:20	Megan L Ross	1
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	05/18/2004 19:00	Sally L Appleyard	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4273915

MW-37-50 Grab Soil Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:05/10/2004 11:35

Account Number: 11255

Submitted: 05/14/2004 09:35
Reported: 05/26/2004 at 09:04
Discard: 06/26/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

EWA50

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02006	TPH by NWTPH-Gx soils					
02007	TPH by NWTPH-Gx soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02160	BTEX/MTBE					
02174	Benzene	71-43-2	N.D.	0.005	mg/kg	25
02177	Toluene	108-88-3	N.D.	0.005	mg/kg	25
02178	Ethylbenzene	100-41-4	N.D.	0.005	mg/kg	25
02182	Total Xylenes	1330-20-7	N.D.	0.02	mg/kg	25
02199	MTBE	1634-04-4	N.D.	0.05	mg/kg	25
	The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.					
02214	TPH by NWTPH-Dx(soils) w/SiGel					
02097	Diesel Range Organics	n.a.	N.D.	3.0	mg/kg	1
02098	Heavy Range Organics	n.a.	N.D.	10.	mg/kg	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02006	TPH by NWTPH-Gx soils	NWTPH-Gx - 8015B Mod.	1	05/18/2004 17:33	K. Robert Caulfeild-James	25
02160	BTEX/MTBE	SW-846 8021B	1	05/18/2004 17:33	K. Robert Caulfeild-James	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modified)	1	05/20/2004 03:55	Robert T Vincent	1
01150	GC VOA Soil Prep	SW-846 5035	1	05/17/2004 15:47	Eric L Vera	n.a.
07004	Extraction - DRO (Soils)	NWTPH-Dx, ECY 97-602, 6/97	1	05/18/2004 19:00	Sally L Appleyard	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4273916

TB-051004 Water Sample
Facility# 96590
232 E. Woodin Ave - Chelan, WA
Collected:05/10/2004 10:00

Account Number: 11255

Submitted: 05/14/2004 09:35
Reported: 05/26/2004 at 09:04
Discard: 06/26/2004

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02159	BTEX, MTBE					
02161	Benzene	71-43-2	N.D.	0.5	ug/l	1
02164	Toluene	108-88-3	N.D.	0.5	ug/l	1
02166	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
02171	Total Xylenes	1330-20-7	N.D.	1.5	ug/l	1
02172	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	ug/l	1
08274	TPH by NWTPH-Gx waters					
01648	TPH by NWTPH-Gx waters	n.a.	N.D.	50.	ug/l	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02159	BTEX, MTBE	SW-846 8021B	1	05/18/2004 23:23	Steven A Skiles	1
08274	TPH by NWTPH-Gx waters	NWTPH-Gx - 8015B Mod.	1	05/18/2004 23:23	Steven A Skiles	1
01146	GC VOA Water Prep	SW-846 5030B	1	05/18/2004 23:23	Steven A Skiles	n.a.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 896133
Reported: 05/26/04 at 09:04 AM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 04132A53B	Sample number(s): 4273916							
TPH by NWTPH-Gx waters	N.D.	0.048	mg/l	98	94	70-130	4	30
Benzene	N.D.	0.5	ug/l	104	96	79-123	8	30
Toluene	N.D.	0.5	ug/l	100	90	82-119	10	30
Ethylbenzene	N.D.	0.5	ug/l	102	97	81-119	4	30
Total Xylenes	N.D.	1.5	ug/l	104	100	82-120	4	30
Methyl tert-Butyl Ether	N.D.	2.5	ug/l	106	100	75-125	6	30
Batch number: 041380011A	Sample number(s): 4273913-4273915							
Diesel Range Organics	N.D.	3.0	mg/kg	72		60-120		
Heavy Range Organics	N.D.	10.	mg/kg					
Batch number: 04139A02A	Sample number(s): 4273913-4273915							
TPH by NWTPH-Gx soils	N.D.	1.0	mg/kg	81		67-119		
Benzene	N.D.	0.005	mg/kg	103		86-113		
Toluene	N.D.	0.005	mg/kg	101		88-113		
Ethylbenzene	N.D.	0.005	mg/kg	102		89-112		
Total Xylenes	N.D.	0.02	mg/kg	100		90-112		
MTBE	N.D.	0.05	mg/kg	85		70-131		
Batch number: 041405708002	Sample number(s): 4273914							
Lead	N.D.	0.930	mg/kg	97		86-109		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 04132A53B	Sample number(s): 4273916								
TPH by NWTPH-Gx waters	103		63-154						
Batch number: 041380011A	Sample number(s): 4273913-4273915								
Diesel Range Organics						N.D.	N.D.	0 (1)	20
Heavy Range Organics						N.D.	N.D.	0 (1)	20
Batch number: 04139A02A	Sample number(s): 4273913-4273915								
TPH by NWTPH-Gx soils	125*	95	39-118	27	30				
Benzene	101	121*	60-111	17	30				
Toluene	101	120*	61-114	17	30				
Ethylbenzene	106	126*	66-110	17	30				
Total Xylenes	106	125*	66-112	16	30				
MTBE	102	123*	50-119	19	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco Group Number: 896133
Reported: 05/26/04 at 09:04 AM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 041405708002	Sample number(s): 4273914								
Lead	99	99	75-125	0	20	6.15	6.19	1 (1)	20

Surrogate Quality Control

Analysis Name: BTEX, MTBE
Batch number: 04132A53B

	Trifluorotoluene-P	Trifluorotoluene-F
4273916	103	120
Blank	106	111
LCS	103	109
LCSD	102	117
MS		114
Limits:	66-136	57-146

Analysis Name: TPH by NWTPH-Dx(soils) w/SiGel
Batch number: 041380011A

	Orthoterphenyl
4273913	87
4273914	71
4273915	89
Blank	93
DUP	71
LCS	72
Limits:	50-150

Analysis Name: BTEX/MTBE
Batch number: 04139A02A

	Trifluorotoluene-F	Trifluorotoluene-P
4273913	84	99
4273914	75	95
4273915	91	106
Blank	89	115
LCS	104	118
MS	88	91
MSD	90	97
Limits:	71-122	72-122

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

Acct. #: 11255 — For Lancaster Laboratories use only — Sample #: 4213913-16 — SCR#: 896133

Facility #: 9-6590 Chelan
Site Address: 232 E. Woodin Ave, Chelan, WA
Chevron PM: Brett Hunter — Lead Consultant: SAIC
Consultant/Office: SAIC / Bothell
Consultant Prj. Mgr.: Tom Dubé
Consultant Phone #: 425-482-3325 — Fax #(425)485-5566
Sampler:
Service Order #: — ☐ Non SAR:

Matrix: ☐ Potable ☐ NPDES; Soil / Water / Oil ☐ Air ☐

Analyses Requested — **Preservation Codes**

Sample Identification	Date Collected	Time Collected	Grab	Composite	Total Number of Containers	BTEX + MTBE 8021 ☒ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ___	TPH G ☒	TPH D ☒ Extended Rng. ☒ Silica Gel Cleanup	Lead Total ☒ Diss. ☐ Method ___	VPH/EPH	NWTPH H HCID ☐ quantification
MW-37-25	5-10-04	1111	✓		2	✓			✓	✓			
MW-37-35	5-10-04	1120	✓		2	✓			✓	✓	✓		
MW-37-50	5-10-04	1135	✓		2	✓			✓	✓			
TB-051004	5-10-04	1000	✓		2	✓			✓				

Preservative Codes
H = HCl — T = Thiosulfate
N = HNO_3 — B = NaOH
S = H_2SO_4 — O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy s on highest hit
☐ Run ____ oxy s on all hits

Comments / Remarks
Can you please run MW-37-35 for Lead as well.
Thank You

Turnaround Time Requested (TAT) (please circle)
STD. TAT — 72 hour — 48 hour
24 hour — 4 day — 5 day

Data Package Options (please circle if required)
QC Summary — Type I - Full
Type VI (Raw Data) — Disk / EDD
WIP (RWQCB) — Standard Format
Disk — ____ Other.

	Date	Time		Date	Time
Relinquished by:	5-13-04	1300	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS (FedEx) Other ____			Received by: Rebecca Shettel	5/14/04	0935

Temperature Upon Receipt 2.5 C°
Custody Seals Intact? (Yes) No

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Partial Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon
925-842-8582

Prepared by:
Lanacaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 857315. Samples arrived at the laboratory on Thursday, Jun 26 2003.
The project for this group is 96590.
The PO# for this sample group is 99011184.
The release number for this sample group is HUNTER.

Sample No.	Collected	Client Description
4072199	6/24/03 15:20	VB-2A-12.5 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. NE - Chelan, WA
4072200	6/25/03 0:00	TB-062503-1 Water Sample Facility# 96590 232 E. Woodin Ave. NE - Chelan, WA
4072201	6/25/03 4:55	VB-3A-10 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. NE - Chelan, WA
4072202	6/25/03 5:12	VB-3A-22.5 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. NE - Chelan, WA
4072203	6/25/03 8:30	B-34-22.5 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. NE - Chelan, WA
4072204	6/25/03 8:45	B-34-25 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. NE - Chelan, WA
4072205	6/25/03 9:35	B-34-35 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. NE - Chelan, WA
4072206	6/25/03 12:00	B-062503-D Grab Soil Sample Facility# 96590 232 E. Woodin Ave. NE - Chelan, WA
4072207	6/25/03 5:35	VB-3A-30 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. NE - Chelan, WA

METHODOLOGY

The specified methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicle.

1 COPY TO SAIC Attn: Tom Dube

Partial Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon
925-842-8582

Prepared by:
Lanacaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

1 COPY TO Data Package Group

Questions? Contact your Client Services Representative
Danette S Blystone at (717)656-2300

Respectfully Submitted,

Partial Report

Lancaster Laboratories

Analytical Report

ChevronTexaco
Project: 232 E. Woodin Ave. NE - Chelan, WA

Report Date: 7/3/2003 14:06
Submit Date: 6/26/2003 9:10

Analysis Name	Units	4072201 VB-3A-10		4072202 VB-3A-22		4072199 VB-2A-12	
		Result	MDL	Result	MDL	Result	MDL
TPH by NWTPH-Gx soils	MG/KG	N.D.	1.0	N.D.	1.0	N.D.	1.0
Diesel Range Organics	MG/KG	N.D.	3.0	N.D.	3.0	N.D.	3.0
Heavy Range Organics	MG/KG	N.D.	10.	N.D.	10.	N.D.	10.
Benzene	MG/KG	N.D.	0.005	N.D.	0.005	N.D.	0.005
Toluene	MG/KG	N.D.	0.005	N.D.	0.005	N.D.	0.005
Ethylbenzene	MG/KG	N.D.	0.005	N.D.	0.005	N.D.	0.005
Total Xylenes	MG/KG	N.D.	0.02	N.D.	0.02	N.D.	0.02
MTBE	MG/KG	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Analysis Name	Units	4072203 B-34-22.		4072204 B-34-25		4072205 B-34-35	
		Result	MDL	Result	MDL	Result	MDL
TPH by NWTPH-Gx soils	MG/KG	3.4	1.0	9.8	1.0	210.	20.
Diesel Range Organics	MG/KG	3.0	3.0	N.D.	3.0	28.	3.0
Heavy Range Organics	MG/KG	98.	10.	19.	10.	24.	10.
Benzene	MG/KG	N.D.	0.005	0.02	0.005	N.D.	0.4
Toluene	MG/KG	0.03	0.005	0.4	0.005	1.0	0.1
Ethylbenzene	MG/KG	0.02	0.005	0.2	0.005	0.7	0.1
Total Xylenes	MG/KG	0.1	0.02	1.5	0.02	7.9	0.3
MTBE	MG/KG	N.D.	0.05	N.D.	0.05	N.D.	1.0

Analysis Name	Units	4072206 B-062503		4072207 VB-3A-30	
		Result	MDL	Result	MDL
TPH by NWTPH-Gx soils	MG/KG	9.7	1.0	42.	4.0
Diesel Range Organics	MG/KG	N.D.	3.0	N.D.	3.0
Heavy Range Organics	MG/KG	27.	10.	34.	10.
Benzene	MG/KG	0.02	0.005	N.D.	0.08
Toluene	MG/KG	0.4	0.005	N.D.	0.08
Ethylbenzene	MG/KG	0.2	0.005	0.05	0.02
Total Xylenes	MG/KG	1.5	0.02	0.6	0.06
MTBE	MG/KG	N.D.	0.05	N.D.	0.2

Analysis Name	Units	4072200 TB-06250	
		Result	MDL
TPH by NWTPH-Gx waters	UG/L	N.D.	50.
Benzene	UG/L	N.D.	0.5
Toluene	UG/L	N.D.	0.5
Ethylbenzene	UG/L	N.D.	0.5
Total Xylenes	UG/L	N.D.	1.5

CAT No.	Analysis Name	Method	Trial ID	Analysis Date/Time	Analyst	Dilution
4072199	**VB-2A-12.5 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	6/27/03 1914	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	6/27/03 1914	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/1/03 0256	Devin M Hetrick	1
4072200	**TB-062503-1 Water Sample**					
02159	BTEX, MTBE	SW-846 8021B	1	6/28/03 1542	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	6/28/03 1542	Martha L Seidel	1
4072201	**VB-3A-10 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	6/27/03 1952	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	6/27/03 1952	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/1/03 0346	Devin M Hetrick	1
4072202	**VB-3A-22.5 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	6/27/03 2223	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	6/27/03 2223	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/1/03 0411	Devin M Hetrick	1
4072203	**B-34-22.5 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	6/27/03 2301	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	6/27/03 2301	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/1/03 0500	Devin M Hetrick	1
4072204	**B-34-25 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	6/30/03 0341	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	6/30/03 0341	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/1/03 0525	Devin M Hetrick	1
4072205	**B-34-35 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	6/28/03 0017	Stephanie A Selis	500
02160	BTEX/MTBE	SW-846 8021B	1	6/28/03 0017	Stephanie A Selis	500
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/1/03 0550	Devin M Hetrick	1
4072206	**B-062503-D Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	6/30/03 0419	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	6/30/03 0419	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/1/03 0615	Devin M Hetrick	1
4072207	**VB-3A-30 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	6/28/03 0133	Stephanie A Selis	100
02160	BTEX/MTBE	SW-846 8021B	1	6/28/03 0133	Stephanie A Selis	100
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/1/03 0640	Devin M Hetrick	1

Comments

4072199 VB-2A-12.5 Grab Soil Sample

02214 TPH by NWTPH-Dx(soils) w/SiGel
The surrogate data in the method blank associated with this sample is above the QC limit. Since no target compounds were detected in the method blank, the results are reported.

State of Washington Lab Certification No. C259

4072200 TB-062503-1 Water Sample

02159 BTEX, MTBE
A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

08274 TPH by NWTPH-Gx waters
A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

State of Washington Lab Certification No. C259

4072201 VB-3A-10 Grab Soil Sample

02214 TPH by NWTPH-Dx(soils) w/SiGel
The surrogate data in the method blank associated with this sample is above the QC limit. Since no target compounds were detected in the method blank, the results are reported.

State of Washington Lab Certification No. C259

4072202 VB-3A-22.5 Grab Soil Sample

02214 TPH by NWTPH-Dx(soils) w/SiGel
The surrogate data in the method blank associated with this sample is above the QC limit. Since no target compounds were detected in the method blank, the results are reported.

State of Washington Lab Certification No. C259

4072203 B-34-22.5 Grab Soil Sample

02214 TPH by NWTPH-Dx(soils) w/SiGel
The surrogate data in the method blank associated with this sample is above the QC limit. Since no target compounds were detected in the method blank, the results are reported.
The observed sample pattern is not typical of diesel/#2 fuel oil.

State of Washington Lab Certification No. C259

4072204 B-34-25 Grab Soil Sample

02214 TPH by NWTPH-Dx(soils) w/SiGel
The surrogate data in the method blank associated with this sample is above the

Comments

QC limit. Since no target compounds were detected in the method blank, the results are reported.

State of Washington Lab Certification No. C259

4072205 B-34-35 Grab Soil Sample

02006 TPH by NWTPH-Gx soils
Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

02160 BTEX/MTBE
Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

Due to the presence of interferents near their retention time, normal reporting limits were not attained for the compounds listed below. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.
benzene
MTBE

02214 TPH by NWTPH-Dx(soils) w/SiGel
The surrogate data in the method blank associated with this sample is above the QC limit. Since no target compounds were detected in the method blank, the results are reported.
The observed sample pattern is not typical of diesel/#2 fuel oil.

State of Washington Lab Certification No. C259

4072206 B-062503-D Grab Soil Sample

02214 TPH by NWTPH-Dx(soils) w/SiGel
The surrogate data in the method blank associated with this sample is above the QC limit. Since no target compounds were detected in the method blank, the results are reported.

State of Washington Lab Certification No. C259

4072207 VB-3A-30 Grab Soil Sample

02006 TPH by NWTPH-Gx soils
Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

02160 BTEX/MTBE
Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.

Due to the presence of interferents near their retention time, normal

Comments

reporting limits were not attained for the compounds listed below. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.
MTBE
benzene
toluene

02214 TPH by NWTPH-Dx(soils) w/SiGel
The surrogate data in the method blank associated with this sample is above the QC limit. Since no target compounds were detected in the method blank, the results are reported.

State of Washington Lab Certification No. C259

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

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Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Partial Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon
925-842-8582

Prepared by:
Lanacaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 857656. Samples arrived at the laboratory on Saturday, Jun 28 2003.
The project for this group is 96590.
The PO# for this sample group is 99011184.
The release number for this sample group is HUNTER.

Sample No.	Collected	Client Description
4074062	6/27/03 4:55	VB-5A-10 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. - Chelan, WA
4074063	6/27/03 6:15	VB-5B-20 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. - Chelan, WA
4074064	6/27/03 12:00	VB-062703-D Grab Soil Sample Facility# 96590 232 E. Woodin Ave. - Chelan, WA
4074065	6/27/03 4:05	TB-062703-1 Water Sample Facility# 96590 232 E. Woodin Ave. - Chelan, WA
4074066	6/26/03 13:55	VB-4A-10 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. - Chelan, WA
4074067	6/26/03 14:15	VB-4A-25 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. - Chelan, WA

1 COPY TO SAIC Attn: Tom Dube

Questions? Contact your Client Services Representative
Danette S Blystone at (717)656-2300

Respectfully Submitted,

Partial Report

Lancaster Laboratories

Analytical Report

ChevronTexaco
Project: 232 E. Woodin Ave. - Chelan, WA

Report Date: 7/8/2003 8:58
Submit Date: 6/28/2003 10:50

Analysis Name	Units	4074063 VB-5B-20		4074064 VB-06270		4074066 VB-4A-10	
		Result	MDL	Result	MDL	Result	MDL
TPH by NWTPH-Gx soils	MG/KG	1.6	1.0	1.3	1.0	N.D.	1.0
Diesel Range Organics	MG/KG	N.D.	3.0	N.D.	3.0	4.0	3.0
Heavy Range Organics	MG/KG	38.	10.	N.D.	10.	51.	10.
Benzene	MG/KG	0.3	0.005	0.2	0.005	N.D.	0.005
Toluene	MG/KG	0.04	0.005	0.02	0.005	N.D.	0.005
Ethylbenzene	MG/KG	0.08	0.005	0.05	0.005	N.D.	0.005
Total Xylenes	MG/KG	0.2	0.02	0.1	0.02	N.D.	0.02
MTBE	MG/KG	N.D.	0.05	N.D.	0.05	N.D.	0.05

Analysis Name	Units	4074067 VB-4A-25		4074062 VB-5A-10	
		Result	MDL	Result	MDL
TPH by NWTPH-Gx soils	MG/KG	7.7	1.0	N.D.	1.0
Diesel Range Organics	MG/KG	N.D.	3.0	N.D.	3.0
Heavy Range Organics	MG/KG	N.D.	10.	N.D.	10.
Benzene	MG/KG	N.D.	0.005	N.D.	0.005
Toluene	MG/KG	0.02	0.005	N.D.	0.005
Ethylbenzene	MG/KG	0.07	0.005	N.D.	0.005
Total Xylenes	MG/KG	0.5	0.02	N.D.	0.02
MTBE	MG/KG	N.D.	0.05	N.D.	0.05

Analysis Name	Units	4074065 TB-06270	
		Result	MDL
TPH by NWTPH-Gx waters	UG/L	N.D.	50.
Benzene	UG/L	N.D.	0.5
Toluene	UG/L	N.D.	0.5
Ethylbenzene	UG/L	N.D.	0.5
Total Xylenes	UG/L	N.D.	1.5

CAT No.	Analysis Name	Method	Trial ID	Analysis Date/Time	Analyst	Dilution
4074062	**VB-5A-10 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	7/1/03 1007	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	7/1/03 1007	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/2/03 2230	Devin M Hetrick	1
4074063	**VB-5B-20 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	7/1/03 1043	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	7/1/03 1043	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/2/03 2255	Devin M Hetrick	1
4074064	**VB-062703-D Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	7/1/03 1119	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	7/1/03 1119	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/2/03 2320	Devin M Hetrick	1
4074065	**TB-062703-1 Water Sample**					
02159	BTEX, MTBE	SW-846 8021B	1	7/1/03 1847	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	7/1/03 1847	Martha L Seidel	1
4074066	**VB-4A-10 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	7/1/03 1156	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	7/1/03 1156	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/3/03 0214	Devin M Hetrick	1
4074067	**VB-4A-25 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	7/1/03 1232	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	7/1/03 1232	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/2/03 2345	Devin M Hetrick	1

Comments

4074062 VB-5A-10 Grab Soil Sample

State of Washington Lab Certification No. C259

4074063 VB-5B-20 Grab Soil Sample

State of Washington Lab Certification No. C259

4074064 VB-062703-D Grab Soil Sample

State of Washington Lab Certification No. C259

4074065 TB-062703-1 Water Sample

02159 BTEX, MTBE
A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

08274 TPH by NWTPH-Gx waters
A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

State of Washington Lab Certification No. C259

4074066 VB-4A-10 Grab Soil Sample

State of Washington Lab Certification No. C259

4074067 VB-4A-25 Grab Soil Sample

State of Washington Lab Certification No. C259

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Partial Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon
925-842-8582

Prepared by:
Lanacaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 858170. Samples arrived at the laboratory on Thursday, Jul 3 2003.
The project for this group is 96590.
The PO# for this sample group is 99011184.
The release number for this sample group is HUNTER.

Sample No.	Collected	Client Description
4076465	6/30/03 4:50	VB-6A-10 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. - Chelan, WA
4076466	6/30/03 5:05	VB-6A-17.5 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. - Chelan, WA
4076467	7/1/03 6:10	VB-7A-25 Grab Soil Sample Facility# 96590 232 E. Woodin Ave. - Chelan, WA
4076468	6/30/03 4:30	TB-063003-1 Water Sample Facility# 96590 232 E. Woodin Ave. - Chelan, WA

1 COPY TO SAIC Attn: Tom Dube

Questions? Contact your Client Services Representative
Danette S Blystone at (717)656-2300

Respectfully Submitted,

Partial Report

Lancaster Laboratories

Analytical Report

ChevronTexaco
Project: 232 E. Woodin Ave. - Chelan, WA

Report Date: 7/11/2003 14:52
Submit Date: 7/3/2003 9:10

Analysis Name	Units	4076465 VB-6A-10		4076466 VB-6A-17		4076467 VB-7A-25	
		Result	MDL	Result	MDL	Result	MDL
Lead (furnace method)	MG/KG	n.a.	n.a.	3.54	0.0792	4.48	0.0800
TPH by NWTPH-Gx soils	MG/KG	N.D.	1.0	230.	20.	5.6	1.0
Diesel Range Organics	MG/KG	N.D.	3.0	37.	3.0	N.D.	3.0
Heavy Range Organics	MG/KG	17.	10.	N.D.	10.	14.	10.
Benzene	MG/KG	N.D.	0.005	N.D.	0.02	0.4	0.005
Toluene	MG/KG	N.D.	0.005	0.3	0.02	0.03	0.005
Ethylbenzene	MG/KG	N.D.	0.005	0.4	0.02	0.3	0.005
Total Xylenes	MG/KG	N.D.	0.02	1.3	0.3	0.5	0.02
MTBE	MG/KG	n.a.	n.a.	N.D.	0.2	N.D.	0.05
1,2-Dichloroethane	MG/KG	n.a.	n.a.	n.a.	n.a.	0.01	0.001
Methyl Tertiary Butyl Ether	MG/KG	n.a.	n.a.	n.a.	n.a.	N.D.	0.001
1,2-Dibromoethane	MG/KG	n.a.	n.a.	n.a.	n.a.	0.001	0.001

Analysis Name	Units	4076468 TB-06300	
		Result	MDL
TPH by NWTPH-Gx waters	UG/L	N.D.	50.
Benzene	UG/L	N.D.	0.5
Toluene	UG/L	N.D.	0.5
Ethylbenzene	UG/L	N.D.	0.5
Total Xylenes	UG/L	N.D.	1.5

Partial Report

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial ID	Analysis Date/Time	Analyst	Dilution
4076465	**VB-6A-10 Grab Soil Sample**					
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	7/9/03 0840	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	7/9/03 0840	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/7/03 1858	Devin M Hetrick	1
4076466	**VB-6A-17.5 Grab Soil Sample**					
01155	Lead (furnace method)	SW-846 7421 modified	1	7/8/03 2122	Melissa-Ann S McAlpine	1
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	7/8/03 1056	Stephanie A Selis	500
02160	BTEX/MTBE	SW-846 8021B	1	7/8/03 1056	Stephanie A Selis	500
02160	BTEX/MTBE	SW-846 8021B	1	7/9/03 0917	Stephanie A Selis	100
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/7/03 1808	Devin M Hetrick	1
4076467	**VB-7A-25 Grab Soil Sample**					
01155	Lead (furnace method)	SW-846 7421 modified	1	7/8/03 2211	Melissa-Ann S McAlpine	1
02006	TPH by NWTPH-Gx soils	TPH by NWTPH-Gx - 8015B Mod.	1	7/8/03 1132	Stephanie A Selis	25
02160	BTEX/MTBE	SW-846 8021B	1	7/8/03 1132	Stephanie A Selis	25
02214	TPH by NWTPH-Dx(soils) w/SiGel	NWTPH-Dx, ECY 97-602(modifiec	1	7/7/03 1833	Devin M Hetrick	1
06373	8260 Special Cmpds for Soils	SW-846 8260B	1	7/8/03 1812	Roy R Mellott	1
4076468	**TB-063003-1 Water Sample**					
05879	BTEX	SW-846 8021B	1	7/7/03 1312	Martha L Seidel	1
08274	TPH by NWTPH-Gx waters	TPH by NWTPH-Gx - 8015B Mod.	1	7/7/03 1312	Martha L Seidel	1

Comments

4076465 VB-6A-10 Grab Soil Sample

State of Washington Lab Certification No. C259

4076466 VB-6A-17.5 Grab Soil Sample

02006 TPH by NWTPH-Gx soils
A poor surrogate recovery was observed due to the dilution needed to perform the analysis.

02160 BTEX/MTBE
A poor surrogate recovery was observed due to the dilution needed to perform the analysis.

Due to the presence of interferents near their retention time, normal reporting limits were not attained for benzene and methyl t-butyl ether. The presence or concentration of these compounds cannot be determined below the reporting limits due to the presence of these interferents.

State of Washington Lab Certification No. C259

4076467 VB-7A-25 Grab Soil Sample

State of Washington Lab Certification No. C259

4076468 TB-063003-1 Water Sample

05879 BTEX
A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

08274 TPH by NWTPH-Gx waters
A site-specific MSD sample was not submitted for the project. A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

State of Washington Lab Certification No. C259

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

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meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

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ppb parts per billion

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X,Y,Z	Defined in case narrative

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Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583
925-842-8582

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 858223. Samples arrived at the laboratory on Thursday, July 03, 2003. The PO# for this group is 99011184 and the release number is HUNTER.

Client Description	Lancaster Labs Number
VW-5B Composite Tedlar Bag Sample	4076706
VW-5A Composite Tedlar Bag Sample	4076707
VW-4A Composite Tedlar Bag Sample	4076708
VW-4B Composite Tedlar Bag Sample	4076709
VW-7A Composite Tedlar Bag Sample	4076710
VW-7B Composite Tedlar Bag Sample	4076711
VW-070103-2 Composite Tedlar Bag Sample	4076712
VW-070103-1 Composite Tedlar Bag Sample	4076713

1 COPY TO SAIC Attn: Tom Dube

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Questions? Contact your Client Services Representative
Danette S Blystone at (717) 656-2300.

Respectfully Submitted,

Robert E. Mellinger
Senior Chemist, Coordinator

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. AQ 4076706

Collected: 07/01/2003 09:20 by TD

Account Number: 11255

Submitted: 07/03/2003 09:10
Reported: 07/11/2003 at 13:51
Discard: 08/11/2003
VW-5B Composite Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	4.5	1.0	ppm(v) hexane	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/03/2003 19:13	David I Ressler	1
07869	TO 14 VOA Ext. List Tedlar	EPA Method TO14A	1	07/07/2003 20:20	Douglas Graham	2
07870	TO 14 VOA Ext List cont Tedlar	EPA Method TO14A	1	07/07/2003 20:20	Douglas Graham	2

VOLATILE ORGANICS IN AIR
TEDLAR BAG SAMPLE
ANALYSIS DATA SHEET

Sample No.: VW-5B Date Collected: 07/01/03 Date Received: 07/03/03
Lab Sample ID: 4076706 Date Analyzed: 07/07/03 Time Analyzed: 20:20
Injection Volume: 125 cc Nominal Volume: 250 cc Dilution Factor: 2.0
Instrument ID: HP4224 Lab File ID: C:\HPCHEM\1\DATA\JUL07\0801007.D

CAS RN	COMPOUND NAME	CONCENTRATION UNITS: MDL ppb(v)	Q
71-43-2	Benzene	10	D
108-88-3	Toluene	6	D
100-41-4	Ethylbenzene	2	J D
1330-20-7	m/p-Xylene	3	D
95-47-6	o-Xylene	3	D

U = Compound was undetected at the specified limit of quantitation.
B = Compound was found in method blank. D = analysis of diluted sample.
J = Compound was detected, but below the limit of quantitation.
NOTE: Limits of detection were raised due to the high concentration of volatile organic compounds in this sample.

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Analysis Report

Lancaster Laboratories Sample No. AQ 4076707

Collected:07/01/2003 09:55 by TD

Account Number: 11255

Submitted: 07/03/2003 09:10
Reported: 07/11/2003 at 13:51
Discard: 08/11/2003
VW-5A Composite Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	7,100.	1.0	ppm(v) hexane	1
07059	BTEX					
07063	Benzene	71-43-2	90.	0.5	ppm(v)	1
07064	Toluene	108-88-3	10.	0.8	ppm(v)	1
07065	Ethylbenzene	100-41-4	10.	0.4	ppm(v)	1
07068	Xylene (total)	1330-20-7	30.	0.7	ppm(v)	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/07/2003 20:18	David I Ressler	1
07059	BTEX	EPA Method 18 modified	1	07/07/2003 20:18	David I Ressler	1

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Analysis Report

Lancaster Laboratories Sample No. AQ 4076708

Collected:07/01/2003 10:40 by TD

Account Number: 11255

Submitted: 07/03/2003 09:10
Reported: 07/11/2003 at 13:51
Discard: 08/11/2003
VW-4A Composite Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	12,000.	1.0	ppm(v) hexane	1
07059	BTEX					
07063	Benzene	71-43-2	20.	0.5	ppm(v)	1
07064	Toluene	108-88-3	20.	0.8	ppm(v)	1
07065	Ethylbenzene	100-41-4	20.	0.4	ppm(v)	1
07068	Xylene (total)	1330-20-7	70.	0.7	ppm(v)	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/07/2003 20:49	David I Ressler	1
07059	BTEX	EPA Method 18 modified	1	07/07/2003 20:49	David I Ressler	1

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Analysis Report

Lancaster Laboratories Sample No. AQ 4076709

Collected:07/01/2003 10:55 by TD

Account Number: 11255

Submitted: 07/03/2003 09:10
Reported: 07/11/2003 at 13:51
Discard: 08/11/2003
VW-4B Composite Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	2.0	1.0	ppm(v) hexane	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/03/2003 19:40	David I Ressler	1
07869	TO 14 VOA Ext. List Tedlar	EPA Method TO14A	1	07/07/2003 21:48	Douglas Graham	2
07870	TO 14 VOA Ext List cont Tedlar	EPA Method TO14A	1	07/07/2003 21:48	Douglas Graham	2

VOLATILE ORGANICS IN AIR
TEDLAR BAG SAMPLE
ANALYSIS DATA SHEET

Sample No.: VW-4B Date Collected: 07/01/03 Date Received: 07/03/03
Lab Sample ID: 4076709 Date Analyzed: 07/07/03 Time Analyzed: 21:48
Injection Volume: 125 cc Nominal Volume: 250 cc Dilution Factor: 2.0
Instrument ID: HP4224 Lab File ID: C:\HPCHEM\1\DATA\JUL07\1001009.D

CAS RN	COMPOUND NAME	CONCENTRATION UNITS: MDL ppb(v)	Q
71-43-2	Benzene	1	J D
108-88-3	Toluene	5	D
100-41-4	Ethylbenzene	2	D
1330-20-7	m/p-Xylene	17	D
95-47-6	o-Xylene	2	J D

U = Compound was undetected at the specified limit of quantitation.
B = Compound was found in method blank. D = analysis of diluted sample.
J = Compound was detected, but below the limit of quantitation.
NOTE: Limits of detection were raised due to the high concentration of volatile organic compounds in this sample.

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Analysis Report

Lancaster Laboratories Sample No. AQ 4076710

Collected: 07/01/2003 11:45 by TD

Account Number: 11255

Submitted: 07/03/2003 09:10
Reported: 07/11/2003 at 13:52
Discard: 08/11/2003
VW-7A Composite Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	6,400.	1.0	ppm(v) hexane	1
07059	BTEX					
07063	Benzene	71-43-2	40.	0.5	ppm(v)	1
07064	Toluene	108-88-3	8.	0.8	ppm(v)	1
07065	Ethylbenzene	100-41-4	20.	0.4	ppm(v)	1
07068	Xylene (total)	1330-20-7	40.	0.7	ppm(v)	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/07/2003 21:19	David I Ressler	1
07059	BTEX	EPA Method 18 modified	1	07/07/2003 21:19	David I Ressler	1

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Analysis Report

Lancaster Laboratories Sample No. AQ 4076711

Collected:07/01/2003 12:00 by TD

Account Number: 11255

Submitted: 07/03/2003 09:10
Reported: 07/11/2003 at 13:52
Discard: 08/11/2003
VW-7B Composite Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	N.D.	1.0	ppm(v) hexane	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/03/2003 20:30	David I Ressler	1
07869	TO 14 VOA Ext. List Tedlar	EPA Method TO14A	1	07/07/2003 22:31	Douglas Graham	5
07870	TO 14 VOA Ext List cont Tedlar	EPA Method TO14A	1	07/07/2003 22:31	Douglas Graham	5

VOLATILE ORGANICS IN AIR
TEDLAR BAG SAMPLE
ANALYSIS DATA SHEET

Sample No.: VW-7B Date Collected: 07/01/03 Date Received: 07/03/03
Lab Sample ID: 4076711 Date Analyzed: 07/07/03 Time Analyzed: 22:31
Injection Volume: 50 cc Nominal Volume: 250 cc Dilution Factor: 5.0
Instrument ID: HP4224 Lab File ID: C:\HPCHEM\1\DATA\JUL07\1101010.D

CAS RN	COMPOUND NAME	CONCENTRATION UNITS: MDL ppb(v)	Q
71-43-2	Benzene	5	J D
108-88-3	Toluene	4	J D
100-41-4	Ethylbenzene	2	J D
1330-20-7	m/p-Xylene	6	D
95-47-6	o-Xylene	1	J D

U = Compound was undetected at the specified limit of quantitation.
B = Compound was found in method blank. D = analysis of diluted sample.
J = Compound was detected, but below the limit of quantitation.
NOTE: Limits of detection were raised due to the high concentration of volatile organic compounds in this sample.

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Analysis Report

Lancaster Laboratories Sample No. AQ 4076712

Collected: 07/01/2003 10:30 by TD

Account Number: 11255

Submitted: 07/03/2003 09:10
Reported: 07/11/2003 at 13:52
Discard: 08/11/2003
VW-070103-2 Composite Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	6,600.	1.0	ppm(v) hexane	1
07059	BTEX					
07063	Benzene	71-43-2	80.	0.5	ppm(v)	1
07064	Toluene	108-88-3	10.	0.8	ppm(v)	1
07065	Ethylbenzene	100-41-4	10.	0.4	ppm(v)	1
07068	Xylene (total)	1330-20-7	30.	0.7	ppm(v)	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/07/2003 21:49	David I Ressler	1
07059	BTEX	EPA Method 18 modified	1	07/07/2003 21:49	David I Ressler	1

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Analysis Report

Lancaster Laboratories Sample No. AQ 4076713

Collected: 07/01/2003 10:35 by TD

Account Number: 11255

Submitted: 07/03/2003 09:10
Reported: 07/11/2003 at 13:52
Discard: 08/11/2003
VW-070103-1 Composite Tedlar Bag Sample
Facility# 96590
232 E. Woodin Ave. - Chelan, WA

ChevronTexaco
6001 Bollinger Canyon Rd L4310

San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07048	C2-C10 Hydrocarbons	n.a.	4.0	1.0	ppm(v) hexane	1

State of Washington Lab Certification No. C259

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
07048	C2-C10 Hydrocarbons	EPA Method 25 modified	1	07/03/2003 20:58	David I Ressler	1
07869	TO 14 VOA Ext. List Tedlar	EPA Method TO14A	1	07/08/2003 12:27	Douglas Graham	2
07870	TO 14 VOA Ext List cont Tedlar	EPA Method TO14A	1	07/08/2003 12:27	Douglas Graham	2

VOLATILE ORGANICS IN AIR
TEDLAR BAG SAMPLE
ANALYSIS DATA SHEET

Sample No.: VW-070103-1 Date Collected: 07/01/03 Date Received: 07/03/03
Lab Sample ID: 4076713 Date Analyzed: 07/08/03 Time Analyzed: 12:27
Injection Volume: 125 cc Nominal Volume: 250 cc Dilution Factor: 2.0
Instrument ID: HP4224 Lab File ID: C:\HPCHEM\1\DATA\JUL07\1401003.D

CAS RN	COMPOUND NAME	CONCENTRATION UNITS: MDL ppb(v)	Q
71-43-2	Benzene	10	D
108-88-3	Toluene	6	D
100-41-4	Ethylbenzene	2	J D
1330-20-7	m/p-Xylene	4	D
95-47-6	o-Xylene	3	D

U = Compound was undetected at the specified limit of quantitation.
B = Compound was found in method blank. D = analysis of diluted sample.
J = Compound was detected, but below the limit of quantitation.
NOTE: Limits of detection were raised due to the high concentration of volatile organic compounds in this sample.

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Analysis Report

Quality Control Summary

Client Name: ChevronTexaco Group Number: 858223
Reported: 07/11/03 at 01:52 PM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: A031881AA	Sample number(s): 4076706,4076709,4076711,4076713							
Benzene	N.D.	0.20	ppb(v)	116		74-141		
Toluene	N.D.	0.20	ppb(v)					
Ethylbenzene	N.D.	0.20	ppb(v)	110		59-143		
m/p-Xylene	N.D.	0.20	ppb(v)					
o-Xylene	N.D.	0.20	ppb(v)					
Batch number: M031881AA	Sample number(s): 4076706,4076709,4076711,4076713							
C2-C10 Hydrocarbons	N.D.	1.0	ppm(v)					
Batch number: M031891AA	Sample number(s): 4076707-4076708,4076710,4076712							
C2-C10 Hydrocarbons	N.D.	1.0	ppm(v)					
Benzene	N.D.	0.5	ppm(v)	104		48-169		
Toluene	N.D.	0.8	ppm(v)	108		48-175		
Ethylbenzene	N.D.	0.4	ppm(v)	117		59-152		
Xylene (total)	N.D.	0.7	ppm(v)	108		63-163		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result falls within the Method Detection Limit (MDL) and Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

APPENDIX F: VAPOR INTRUSION MODELING

Vapor Intrusion Modeling for Buildings with Basements

APPENDIX F
VAPOR INTRUSION MODELING FOR BUILDINGS WITH BASEMENTS

Introduction

The vapor-intrusion model of Johnson and Ettinger (1991) has been updated and adapted by the U.S. Environmental Protection Agency and is provided in a Microsoft Excel spreadsheet format with a user's guide (U.S. EPA, 2003). The model utilizes a large number of input parameters, including sampling depth, soil types and depths, soil vapor concentration, basement dimensions, exposure information, and air exchange rate. The model outputs the resultant excess (incremental) carcinogenic or noncarcinogenic risk. A number of factors affect the usefulness and accuracy of this vapor-intrusion model for the Chelan site. The model is generally intended for residential and not commercial buildings. Two of the most important factors in this case involve the thickness or presence of a concrete foundation or slab below the building, and the indoor air exchange rate with the outside.

The user's guide states that the model is intended for evaluating an entire building together as a single enclosed-space unit. However, in order to more conservatively (more safely) model indoor basement air at Chelan, two different scenarios were evaluated for each location: (1) the basement floor space alone, separately from the main floor; and (2) the basement together with the main occupied first-floor space. This methodology was applied to conservatively err on the side of safety in estimating risk. Some Chelan buildings also have a second floor that is infrequently used. This second floor was not included in the modeling parameters because of its infrequent use and also to conservatively err on the side of safety, because adding additional floor space essentially dilutes the indoor air and produces a lower risk estimate.

The user's guide states that the soil gas model is not intended for use where a fourth phase (non-aqueous phase liquid or NAPL) is present in the soil column, or at sites contaminated with petroleum products derived from leaking USTs. The reason is that the soil gas model does not account for the fourth phase or for contaminant attenuation (such as biodegradation), which may be significant at these sties. However, the model does apply to the Chelan site because the soil column of interest (within the upper15 ft) does not contain NAPL, and samples were collected at depths immediately below basement levels. Therefore, NAPL does not directly factor into the model, except as a source at depth, which agrees with the basis of the model in that it considers contamination to be an "infinite source" at depth below the site. Also, attenuation is not a concern as it would be near the source (at the UST site), because the vapors are being sampled very close to the final receptor location – the basement level. The vapors are not expected to biodegrade between the short distance from the depth of the vapor well screen to the basement floor. Thus, these model conditions do apply to the Chelan case.

The text that follows lists the assumptions, inputs, and uncertainties for modeling basements and buildings near the seven vapor well locations.

Enclosed Space Floor Thickness

One important aspect of the model, according to the user's guide, is that it is intended for buildings with basement foundation construction or slab on grade, but not for buildings with crawlspaces, earthen floors, or other significant openings to the subsurface. The model calculates vapor intrusion into buildings by upward diffusion through the soil and by convection through the seam or cracks in the floor-wall concrete joint at the foundation margin. Two of the Chelan buildings modeled and described below have earthen-floored basements. In the model, there are two means of varying input parameters to adjust for a lack of a foundation slab. One method is by setting the enclosed space floor thickness (concrete foundation slab) to zero instead of the standard 15 cm thickness. The other method is by using the standard slab thickness but increasing the floor-wall seam crack width (default is 0.1 cm) until the ratio of the crack surface area to the basement surface area is approximately one, based on the model inter-calculation output; this essentially makes the earthen floor area into a single large crack space. These two methods produce essentially identical results for excess risk. The latter option was utilized because it better suits the intent of the model, and because it could be varied according to the percentage of the basement that is dirt vs. concrete-floored (for VW-3 and VW-6, the basements are approximately half dirt and half concrete). By modifying the parameters such as this, it is assumed that the conservative nature of the input and default parameters would produce a conservative result, even in the case of a wide crack thickness.

Indoor Air Exchange Rate

Another stated aspect of the model is that it is intended for buildings (residences) with moderate air exchange rates to the outside. It apparently does not perform as well for low rates of air exchange, as might be found in some basements. The default exchange rate for residential indoor air in the EPA J&E model is a conservatively low 0.25/hour, with a listed "practical range" of 0.18 to 1.26. A value of 0.25/hour indicates that one-quarter of the indoor air is exchanged every hour. These numbers apply to typical energy-efficient houses, and the measured range of values listed in the user's guide is from about 0.1 to more than 2.0/hour.

The actual exchange rate is likely to be relatively high in Chelan retail businesses (at least the main floor) because the outside door(s) is frequently opened and/or ventilation via the heater/air conditioner is active. In the warmer part of the year at Chelan, the main front door to the business is often left open during working hours. For those Chelan building basements that are regularly occupied and are ventilated, with open circulation to the main floor, the conservative default value of 0.25/hour is used in the model. This value is also applied for modeling the entire basement and main floor together.

On the other hand, for those Chelan basements that are poorly connected by weak ventilation with the main floor, this 0.25 value does not apply because the air exchange rate is likely significantly lower. Some of these basements are not directly heated or

cooled, and the basement door often remains closed, which reduces air flux. However, some of these basements house the furnace or heat pump, which would cause more air exchange from outside the basement. Also, while workers visit these basements, the door typically remains open for the duration of the visit, which facilitates air exchange. As a result, for those basements that are not regularly occupied and are not directly ventilated, an estimated average exchange rate of 0.05/hour is used in the model (1/20 of air is exchanged every hour). The user's guide does not state what the impact is for using low exchange rates, although the calculated risk is directly proportional to the rate (half the exchange rate will double the risk).

In the Chelan modeling, two types of basements are distinguished: those that are frequently used and are well ventilated (exchange rate applied = 0.25/hr), and those that are infrequently used and poorly or partly ventilated (exchange rate applied = 0.05/hr). When the building as a whole is considered (basement + main occupied floor), the rate of 0.25/hr is utilized.

Enclosed Space Floor Length, Width, and Height

The actual length, width, and interior height of the basements and main floors are either known or estimated. Most of the buildings and basements being modeled were visited in June 2003 and the heights were measured or were determined by asking the business manager. The lengths and widths are estimated, and mostly are slightly smaller than the exterior building sizes shown on the site map. In the model for each building, the height is set for two cases: the basement height, and the combined height of basement + main occupied floor (first floor). For the former case, the basement was considered separately in order to determine a conservative estimate of risk for basement exposure. For the latter case, it assumes that air in the basement and main retail floor are in part mixed (again to be conservative), and together they exchange air with the outside at an average rate of 0.25/hour.

Soil Gas Concentration

The soil gas concentration was taken directly from the analytical values from samples collected in the shallow vapor well at each location. For sample VW-3B, the benzene result reported by the laboratory was <10 ppbv, which means this chemical was not detected at 10 parts per billion (by volume), but is present at some lower concentration. To err on the conservative side, a value of 10 ppbv (or 0.010 ppmv) was inserted into the model.

Soil Parameters

Soil parametric values were chosen by selecting one of the twelve SCS soil types built into the model that most closely matched the lithology between the vapor well screen interval and the floor of the basement. The model then selects a number of average values as default inputs. If soil varied with depth, up to three different soil types at different strata depths were defined in the model (strata A, B, and C, from ground surface

down to the well screen). Depths below grade of soil strata and depths to basement and well screens are all described below for individual locations. An average soil temperature of 15ºC (59ºF) was selected for all locations, based on average annual temperatures of shallow groundwater at the site, as stated in the user's guide.

Exposure Duration and Averaging Time

For carcinogens (benzene), an exposure duration of 25 years was applied, based on the EPA's occupational worker value (MTCA uses 30 years for residential). The carcinogen averaging time of 75 years was used, taken from the MTCA average life expectancy value [WAC 173-340-750(3)]. The MTCA noncarcinogenic exposure duration (6 years) and averaging time (6 years) apply to a child exposure residential scenario, which is not conservative enough or pertinent for an occupational adult scenario at Chelan. Instead EPA's default values for an occupational worker scenario are used, with a reasonable maximum exposure (RME) noncarcinogenic exposure duration of 25 years and an averaging time of 25 years (USEPA, 1991). MTCA allows for modifications to the exposure duration, exposure time, and exposure frequency, including for air exposure, when use of alternative values would be more appropriate for the conditions present at the site [WAC 173-340-708(10)].

MTCA Method B data tables (CLARC version 3.1) list both carcinogen and noncarcinogen standard formula values for benzene, and only noncarcinogen values for toluene, ethylbenzene, and xylenes. These classifications were used accordingly in this model, with benzene considered as a carcinogen (the model only gives carcinogen risk values for benzene); and toluene, ethylbenzene, and xylenes are considered as noncarcinogens.

Exposure Frequency

One factor that was varied for Chelan buildings is the exposure frequency (EF), which in MTCA is applied to residences under a very conservative, continuous exposure scenario (365 days/year and 24 hours/day, or EF=1.0). This residential scenario does not apply and likely may never apply to basements or main floors in the retail/commercial district along Woodin Avenue. As a result, the cases were modeled under more realistic conditions, yet still overly conservative to err on the side of safety. The exposure frequencies were determined on an individual basis, depending on the type of business, the work hours (conservatively using the longer summer-schedule hours), and the current or likely future usage of the basement. Thus an RME was applied for greater than the actual maximum hours spent in each basement and greater than the actual maximum business hours spent in the main occupied floor for each building being modeled [modifications are as described above for WAC 173-340-708(10)].

Other Parameters

Other input parameters in the model use the typical default values or allows the model to calculate appropriate values.

Location-Specific Modeling Information

The text that follows describes location-specific factors and inputs used in modeling at each vapor well location and adjacent building. In general, the vapor wells were placed in proximity to higher-risk locations above or near the product plume, such as near dirt-floor basements, or basements that are more heavily used. Other well locations were placed to geographically distribute the sampling points throughout the site. Well locations and basement types are shown in Figure 1-4. The analytical data from vapor well sampling is presented in Table 4-4. The important varying inputs for each location are summarized in Table 4-5. In the following evaluation, only samples from the shallow vapor wells at each location are used for evaluation, because these well screens were specifically placed to sample vapors at just below the basement depths.

VW-1B
209 E. Woodin Avenue
Lake Chelan Eagle Lodge 2218
Concrete basement, frequently used

The basement is large, occupied in the evenings, and used as a Bingo hall. There is one open staircase and one elevator access to the basement from the main floor.

The basement floor depth is about 9.3 ft below building grade level; adding 15 cm for the assumed thickness of the concrete slab thus gives a depth of about 298 cm for the bottom of the slab. VW-1B is installed about 0.5 ft in elevation below the building grade; the screen depth is at 9 to 11.5 ft bgs at the well, which corresponds to 9.5 to 12 ft below the building grade. The middle screen depth is thus 10.75 ft (328 cm) below the building grade.

The SCS soil type at the well screen depth and above is silty fine sand with gravel, which corresponds conservatively to loamy sand in characteristics (SCS soil type = LS). The assumption is made that this sand unit continues up to the base of the concrete slab.

The basement plan area is assumed to be almost same as the building plan area, or about 100 by 38 ft (3050 by 1150 cm). The basement height is about 8 ft (244 cm), and for the basement only model, the basement is conservatively assumed to be closed off from the main floor of the building (actually there is a wide open staircase and good ventilation, but separating the basement volume will give worst-case conditions). The main occupied first-floor height is approximately 9 ft (274 cm), and the combined height of the basement and first floor is 17 ft (518 cm).

An indoor air exchange rate of 0.25/hour is used for calculations of both the basement itself and the basement + occupied first floor together. The following exposure frequencies are applied.

The Eagle's lodge is opened for an average of about 8.75 hours/day, 7 days/week, and the basement is used nightly as a Bingo hall twice per week for 3 hours/day. These values are rounded up to 9.5 hours/day for the lodge and 4 hours/day for the basement, in order to more conservatively model exposure. Exposure days per year modeled include:

- Business hours for the lodge: 9.5 hours/day, 7 days/week, all year (equivalent to 143 full 24-hour days input to the model)
- Basement usage hours (maximum likely time spent in basement): 4 hours/day, 2 days/week, all year (equivalent to 17 full 24-hour days input to the model)

VW-2
113 S. Emerson Street
Sophisticated Backwoods
Concrete basement, infrequently used

The basement is used only for storage, and is rarely ever entered. Sophisticated Backwoods owner has only visited the basement a couple times. An additional business tenant is located on the second floor. The business tenants do not have the key to the basement, which is kept locked by an offsite maintenance individual.

The basement floor depth is about 11 ft below building grade level; adding 15 cm for the assumed thickness of the concrete slab thus gives a depth of about 350 cm for the bottom of the slab. VW-2 is installed at about the same elevation as the building grade; the screen depth is at 12.5 to 15 ft bgs at the well. The middle screen depth is thus 13.75 ft (419 cm) below the shop building grade.

The SCS soil type at the well screen is silt (SI) extending upward to a depth of 12 ft (366 cm), so this layer is 53 cm thick down to the mid-screen level. Sand (S) extends above that to the ground surface; the assumption is made that this sand unit continues up to the base of the concrete slab.

The basement underlies only the back (eastern half) of the building, and the size is assumed to be about 25 by 35 ft (770 by 1060 cm). The basement height is about 10 ft (305 cm), and the basement is closed off from the main floor of the building (entrance is in the stairwell at the northeast end of building). The main occupied first floor of the building is about 10 ft in height (305 cm), and the combined height of the basement and first floor is about 20 ft (610 cm). To simplify calculations and to be more conservative, it is assumed that the first floor area is the same as the basement, although the basement is only half the size of the first floor. This simplification will result in a higher calculated risk.

An indoor air exchange rate of 0.05/hour is used for the basement itself, and 0.25/hour is used for the basement + occupied first floor together. The following exposure frequencies are applied.

The store is opened for 7 hours/day, 6 days/week. The basement is assumed to be visited, at most, 1 hour per week. These values are rounded up to 8 hours/day for the store and 2 hours/week for the basement, in order to conservatively model exposure. Exposure days per year modeled include:

- Business hours for the first-floor store: 8 hours/day, 6 days/week, all year (equivalent to 104 full 24-hour days input to the model)
- Basement usage hours (maximum likely time spent in basement): 2 hour/day, 1 day/week, all year (equivalent to 4 full 24-hour days input to the model)

VW-3B
206 E. Woodin Avenue
Chelan Department Store (Whaley Building)
Dirt/concrete basement, infrequently used

The basement is used only for storage. According to the owner, the basement is occupied for less than a few minutes per month or less than an hour per year. There is no heater in the basement, which is concrete-floored on the north side; and hard, compacted, dark dirt (silt) on the south side. The owner refuted the fact that someone last year reported odors of some kind had been noted in the basement (as reported via Steve Liles of the city, recorded in Delta's field notebook, 6/12/02). She said that she owned the business last year, and she would know about any odors or reports of odors.

The basement floor depth is about 8 ft below building grade level (depth to soil floor of basement is about 244 cm). VW-3B is installed at about the same elevation as the building grade; the screen depth is at 8.5 to 11 ft bgs at the well. The middle screen depth is thus 9.75 ft (297 cm) below the shop building grade. The floor-wall seam crack width is set to 333 cm, which corresponds to a crack-to-total area ratio of 0.50 (according to the model inter-calculation values). This value is selected to model the actual basement configuration, which is about half concrete and half dirt-floor.

The SCS soil type at the well screen is sand (S); however, the soil inside the basement is hard, compact silty material. So the assumption is made that sand is present up to the level of the top of the screen (259 cm), and from 259 to 244 cm (up to the basement floor) consists of silt. Thus, sand (S) extends from 297 to 259 cm depth (model unit C, 38 cm thick), and silt (SI) extends from 259 to 244 cm (model unit B, 15 cm thick); above this from 244 to 0 cm (model unit A, 244 cm thick) is again assumed to be sand (S), for a more conservative estimate of soil vapor permeability.

The basement plan area is assumed to be almost the size of the building plan area, or about 104 by 38 ft (3170 by 1150 cm). The north half of the basement is concrete and the south side is sand, so only half of the basement can readily vent soil gas. The basement height is about 7 ft high (213 cm), and the basement is assumed to be largely closed off from the main floor of the shop; there is an intervening door that is almost always closed. The main floor has much more air flow than the basement, and the store front door is often opened. The main occupied first-floor height is about 12 ft (366 cm), and the combined height of basement and first floor is 19 ft (579 cm).

Benzene concentration for VW-3B is stated as <10 ppbv, and the well close to the south (dirt) end of the basement, VW-2, showed only 0.7 ppbv. However, to be conservative, a detected value of 10 ppbv will be assumed.

An indoor air exchange rate of 0.05/hour is used for the basement itself, and 0.25/hour is used for the basement + occupied first floor together. The following exposure frequencies are applied.

The store is opened for 7.5 hours/day, 6 days/week. The basement is assumed to be visited, at most, 1 hour per week. These values are rounded up to 8 hours/day for the store and 2 hours/week for the basement, in order to conservatively model exposure. Exposure days per year modeled include:

- Business hours for the store: 8 hours/day, 6 days/week, all year (equivalent to 104 full 24-hour days input to the model)
- Basement usage hours (maximum likely time spent in basement): 2 hours/day, 1 day/week, all year (equivalent to 4 full 24-hour days input to the model)

VW-4B
108 S. Emerson Street
Hair Connections
Concrete-floored basement, infrequently used

The basement is used only for storage, and is entered only 10-15 times per year for a few minutes each time.

The basement floor depth is about 8.6 ft below building grade level (at the level of the sidewalk near the front door, about 0.4 ft below the salon level); adding 15 cm for the assumed thickness of the concrete slab thus gives a depth of about 277 cm for the bottom of slab. VW-4B is installed about 0.75 ft in elevation below building grade; the screen is at 8 to 10.5 ft bgs at the well, which corresponds to 8.75 to 11.25 ft below building grade. The middle screen depth is thus 10.0 ft below shop building grade (305 cm).

The SCS soil type at the well screen is sand (S). The assumption is made that this sand unit continues up to the base of the concrete slab.

The basement size is estimated to be about 24 by 31 ft (720 by 950 cm). The basement height is about 8 ft (244 cm), and the basement is largely closed off from the main floor of the shop (the lobby), and the door is almost always closed. The main first floor height is about 8 ft (244 cm), and the combined height of the basement and first floor is 16 ft (488 cm). To simplify calculations and to be overly conservative, it is assumed that the first floor area is the same as the basement, although the basement is less than half the size of the first floor. This simplification will result in a higher calculated risk.

The indoor air exchange rate of 0.05/hour is used for the basement itself, and 0.25/hour is used for the basement + occupied first floor together. The following exposure frequencies are applied.

The salon is opened for 8 hours/day, 6 days/week. The basement is assumed to be visited, at most, 1 hour per week. These values are rounded up to 9 hours/day for the salon and 2 hours/week for the basement, in order to conservatively model exposure. Exposure days per year modeled include:

- Business hours for the salon: 9 hours/day, 6 days/week, all year (equivalent to 117 full 24-hour days input to the model)
- Basement usage hours (maximum likely time spent in basement): 2 hour/day, 1 day/week, all year (equivalent to 4 full 24-hour days input to the model)

VW-5B
212 E. Woodin Avenue
Mackey's Hardware
Concrete-floored basement, frequently used

The basement is used now for offices and storage, but in the past was used for retail. Workers are in the offices for portions of every day.

The basement depth is about 8 ft below building grade level; adding 15 cm for the assumed thickness of the concrete slab thus gives a depth of about 259 cm for the bottom of slab. VW-5B is installed about 0.5 ft in elevation below building grade; the screen is at 8.5 to 11 ft bgs at the well, which corresponds to 9 to 11.5 ft below building grade. The middle screen depth is thus 10.25 ft below shop building grade (312 cm).

The SCS soil type at the well screen is sand (S). The assumption is made that this sand unit continues up to the base of the concrete slab.

The basement plan area is assumed to be almost the size of the building plan area, or about 104 by 38 ft (3170 by 1150 cm). The basement height is assumed to be 7 ft (213 cm); for the basement model, the basement is conservatively assumed to be closed off from the main floor of the store. The main first floor height is about 10 ft (305 cm), and the combined height of the basement and first floor is 17 ft (518 cm). The main floor has good ventilation, and the store front door is often opened.

An indoor air exchange rate of 0.25/hour is used for calculations of both the basement itself and the basement + first floor together. The following exposure frequencies are applied.

The store is opened for an average of 8.6 hours/day, 7 days/week. The basement is assumed to be visited during half of these working hours (4.3 hours/day). These values are rounded up to 9 hours/day for the store and 4.5 hours/day for the basement, in order to conservatively model exposure. Exposure days per year modeled include:

- Business hours for the store: 9 hours/day, 7 days/week, all year (equivalent to 137 full 24-hour days input to the model)
- Basement usage hours (maximum likely time spent in basement): 4.5 hours/day, 7 days/week, all year (equivalent to 68 full 24-hour days input to the model)

VW-6B
140 E. Woodin Avenue
Shirt Shop Plus
Dirt/concrete basement, infrequently used

The basement is used only for storage, and is not regularly occupied. According to the owner, the basement is visited for only several minutes per month. A heat pump is present in the basement, which is concrete-floored on the south side and loose sand on the north side.

The basement depth is about 9.7 ft below building grade level (296 cm to the basement floor). VW-6B is installed about 0.5 ft in elevation below building grade; the screen is at 9.5 to 12 ft bgs at the well, which corresponds to 10 to 12.5 ft below building grade. The middle screen depth is thus 11.25 ft (343 cm) below the shop building grade. In the model, the floor-wall seam crack width is set to 324 cm, which corresponds to a crack-to-total area ratio of 0.50 (according to the model inter-calculation values). This is done to model the actual basement configuration, which is about half concrete and half dirt-floored.

The SCS soil type is sand (S); the soil inside the basement is also loose sandy material. It is assumed that sand is continuous from the well screen to inside the basement.

The basement plan area is assumed to be almost the size of the building plan area, or about 100 ft by 30 ft (3050 cm by 915 cm). The basement height is about 8.5 ft high (259 cm), and the basement is assumed to be largely closed off from the main floor of the shop; the intervening door is usually closed. The main first floor height is about 10 ft (305 cm), and the combined height of the basement and first floor is 18.5 ft (564 cm). The main floor has good ventilation, and the store front door is often opened.

An indoor air exchange rate of 0.05/hour is used for the basement itself, and 0.25/hour is used for the basement + occupied first floor together. The following exposure frequencies are applied.

The shop is opened for an average of 8 hours/day, 7 days/week. The basement is assumed to be visited, at most, 1 hour per week. These values are rounded up to 9 hours/day for the shop and 2 hours/week for the basement, in order to conservatively model exposure. Exposure days per year modeled include:

- Business hours for the shop: 9 hours/day, 7 days/week, all year (equivalent to 137 full 24-hour days input to the model)
- Basement usage hours (maximum likely time spent in basement): 2 hour/day, 1 day/week, all year (equivalent to 4 full 24-hour days input to the model)

VW-7B
222 E. Woodin Avenue
Pacific Northwest Bank
Concrete-floored basement, frequently used

The basement is large, occupied and used for a bank vault, bank storage, lunchroom, and other miscellaneous activities. Two open staircases connect the basement level to a spacious main floor.

The basement depth is about 11 ft below building grade level; adding 15 cm for the assumed thickness of the concrete slab thus gives a depth of about 350 cm for the bottom of slab. VW-7B is installed about 0.2 ft in elevation below building grade; the screen is at 11.5 to 14 ft bgs at the well, which corresponds to 11.7 to 14.2 ft below building grade. The middle screen depth is thus 13.0 ft below bank building grade (395 cm).

The SCS soil type at the well screen is sand (S). The assumption is made that this sand unit continues up to the base of the concrete slab.

The basement plan area is assumed to be almost the size of the building plan area, or about 95 by 44 ft (2880 by 1340 cm). The basement height is about 9 ft high (274 cm), and for the basement model, the basement is conservatively assumed to be closed off from the main floor of the bank (actually there are two open staircases and ventilation). The first floor height is about 12 ft (366 cm), and the combined height of basement and first floor is 21 ft (640 cm). The main floor is large and spacious, with good ventilation, and has front and back doors, which open and close frequently.

An indoor air exchange rate of 0.25/hour is used for calculations of both the basement itself and the basement + first floor together. The following exposure frequencies are applied.

The bank is opened for an average of 8.2 hours/day, 5 days/week. The basement is assumed to be visited during half of these working hours (4.1 hours/day). These values are rounded up to 9 hours/day for the main floor and 4.5 hours/day for the basement, in order to conservatively model exposure. Exposure days per year modeled include:

- Business hours for the bank: 9 hours/day, 5 days/week, all year (equivalent to 98 full 24-hour days input to the model)
- Basement usage hours (maximum likely time spent in basement): 4.5 hours/day, 5 days/week, all year (equivalent to 49 full 24-hour days input to the model)

References

Johnson, P.C., and Ettinger, R.A., 1991. *Heuristic Model for Predicting the Intrusion Rate of Contaminant Vapors in Buildings.* Environ. Sci. Technol., v. 25, p. 1445-1452.

U.S. Environmental Protection Agency, 1991. *Standard Default Exposure Factors. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance.* Interim Final. Office of Solid Waste and Emergency Response, USEPA. OSWER Directive 9285:6-03. March 25, 1991.

U.S. Environmental Protection Agency, 2003. *User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings*. Prepared by Environmental Quality Management Inc., for Industrial Economics Inc., for submittal to USEPA, Washington, D.C. June 19, 2003. (Available at EPA's web page: http://www.epa.gov/superfund/-programs/risk/airmodel/johnson_ettinger.htm)

APPENDIX F: VAPOR INTRUSION MODELING

Printouts of Vapor Intrusion Model for Benzene

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			1.00E-03	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
298	328	15	328	0	0	LS		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
LS	1.62	0.39	0.076	LS	1.62	0.39	0.076	LS	1.62	0.39	0.076

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	3050	1150	518	0.1	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	143

END

Benzene
VW-1B Basement + First Floor
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	30	0.314	0.314	0.314	0.079	1.64E-08	0.957	1.57E-08	8,400	3.30E+00	1.26E+05

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
6.01E+06	1.40E-04	298	8,071	3.45E-03	1.46E-01	1.77E-04	1.22E-02	0.00E+00	0.00E+00	1.22E-02	30

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
298	3.30E+00	0.10	2.15E+01	1.22E-02	8.40E+02	4.50E+13	1.69E-04	5.58E-04	7.8E-06	NA

END

Benzene
VW-1B Basement + First Floor
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
5.7E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-1B Basement + First Floor
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			1.00E-03	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
298	328	15	328	0	0	LS		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
LS	1.62	0.39	0.076	LS	1.62	0.39	0.076	LS	1.62	0.39	0.076

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	3050	1150	244	0.1	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	17

END

Benzene
VW-1B Basement Only
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	30	0.314	0.314	0.314	0.079	1.64E-08	0.957	1.57E-08	8,400	3.30E+00	5.94E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
6.01E+06	1.40E-04	298	8,071	3.45E-03	1.46E-01	1.77E-04	1.22E-02	0.00E+00	0.00E+00	1.22E-02	30

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
298	3.30E+00	0.10	2.15E+01	1.22E-02	8.40E+02	4.50E+13	3.59E-04	1.19E-03	7.8E-06	NA

END

Benzene
VW-1B Basement Only
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.4E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-1B Basement Only
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			7.00E-04	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
350	419	15	366	53	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	SI	1.35	0.489	0.167	SI	1.35	0.489	0.167

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	1060	770	610	0.1	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	104

END

Benzene
VW-2 Basement + First Floor
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	69	0.321	0.322	0.322	0.003	1.00E-07	0.998	9.99E-08	3,660	2.31E+00	3.46E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.10E+06	1.75E-04	350	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	8.45E-03	0.00E+00	9.33E-03	69

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
350	2.31E+00	0.10	5.87E+01	1.42E-02	3.66E+02	2.55E+73	1.41E-03	3.25E-03	7.8E-06	NA

END

Benzene
VW-2 Basement + First Floor
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.4E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-2 Basement + First Floor
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			7.00E-04	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
350	419	15	366	53	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	SI	1.35	0.489	0.167	SI	1.35	0.489	0.167

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	1060	770	305	0.1	0.05	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	4

END

Benzene
VW-2 Basement Only
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	69	0.321	0.322	0.322	0.003	1.00E-07	0.998	9.99E-08	3,660	2.31E+00	3.46E+03

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.10E+06	1.75E-04	350	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	8.45E-03	0.00E+00	9.33E-03	69

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
350	2.31E+00	0.10	5.87E+01	1.42E-02	3.66E+02	2.55E+73	1.41E-02	3.25E-02	7.8E-06	NA

END

Benzene
VW-2 Basement Only
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
9.3E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-2 Basement Only
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			1.00E-02	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
244	297	15	244	15	38	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	SI	1.35	0.489	0.167	S	1.66	0.375	0.054

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	3170	1150	579	333	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	104

END

Benzene
VW-3B Basement + First Floor
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	53	0.321	0.322	0.321	0.003	1.00E-07	0.998	9.99E-08	8,640	3.30E+01	1.47E+05

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
5.75E+06	5.00E-01	244	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	8.45E-03	1.42E-02	1.19E-02	53

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
244	3.30E+01	333.00	3.21E+03	1.42E-02	2.88E+06	3.24E+00	6.89E-03	2.28E-01	7.8E-06	NA

END

Benzene
VW-3B Basement + First Floor
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.7E-07	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-3B Basement + First Floor
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			1.00E-02	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
244	297	15	244	15	38	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	SI	1.35	0.489	0.167	S	1.66	0.375	0.054

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	3170	1150	213	333	0.05	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	4

END

Benzene
VW-3B Basement
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	53	0.321	0.322	0.321	0.003	1.00E-07	0.998	9.99E-08	8,640	3.30E+01	1.08E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
5.75E+06	5.00E-01	244	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	8.45E-03	1.42E-02	1.19E-02	53

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
244	3.30E+01	333.00	3.21E+03	1.42E-02	2.88E+06	3.24E+00	9.12E-02	3.01E+00	7.8E-06	NA

END

Benzene
VW-3B Basement
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
8.6E-08	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-3B Basement
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			1.00E-03	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
277	305	15	305	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	950	720	488	0.1	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	117

END

Benzene
VW-4B Basement + First Floor
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	28	0.321	0.321	0.321	0.003	1.00E-07	0.998	9.99E-08	3,340	3.30E+00	2.32E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.61E+06	2.08E-04	277	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	0.00E+00	0.00E+00	1.42E-02	28

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
277	3.30E+00	0.10	5.50E+01	1.42E-02	3.34E+02	2.51E+75	2.22E-03	7.34E-03	7.8E-06	NA

END

Benzene
VW-4B Basement + First Floor
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
6.1E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-4B Basement + First Floor
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			1.00E-03	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
277	305	15	305	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	950	720	244	0.1	0.05	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	4

END

Benzene
VW-4B Basement Only
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	28	0.321	0.321	0.321	0.003	1.00E-07	0.998	9.99E-08	3,340	3.30E+00	2.32E+03

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.61E+06	2.08E-04	277	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	0.00E+00	0.00E+00	1.42E-02	28

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
277	3.30E+00	0.10	5.50E+01	1.42E-02	3.34E+02	2.51E+75	2.22E-02	7.34E-02	7.8E-06	NA

END

Benzene
VW-4B Basement Only
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.1E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-4B Basement Only
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			1.00E-02	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
259	312	15	312	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	3170	1150	518	0.1	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	137

END

Benzene
VW-5B Basement + First Floor
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	53	0.321	0.321	0.321	0.003	1.00E-07	0.998	9.99E-08	8,640	3.30E+01	1.31E+05

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
5.88E+06	1.47E-04	259	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	0.00E+00	0.00E+00	1.42E-02	53

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
259	3.30E+01	0.10	1.43E+02	1.42E-02	8.64E+02	9.81E+75	1.00E-03	3.31E-02	7.8E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.2E-08	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-5B Basement + First Floor
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			1.00E-02	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
259	312	15	312	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	3170	1150	213	0.1	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	68

END

Benzene
VW-5B Basement Only
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	53	0.321	0.321	0.321	0.003	1.00E-07	0.998	9.99E-08	8,640	3.30E+01	5.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
5.88E+06	1.47E-04	259	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	0.00E+00	0.00E+00	1.42E-02	53

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
259	3.30E+01	0.10	1.43E+02	1.42E-02	8.64E+02	9.81E+75	2.44E-03	8.05E-02	7.8E-06	NA

END

Benzene
VW-5B Basement Only
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.9E-08	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-5B Basement Only
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			4.00E-03	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
296	343	15	343	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	3050	915	564	324	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	137

END

Benzene
VW-6B Basement + First Floor
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	47	0.321	0.321	0.321	0.003	1.00E-07	0.998	9.99E-08	7,930	1.32E+01	1.09E+05

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
5.14E+06	5.00E-01	296	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	0.00E+00	0.00E+00	1.42E-02	47

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
296	1.32E+01	324.00	1.87E+03	1.42E-02	2.57E+06	2.15E+00	9.80E-03	1.29E-01	7.8E-06	NA

END

Benzene
VW-6B Basement + First Floor
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.3E-07	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-6B Basement + First Floor
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			4.00E-03	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
296	343	15	343	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	3050	915	259	324	0.05	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	4

END

Benzene
VW-6B Basement Only
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	47	0.321	0.321	0.321	0.003	1.00E-07	0.998	9.99E-08	7,930	1.32E+01	1.00E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
5.14E+06	5.00E-01	296	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	0.00E+00	0.00E+00	1.42E-02	47

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
296	1.32E+01	324.00	1.87E+03	1.42E-02	2.57E+06	2.15E+00	1.02E-01	1.35E+00	7.8E-06	NA

END

Benzene
VW-6B Basement Only
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.8E-08	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-6B Basement Only
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			5.00E-03	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
350	395	15	395	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	2880	1340	640	0.1	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	98

END

Benzene
VW-7B Basement + First Floor
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	45	0.321	0.321	0.321	0.003	1.00E-07	0.998	9.99E-08	8,440	1.65E+01	1.72E+05

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
6.81E+06	1.24E-04	350	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	0.00E+00	0.00E+00	1.42E-02	45

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
350	1.65E+01	0.10	1.35E+02	1.42E-02	8.44E+02	2.55E+73	7.42E-04	1.23E-02	7.8E-06	NA

END

Benzene
VW-7B Basement + First Floor
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
8.6E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-7B Basement + First Floor
Vapor Model Results

DATA ENTRY SHEET

SG-ADV Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432			5.00E-03	Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
350	395	15	395	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15	40	2880	1340	259	0.1	0.25	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
75	25	25	49

END

Benzene
VW-7B Basement Only
Vapor Model Input Parameters

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	45	0.321	0.321	0.321	0.003	1.00E-07	0.998	9.99E-08	8,440	1.65E+01	6.94E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
6.81E+06	1.24E-04	350	8,071	3.45E-03	1.46E-01	1.77E-04	1.42E-02	0.00E+00	0.00E+00	1.42E-02	45

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
350	1.65E+01	0.10	1.35E+02	1.42E-02	8.44E+02	2.55E+73	1.83E-03	3.03E-02	7.8E-06	NA

END

Benzene
VW-7B Basement Only
Vapor Model Intercalculations

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.1E-08	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Benzene
VW-7B Basement Only
Vapor Model Results

APPENDIX G: NAPL VOLUME CALCULATIONS

Volume Calculation of NAPL in Aquifer
Based on NAPL Thickness Measured in Monitoring Wells

According to Farr, Houghtalen and McWhorter (1990)
The volume of nonresidual NAPL (Vo) may be calculated by the following equation:

$Vo \approx \phi (1 - Sr) * T$ (Brooks & Corey (1966) simplified equation for large λ (Pore size distribution))

Where:

Vo = Volume of Nonresidual NAPL in the aquifer
ϕ = Porosity = 0.5
Sr = Residual water saturation
for silty loam ≈ 0.395
T = Average Thickness = 1.44 ft (see calculation on page G-2)

Areal Extent of Plume = 92,382 ft^2 (estimated from Figure 4-6)

Then:

$Vo \approx 0.5 (1 - 0.395) * (1.44 ft) * (92{,}382 ft^2) * (7.48 gal/ft^3)$

Vo ≈ 300,000 gallons

Note: This calculated volume likely overestimates the NAPL volume because the fine grain size of lithologic unit B is not fully accounted for in the equation (partially factored into ϕ and Sr). Empirical information shows that a fine-grained unit (such as silt with clay) may exaggerate NAPL thickness in a well by 10 times or more compared to the thickness in an aquifer.

NAPL thickness was calculated as an average thickness in wells containing SPH. MW-25 and MW-36 are newly installed wells, and NAPL levels have not stabilized. For this reason, these wells were excluded from the thickness calculation.

NAPL in each well was averaged over time after stabilization. Stabilization periods may be different for each well, depending on installation date.

MW-7: From January 2002 to present:
thickness fluctuated between 0.01 - 0.04 ft.
Used 0.04 ft

MW-9: From April 2002 to present:
thickness fluctuated between 0.31 - 0.59 ft.
Used 0.46 ft

MW-10: From May 2002 to present:
thickness fluctuated between 2.62 - 7.05 ft.
Used 4.74 ft

MW-12: From May 2002 to present:
thickness fluctuated between 1.01 - 5.75 ft.
Used 1.89 ft

MW-15: From May 2002 to present:
thickness fluctuated between 0.64 - 1.20 ft.
Used 0.89 ft

MW-16: From May 2002 to present:
thickness fluctuated between 0.66 - 2.99 ft.
Used 1.46 ft

MW-18: From April 2003 to present:
thickness fluctuated between 0.39 - 0.77 ft.
Used 0.57 ft

Average NAPL thickness in wells = $\frac{0.04 + 0.46 + 4.74 + 1.89 + 0.89 + 1.46 + 0.57}{7}$

Average NAPL thickness in wells = 1.44 feet

Calculations require mass assumptions:

With a measured porosity of approximately 0.5,

We assume the following:

Grain size is uniform

Sr = residual saturation of water is similar to experimental soil sample of Touchet Silt Loam.
(32% sand, 53% silt, 15% clay).

Actual soil type is less sand, more silt, which would increase Sr even more.
Assume Sr = 0.395 a low estimate.

We do not have a "sufficiently" large T/D ratio of NAPL thickness / NAPL depth.
1.44/35.7 = 0.040 so use the linear relationship:

Vo = (porosity) x (1 – Sr) x D x (T/D – 1) for a large λ where:

λ = pore size distribution index. As shown in example (Farr, 1990) silts have large λ.

These assumptions give an effective porosity (ϕ * (1 – Sr)) = 0.3025.
(This is in the usual range for Brooks/Corey of 0.2 – 0.4)

APPENDIX H: REMEDIAL ALTERNATIVES COST ESTIMATES

Table H-1
Capital Cost Estimate for Alternative 1A
(NAPL Recovery by Belt Skimmer)

Cost Item	Quantity	Unit	Unit Cost	Total Direct Cost (rounded)
Pilot Test				***$ 15,000***
Well /Valt Installation				
Vault 6' x 10' x 6' high	14	each	3300	$ 46,200
4" well installation	8	each	5070	$ 40,600
Subtotal				***$ 86,800***
Drill Cutting Disposal				
Local Haul	17	CY	8.8	$ 200
Drill cuttings Disposal	64	Drums	85	$ 5,500
Drill cuttings transport	4	Truck	1056	$ 4,300
Subtotal				***$ 10,000***
Belt Skimmer				
Belt Skimmer	14	each	2500	$ 35,000
NAPL containment (drum + overpack)	14	each	287.31	$ 4,000
Setup				$ 5,000
Subtotal				***$ 44,000***
Electrical Conduit Installation				
Concrete Removal	2950	SF	4.39	$ 13,000
Trench	218	CY	5.5	$ 1,200
Local Haul	218	CY	8.8	$ 1,900
Electrical Conduit	1475	LF	14.4	$ 21,200
Subtotal				***$ 37,300***
Backfill				
Haul	218	CY	8.8	$ 1,900
Material	218	CY	14.5	$ 3,200
Repaving	110	SY	3.67	$ 400
Subtotal				***$ 5,500***
TOTAL DIRECT CAPITAL COSTS (TDCC)				**$ 198,600**
INDIRECT CAPITAL COSTS				
Engineering, legal, administration (20% of TDCC)				**$ 39,700**
Contractor overhead and profit (25% of TDCC)				**$ 49,700**
TOTAL INDIRECT CAPITAL COST				**$ 89,400**
TOTAL CAPITAL COST REQUIREMENT				
Total direct and indirect capital costs				**$ 288,000**
Contingency (30%)				**$ 86,400**
TOTAL PROJECT CAPITAL COST				**$ 374,400**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-2
O&M Cost Estimate for Alternative 1A
(NAPL Recovery by Belt Skimmer)

Cost Component	Quantity	Unit	Unit Cost		Annualized Cost $/Year
Operating Labor (Anticipated for 3 Years)	12	trip	1000	$	12,000
Electrical	12	month	300	$	3,600
NAPL Disposal					
Transport	156	hours	79	$	12,300
Disposal	5040	gallons	1.2	$	6,000
Monitored Natural Attenuation (Years 1-3)					
Laboratory Analysis	4	event	2160	$	8,600
Labor	4	event	6300	$	25,200
Report Preparation	4	event	2400	$	9,600
Monitored Natural Attenuation (Years 4-5, 10, 20, 30)					
Laboratory Analysis	1	event	2160	$	2,200
Labor	1	event	6300	$	6,300
Report Preparation	1	event	2400	$	2,400
Maintenance (3% Direct Capital Cost)				$	6,000
Environmental Monitoring					
Annual Monitoring of Deep Aquifer (Years 1-5, 10, 20, 30)				$	5,000
Visual Observation (included in Operating Cost)				$	-
Soil Cleanup Level Compliance Monitoring (anticipated year 11)				$	10,000
Total Annual Cost (Years 1-3)				**$**	**88,300**
Total Annual Cost (Years 4-5, 10, 20, 30)				**$**	**21,900**
Total Annual Cost (Year 11)				**$**	**10,000**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-3
Capital Cost Estimate for Alternative 1B
(NAPL Recovery by Pneumatic Pump)

Cost Item	Quantity	Unit	Unit Cost	Total Direct Cost (rounded)
Pilot Test				***$ 15,000***
Well Installation				
Vault 6' x 10' x 6' high	14	each	3300	$ 46,200
4" well installation	8	each	5070	$ 40,600
Subtotal				***$ 86,800***
Pneumatic Pumps				
Pumps	14	each	3900	$ 54,600
Compressed Gas	14	each	35	$ 500
Setup				$ 5,000
Subtotal				***$ 60,100***
Drill Cutting Disposal				
Local Haul	17	CY	8.8	$ 200
Drill cuttings Disposal	64	Drums	85	$ 5,500
Drill cuttings transport	4	Truck	1056	$ 4,300
Subtotal				***$ 10,000***
TOTAL DIRECT CAPITAL COSTS (TDCC)				**$ 171,900**
INDIRECT CAPITAL COSTS				
Engineering, legal, administration (20% of TDCC)				**$ 34,400**
Contractor overhead and profit (25% of TDCC)				**$ 43,000**
TOTAL INDIRECT CAPITAL COST				**$ 77,400**
TOTAL CAPITAL COST REQUIREMENT				
Total direct and indirect capital costs				**$ 249,300**
Contingency (30%)				**$ 74,800**
TOTAL PROJECT CAPITAL COST				**$ 324,100**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-4
O&M Cost Estimate for Alternative 1B
(NAPL Recovery by Pneumatic Pump)

Cost Component	Quantity	Unit	Unit Cost $		Annualized Cost $/Year
Operating Labor (Anticipated for 3 Years)	12	trip	1000	$	12,000
NAPL Disposal					
Transport	156	hours	79	$	12,300
Disposal	5040	gallons	1.2	$	6,000
Compressed Gas	168	canisters	35	$	5,900
Monitored Natural Attenuation (Years 1-3)					
Laboratory Analysis	4	event	2160	$	8,600
Labor	4	event	6300	$	25,200
Report Preparation	4	event	2400	$	9,600
Monitored Natural Attenuation (Years 4-5, 10, 20, 30)					
Laboratory Analysis	1	event	2160	$	2,200
Labor	1	event	6300	$	6,300
Report Preparation	1	event	2400	$	2,400
Maintenance (3% Capital Cost)				$	5,200
Environmental Monitoring					
Annual Monitoring of Deep Aquifer (Years 1-5, 10,20,30)				$	5,000
Visual Observation (included in Operating Cost)				$	-
Soil Cleanup Level Compliance Monitoring (anticipated year 11)				$	10,000
Total Annual Cost (Years 1-3)				**$**	**89,800**
Total Annual Cost (Years 4-5, 10, 20, 30)				**$**	**21,100**
Total Annual Cost (Year 11)				**$**	**10,000**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-5
Capital Cost Estimate for Alternative 2A
(Periodic NAPL Recovery by Vacuum Truck)

Cost Item	Quantity	Unit	Unit Cost	Total Direct Cost (rounded)
Well Installation				
4" well installation	8	each	5070	***$ 40,600***
Drill Cutting Disposal				
Local Haul	17	CY	8.8	$ 200
Drill cuttings Disposal	64	55 Gal Drums	85	$ 5,500
Drill cuttings transport	4	Truck	1056	$ 4,300
Subtotal				***$ 10,000***
TOTAL DIRECT CAPITAL COSTS (TDCC)				**$ 50,600**
INDIRECT CAPITAL COSTS				
Engineering, legal, administration (20% of TDCC)				**$ 10,100**
Contractor overhead and profit (25% of TDCC)				**$ 12,700**
TOTAL INDIRECT CAPITAL COST				**$ 22,800**
TOTAL CAPITAL COST REQUIREMENT				
Total direct and indirect capital costs				**$ 73,400**
Contingency (30%)				**$ 22,000**
TOTAL PROJECT CAPITAL COST				**$ 95,400**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-6
O&M Cost Estimate for Alternative 2A
(Periodic NAPL Recovery by Vacuum Truck)

Cost Component	Quantity	Unit	Unit Cost $		Annualized Cost $/Year
Operating Labor (Anticipated for 3 Years)	12	trip	750	$	9,000
NAPL Disposal/Groundwater Disposal					
Transport/Extract	96	hours	79	$	7,600
Transport/Extract Overtime	132	hours	87	$	11,500
Disposal	2520	gallons	1.2	$	3,000
Monitored Natural Attenuation (Years 1-3)					
Laboratory Analysis	4	event	2160	$	8,600
Labor	4	event	6300	$	25,200
Report Preparation	4	event	2400	$	9,600
Monitored Natural Attenuation (Years 4-5, 10, 20, 30)					
Laboratory Analysis	1	event	2160	$	2,200
Labor	1	event	6300	$	6,300
Report Preparation	1	event	2400	$	2,400
Maintenance (3% Capital Cost)				$	1,500
Environmental Monitoring					
Annual Monitoring of Deep Aquifer (Years 1-5, 10, 20, 30)				$	5,000
Visual Observation (included in Operating Cost)				$	-
Soil Cleanup Level Compliance Monitoring (anticipated year 11)				$	10,000
Total Annual Cost (Years 1-3)				**$**	**81,000**
Total Annual Cost (Years 4-5, 10, 20, 30)				**$**	**17,400**
Total Annual Cost (Year 11)				**$**	**10,000**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-7
Capital Cost Estimate for Alternative 2B
(Periodic NAPL Recovery by Pneumatic Pump)

Cost Item	Quantity	Unit	Unit Cost	Total Direct Cost (rounded)
Well Installation				
4" well installation	8	each	5070	***$ 40,600***
Pneumatic Pumps				
Pumps	14	each	1825	$ 25,600
Compressor	1	each	1875	$ 1,900
Control Box	1	each	1050	$ 1,100
Subtotal				***$ 28,600***
NAPL Containment				
Storage Drum	1	55 Gal Drum	68.91	$ 100
HDPE overpack	1	each	218.31	$ 200
Subtotal				***$ 300***
Drill Cutting Disposal				
Local Haul	17	CY	8.8	$ 200
Drill cuttings Disposal	64	55 Gal Drums	85	$ 5,500
Drill cuttings transport	4	Truck	1056	$ 4,300
Subtotal				***$ 10,000***
TOTAL DIRECT CAPITAL COSTS (TDCC)				**$ 79,500**
INDIRECT CAPITAL COSTS				
Engineering, legal, administration (20% of TDCC)				**$ 15,900**
Contractor overhead and profit (25% of TDCC)				**$ 19,900**
TOTAL INDIRECT CAPITAL COST				**$ 35,800**
TOTAL CAPITAL COST REQUIREMENT				
Total direct and indirect capital costs				**$ 115,300**
Contingency (30%)				**$ 34,600**
TOTAL PROJECT CAPITAL COST				**$ 149,900**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-8
O&M Cost Estimate for Alternative 2B
(Periodic NAPL Recovery by Pneumatic Pump)

Cost Component	Quantity	Unit	Unit Cost $		Annualized Cost $/Year
Operating Labor (Anticipated for 3 Years)	12	trip	1000	$	12,000
NAPL Disposal					
Transport	96	hours	79	$	7,600
Disposal	660	gallons	1.2	$	800
Monitored Natural Attenuation (Years 1-3)					
Laboratory Analysis	4	event	2160	$	8,600
Labor	4	event	6300	$	25,200
Report Preparation	4	event	2400	$	9,600
Monitored Natural Attenuation (Years 4-5, 10, 20, 30)					
Laboratory Analysis	1	event	2160	$	2,200
Labor	1	event	6300	$	6,300
Report Preparation	1	event	2400	$	2,400
Maintenance (3% Capital Cost)				$	2,400
Environmental Monitoring					
Annual Monitoring of Deep Aquifer (Years 1-5, 10, 20, 30)				$	5,000
Visual Observation (included in Operating Cost)				$	-
Soil Cleanup Level Compliance Monitoring (anticipated year 11)				$	10,000
Total Annual Cost (Years 1-3)				**$**	**71,200**
Total Annual Cost (Years 4-5, 10, 20, 30)				**$**	**18,300**
Total Annual Cost (Year 11)				**$**	**10,000**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-9
Capital Cost Estimate for Alternative 2C
(Periodic NAPL Removal by Hand Bailing and Absorbent Socks)

Cost Item	Quantity	Unit	Unit Cost	Total Direct Cost (rounded)
Well Installation				
4" well installation	8	each	5070	***$ 40,600***
Drill Cutting Disposal				
Local Haul	17	CY	8.8	$ 200
Drill cuttings Disposal	64	55 Gal Drums	85	$ 5,500
Drill cuttings transport	4	Truck	1056	$ 4,300
Subtotal				***$ 10,000***
Hand Bailing and Absorbent Socks				
Bailers	14	each	5	$ 70
Absorbent Socks	14	each	5	$ 70
Subtotal				***$ 100***
TOTAL DIRECT CAPITAL COSTS (TDCC)				**$ 50,700**
INDIRECT CAPITAL COSTS				
Engineering, legal, administration (20% of TDCC)				**$ 10,100**
Contractor overhead and profit (25% of TDCC)				**$ 12,700**
TOTAL INDIRECT CAPITAL COST				**$ 22,800**
TOTAL CAPITAL COST REQUIREMENT				
Total direct and indirect capital costs				**$ 73,500**
Contingency (30%)				**$ 22,100**
TOTAL PROJECT CAPITAL COST				**$ 95,600**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-10
O&M Cost Estimate for Alternative 2C
(Periodic NAPL Removal by Hand Bailing and Absorbent Socks)

Cost Component	Quantity	Unit	Unit Cost $	Annualized Cost $/Year	
Labor Monthly Bailing (Anticipated for 3 Years)	12	trip	1000	$	12,000
NAPL Disposal					
Transport	96	hours	79	$	7,600
Disposal	660	gallons	1.2	$	800
Monitored Natural Attenuation (Years 1-3)					
Laboratory Analysis	4	event	2160	$	8,600
Labor	4	event	6300	$	25,200
Report Preparation	4	event	2400	$	9,600
Monitored Natural Attenuation (Years 4-5, 10, 20, 30)					
Laboratory Analysis	1	event	2160	$	2,200
Labor	1	event	6300	$	6,300
Report Preparation	1	event	2400	$	2,400
Maintenance (3% Capital Cost)				$	1,500
Environmental Monitoring					
Annual Monitoring of Deep Aquifer (Years 1-5, 10, 20, 30)				$	5,000
Visual Observation (included in Operating Cost)				$	-
Soil Cleanup Level Compliance Monitoring (anticipated year 11)				$	10,000
Total Annual Cost (Years 1-3)				**$**	**70,300**
Total Annual Cost (Years 4-5, 10, 20, 30)				**$**	**17,400**
Total Annual Cost (Year 11)				**$**	**10,000**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-11
Capital Cost Estimate for Alternative 3
(NAPL / Groundwater Recovery + SVE)

Cost Item	Quantity	Unit	Unit Cost		Total Direct Cost
Pilot Test				***$***	***25,000***
SVE System Installation					
SVE Well Installation					
4" well installation	3	each	5265	***$***	***15,800***
Excavation of soil from SVE piping					
Concrete Removal	2260	SF	4.39	$	9,900
Trench	168	CY	5.5	$	900
Haul	168	CY	8.8	$	1,500
Piping + 15% increase for fittings	1500	LF	4.94	$	8,500
Subtotal				***$***	***20,800***
Backfill					
Haul	168	CY	8.8	$	1,500
Material	251	SY	14.5	$	3,600
Repaving	251	SY	3.67	$	900
Subtotal				***$***	***6,000***
Drill Cutting Disposal					
Local Haul	1	CY	8.8	$	-
Drill cuttings Disposal	9	55 Gal Drums	85	$	800
Drill cuttings transport	1	Truck	1056	$	1,100
Subtotal				**$**	**1,900**
NAPL/Groundwater Extraction Well Installation					
Piping & Electrical Conduit Installation					
Concrete Removal	2710	SF	4.39	$	11,900
Trench	201	CY	5.5	$	1,100
Haul	201	CY	8.8	$	1,800
Piping + 15% increase for fittings	1355	LF	10.9	$	17,000
Electrical Conduit	1355	LF	14.4	$	19,500
Subtotal				***$***	***51,300***
Backfill for Piping					
Haul	191	CY	8.8	$	1,700
Material	301	CY	14.5	$	4,400
Repaving	301	SY	3.67	$	1,100
Subtotal				***$***	***7,200***
Extraction Well/Pump Installation					

Table H-11
Capital Cost Estimate for Alternative 3
(NAPL / Groundwater Recovery + SVE)

Cost Item	Quantity	Unit	Unit Cost		Total Direct Cost
4" well installation	11	each	5070	$	55,800
Vault (4' x 4' x 4')	12	each	1525	$	18,300
Ferrett 2" Product Pump	12	each	3900	$	46,800
Nitrogen Canisters	12	each	35	$	400
Hammerhead multi-liquid pump	12	each	3400	$	40,800
Subtotal				***$***	***162,100***
Groundwater/Soil Vapor Treatment					
Oil/Water separator	1	each	944.8	$	900
Air Stripper	1	each	16497	$	16,500
Carbon Filtration	2	each	420	$	800
Catalytic Oxidation System	1	each	41452	$	41,500
Subtotal				***$***	***59,700***
Drill Cutting Disposal					
Local Haul	1	CY	8.8	$	-
Drill cuttings Disposal	88	55 Gal Drums	85	$	7,500
Drill cuttings transport	5	Truck	1056	$	5,300
Subtotal				***$***	***12,800***
TOTAL DIRECT CAPITAL COSTS (TDCC)				**$**	**362,600**
INDIRECT CAPITAL COSTS					
Engineering, legal, administration (20% of TDCC)				**$**	**72,500**
Contractor overhead and profit (25% of TDCC)				**$**	**90,700**
TOTAL INDIRECT CAPITAL COST				**$**	**163,200**
TOTAL CAPITAL COST REQUIREMENT					
Total direct and indirect capital costs				**$**	**525,800**
Contingency (30%)				**$**	**157,700**
TOTAL PROJECT CAPITAL COST				**$**	**683,500**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-12
O&M Cost Estimate for Alternative 3
(Total Fluids Recovery)

Cost Component	Quantity	Unit	Unit Cost $	Annualized Cost $/Year	
Operating Labor (Anticipated for 3 Years)	52	trip	1500	$	78,000
Electrical	12	month	2500	$	30,000
NAPL Disposal					
Transport	156	hours	79	$	12,300
Disposal	4320	gallons	1.2	$	5,200
Monitored Natural Attenuation (Years 1-3)					
Laboratory Analysis	4	event	2160	$	8,600
Labor	4	event	6300	$	25,200
Report Preparation	4	event	2400	$	9,600
Monitored Natural Attenuation (Years 4-5, 10, 20, 30)					
Laboratory Analysis	1	event	2160	$	2,200
Labor	1	event	6300	$	6,300
Report Preparation	1	event	2400	$	2,400
Maintenance (3% Capital Cost)				$	10,900
Environmental Monitoring					
Annual Monitoring of Deep Aquifer (Years 1-5, 10, 20, 30)				$	5,000
Visual Observation (included in Operating Cost)				$	-
System Discharge Monitoring (Years 1-3)				$	5,000
Soil Cleanup Level Compliance Monitoring (anticipated year 6)				$	10,000
Total Annual Cost (Years 1-3)				**$**	**189,800**
Total Annual Cost (Years 4-5, 10, 20, 30)				**$**	**26,800**
Total Annual Cost (Year 6)				**$**	**10,000**

* Note: Due to rounding, numbers may not appear to add exactly.

Table H-13
Present Worth Cost

Alternative	Initial Capital Investment $	Present Value of O&M Costs $	Total Present Worth $
ALTERNATIVE 1A			
For 2.2% net discount rate	374,400	344,000	718,400
For 5% net discount rate	374,400	308,000	682,400
For 10% net discount rate	374,400	265,000	639,400
ALTERNATIVE 1B			
For 2.2% net discount rate	324,100	346,000	670,100
For 5% net discount rate	324,100	310,000	634,100
For 10% net discount rate	324,100	267,000	591,100
ALTERNATIVE 2A			
For 2.2% net discount rate	95,400	306,000	401,400
For 5% net discount rate	95,400	276,000	371,400
For 10% net discount rate	95,400	238,000	333,400
ALTERNATIVE 2B			
For 2.2% net discount rate	149,900	282,000	431,900
For 5% net discount rate	149,900	252,000	401,900
For 10% net discount rate	149,900	215,000	364,900
ALTERNATIVE 2C			
For 2.2% net discount rate	95,600	276,000	371,600
For 5% net discount rate	95,600	247,000	342,600
For 10% net discount rate	95,600	211,000	306,600
ALTERNATIVE 3			
For 2.2% net discount rate	683,500	655,000	1,338,500
For 5% net discount rate	683,500	600,000	1,283,500
For 10% net discount rate	683,500	528,000	1,211,500

APPENDIX I: MODELING OF GROUNDWATER CONTAMINANT TRANSPORT TO DEEP AQUIFER

APPENDIX I

MODELING OF CONTAMINANT TRANSPORT TO DEEP AQUIFER

1.0 Introduction

This groundwater modeling evaluation applies to an active Chevron gasoline station that is located at the southwest corner of the intersection of Woodin Avenue and Sanders Street in Chelan, Washington. The area potentially impacted by subsurface releases of gasoline product from the station (and possibly other sources) extends to the west and southwest to a maximum distance of approximately 600 feet from the center of the station. Groundwater occurs principally in two water-bearing zones at the site: a shallow localized perched aquifer and a deeper water-table aquifer. The perched aquifer thins and terminates south and southwest of the station, where the vadose zone becomes thicker and the deep aquifer is thus the most shallow water-bearing zone.

As a result of the presence or absence of the perched aquifer in different areas of the site, the purpose of this evaluation is twofold: (1) To predict the estimated travel time for petroleum hydrocarbons within the perched aquifer to migrate through the underlying glacial till aquitard that separates the two aquifers; this will be accomplished by modeling the dissolved phase aromatic (BTEX) compounds in groundwater (see Section 3 below). (2) In the vadose zone lateral to (south of) the perched aquifer, to evaluate the potential leachability threat to groundwater of the deeper aquifer posed by BTEX compounds in soils (see Section 4 below).

In order to accommodate the dual characteristics of the site, two different models were employed. To handle the first objective above, principles of the Vadose Zone Contaminant Migration Multi-layered Model (VZCOMML) program were used (Rucker, 2002), and the model was modified for site-specific groundwater conditions. To handle the second objective, the Seasonal Soil Compartment Model (SESOIL) program was used (Bonazountas and Wagner, 1984; GSC, 1986).

2.0 Physical and Chemical Properties of Organic Contaminants

In order to input the model parameters, the physical and chemical properties of organic compounds such as BTEX need to be evaluated. Organic compounds may be degraded in the environment by various processes, including hydrolysis, oxidation/reduction, photolysis, or biodegradation. Environmental half-lives of organic compounds in various media can vary from minutes to years, depending on chemical and environmental conditions present. Degradation usually reduces the toxicity of a constituent but may not eliminate the threat to human health and the environment. Environmental half-lives for the BTEX compounds are presented in Table 1. These values are the most conservative (slowest degradation rate) for the constituent presented in the *Handbook of Environmental Degradation Rates* (Howard et al., 1991).

The mobility of an organic compound is affected by its volatility, partitioning behavior between solids and water, water solubility, and concentration. Increased volatility generally correlates with decreased mobility in soil due to losses of the chemical from the dissolved (aqueous) phase to the

gaseous phase. However, volatilization may be restricted by limited soil gas volume and a resultant increase in the partial pressure of the chemical in the gas above the pore water. Chemicals with relatively high vapor pressures tend to partition into soil gas, and, if the gas is vented, transport in groundwater is retarded. Chemicals with relatively low vapor pressures tend to remain in the aqueous phase and are relatively mobile. In most vadose zone soils, soil gas is not vented significantly and the partial pressure of the chemical increases, resulting in a higher aqueous-phase concentration. This relationship is governed by Henry's Law, which uses a proportionality constant, the Henry's Law constant (K_h), to describe the aqueous-phase concentration of a volatile chemical in water as a function of the partial pressure of the chemical in the gaseous phase.

The tendency to adsorb to particles or organic matter can correlate with retardation in groundwater transport. The soil-water partitioning coefficient (K_d) of an organic compound is related to the organic carbon partitioning coefficient (K_{oc}) by:

$$K_d = f_{oc} \times K_{oc} \qquad \text{(Equation 1)}$$

where:

K_d = soil-water partitioning coefficient (L/kg)

f_{oc} = soil organic carbon content as mass fraction (unitless)

K_{oc} = organic carbon partitioning coefficient (L/kg)

In most site characterization studies, total organic carbon analysis is used to approximate the site soil organic carbon content (f_{oc}). In the absence of site-specific data, state (WDOE) or federal (USEPA) default values are used.

Chemical-specific K_{oc} values may be obtained from literature sources or may be calculated using empirical formulas relating the octanol-water partitioning coefficient (K_{ow}) to the K_{oc}. The K_{ow} (ml/ml) is the ratio of a contaminant's concentration in a system containing water and octanol. K_{ow} is used to estimate the tendency for a chemical to partition between environmental phases of different polarity. Organic compounds with log K_{ow} values less than 1 are highly hydrophilic, while organic compounds with log K_{ow} values greater than 4 are nearly insoluble in water and will partition to soil particles. The most commonly used formula (Mills et al., 1985) to relate K_{ow} to K_{oc} is given by:

$$K_{oc} = 0.63 \times K_{ow} \qquad \text{(Equation 2)}$$

where:

K_{oc} = organic carbon partitioning coefficient (L/kg)

K_{ow} = octanol-water partitioning coefficient (unitless)

Chemicals with relatively high water solubilities and low partitioning coefficients (e.g., benzene and many volatile compounds) usually remain dissolved and are transported with groundwater. Chemicals with lower water solubilities and higher partitioning coefficients (e.g., semivolatile organic compounds and PCBs) are expected to remain primarily adsorbed to soil particles and migrate in groundwater at a much slower rate.

The K_{oc} values used for the BTEX compounds are literature values (USEPA, 1996a,b).

Compared to the groundwater contaminant transport screening in Section 3, the fate and transport modeling in Section 4 requires a greater use of physical-chemical properties. The fate and transport of organic compounds depend on site characteristics and the interactions of contaminants with site media. The physical and chemical properties associated with these processes are presented in Table 1 for BTEX compounds.

3.0 Groundwater Transport Screening from Perched to Deeper Aquifer

This groundwater model applies to contaminants identified in the perched aquifer on the site, and evaluates the time for these chemicals to reach the deeper water-table aquifer. This evaluation only considers the time for contaminants to migrate downward through the layer(s) of glacial till. It does not include time required to migrate through any portion of Unit B to the basal contact with till, nor the time to travel through the sandy layers within Unit C before reaching the deeper water table. This evaluation considers only physical attenuation of contaminants, not biodegradation. Thus, the model is conservatively biased, meaning that chemicals in the environment may be removed from the subsurface through biodegradation and attenuation prior to the predicted time required to reach the deeper water-table aquifer.

3.1 Groundwater Transport Model Screening Method

The estimated travel time through the glacial till above the deep aquifer in Unit C for each of the BTEX compounds is determined using the following equation:

$$T_t = \frac{H \times R_f}{V_p} \qquad \text{(Equation 3)}$$

where:

T_t = travel time (yr)

H = thickness of underlying glacial till (ft)

R_f = retardation factor (unitless) (Equation 4)

V_p = average linear velocity (ft/yr) (Equation 5)

The retardation factor (R_f) describes attenuation in the migration velocity of a contaminant:

$$R_f = 1 + \frac{(K_d \times \rho_b)}{n_e} \qquad \text{(Equation 4)}$$

where:

R_f = retardation factor (unitless)

K_d = soil-water partitioning coefficient (L/kg) (Equation 1)

ρ_b = soil bulk density (g/cm^3)

n_e = effective porosity (unitless)

The average linear velocity is defined as:

$$V_p = \left(\frac{K}{n_e}\right) \times \left(\frac{dh}{dz}\right) \qquad \text{(Equation 5)}$$

where:

K = hydraulic conductivity (ft/yr)

dh/dz = potential vertical gradient (ft/ft)

n_e = effective porosity (unitless)

3.2 Groundwater Transport Model Input Parameters

Input model parameters used in this evaluation are described below and are presented in Tables 2 through 4.

- The organic carbon soil-water distribution coefficients (K_{oc}) for BTEX compounds are derived from standard literature values (USEPA, 1996a).

- The hydraulic conductivity ($1x10^{-7}$ cm/sec) used in this analysis is based on the average value for a glacial till (Freeze and Cherry, 1979). Also, based on laboratory analysis of glacial tills from Washington state (conducted by a local geotechnical lab, ARI), $1x10^{-7}$ cm/sec is a conservative value for glacial till, and most tills have lower conductivity values. Further, because the till perches water on top of it within Unit B, it is likely that the hydraulic conductivity of the site till is significantly smaller than that of Unit B, which has been measured at $1x10^{-6}$ cm/sec.

- The vertical potential gradient (0.84 ft/ft) is calculated from wells MW-6 and MW-30 and from an overall evaluation of potentiometric surfaces for both aquifers.

- The bulk density (2.1 g/cm^3) and effective porosity (0.30) used in this analysis are based on typical laboratory analyses of glacial tills from Washington state, conducted by ARI.

- The soil organic carbon content (0.1%) is based on the WDOE default value from the Method B calculation worksheet (WDOE, 2001).

- The average thickness of all glacial till layers between the two aquifers is calculated from boring logs for wells MW-20, MW-30, MW-31, and MW-37, which penetrate the till layers.

3.3 Groundwater Transport Model Assumptions

Assumptions used in this modeling evaluation are described below.

- Literature, WDOE default, or typical laboratory results for glacial till were used in the absence of site-specific data for input parameters. This evaluation assumes that these values are reasonable and pertinent, which is suggested by field observations.

- Flow is through porous media, and there are no preferential flow pathways (such as fractures, fissures, through-going coarser lenses).

- All units underlying the perched water table are saturated.

3.4 Groundwater Transport Model Results

The results of this evaluation are summarized in Table 4. Based on calculations conducted during this evaluation, it will take benzene approximately 117 years, toluene approximately 162 years, ethylbenzene approximately 196 years, and xylenes approximately 195 years to migrate through the glacial till before reaching the sands of the deep aquifer.

Based on the assumptions above and on the biodegradation rates for groundwater (Table 1), it is unlikely that BTEX originating in the perched aquifer will reach the underlying aquifer at concentrations exceeding MTCA Method A cleanup levels. This is based on the worst-case scenario, where the BTEX compounds are at their solubility limits in groundwater. For example, benzene is predicted to migrate through the glacial till in approximately 117 years. Based on the solubility limit of benzene (1,780 mg/L) and the groundwater half-life of 2 years, the concentration of benzene after 117 years is predicted to be 4.4×10^{-15} mg/L which is well below the MTCA Method A cleanup level for benzene (0.005 mg/L).

A sensitivity analysis was conducted on the results of this calculation. In this sensitivity analysis, four key input parameters (hydraulic conductivity, effective porosity, soil organic carbon content, and thickness of the glacial till) were varied based on the extreme range (minimum and maximum) of potential values. Each input parameter was changed one at a time to determine the sensitivity

pertaining to each one. Results of this analysis and explanations of the ranges are presented on Tables 5 through 8. Sensitivity analysis indicates that the hydraulic conductivity of glacial till is the key input parameter that affects the outcome of this evaluation.

4.0 Vadose Zone Leachability Modeling

This evaluation applies to the area of the site where the perched aquifer is not present, south and southwest of the Chevron station, but where soil contamination has been identified. The model presents the expected fate and transport of the contaminants in soil. The purpose of this contaminant migration assessment is to evaluate the potential leachability threat to deeper groundwater posed by BTEX compounds in vadose zone (unsaturated) soils. Computer modeling with the Seasonal Soil Compartment Model (SESOIL) program (Bonazountas and Wagner, 1984; GSC, 1986) was used in order to define future transport to potentially potable groundwater at depth.

4.1 Fate and Transport of Contaminants in Soil

Infiltration, Surface Runoff, and Evapotranspiration

The potential for contaminant transport through the vadose zone begins with precipitation. The average annual rainfall for Chelan is approximately 10.8 inches, based on long-term data from the adjacent town of Lakeside (Table 9) (WRCC, 2004). Precipitation may either infiltrate the shallow soil section, evaporate from the surface, or be released as surface runoff. A portion of the water that infiltrates shallow soil escapes through evapotranspiration, which includes transpiration and soil moisture evaporation. The aquifer recharge rate was simulated using the Hydrogeologic Evaluation of Landfill Performance (HELP) model (Schroeder et. al, 1994). The attachment to this appendix includes the input parameters for the HELP model. Three hydrostratigraphic layers were simulated: Layer 1 (Unit A) is 2.4 m (8 ft) thick and has a hydraulic conductivity of $1x10^{-3}$ cm/sec; Layer 2 (Unit B) is 10.4 m (34 ft) thick and has a hydraulic conductivity of $1x10^{-6}$ cm/sec; and Layer 3 (Unit C) is 11.3 m (37 ft) and has a hydraulic conductivity of $1x10^{-7}$cm/sec (these three layers are used only to calculate a recharge rate). The soil input parameters were based on measured geotechnical information, average literature values, and soil descriptions from deep monitoring well MW-30 (specifically for thickness, but other logs were also utilized; see Appendix B). Based on the simulation, the groundwater recharge rate is 0.135 ft/yr (Table 10). The water budget for the site consists of input from an annual rainfall of 27.5 cm (10.8 inch) (average total precipitation in Lakeside, between 1890 and 2004) with losses to evapotranspiration and surface runoff.

Subsurface Flow System

The subsurface flow system is comprised of the vadose zone and the saturated zone. The vadose zone is approximately 24.4 m (80 ft) thick. Vertical migration of infiltrating water leaching contaminants from soil through the vadose zone to the underlying deep water-table aquifer is the primary contaminant transport mechanism.

The deep water-table aquifer is approximately 36.6 m (120 ft) thick, based on a single pertinent boring log from the area. The hydraulic conductivity of the sands in the deep water-table aquifer is estimated to be 1.0×10^{-3} cm/s (5,179 ft/yr), based on lithologic descriptions.

Release Mechanisms

Leaching through petroleum (BTEX) contaminated soil is the release mechanism related to contaminant migration.

Attenuation

Attenuation occurs through fixation of contaminants on soil particles and through degradation. Organic compounds are vulnerable to biodegradation and thus have an associated environmental half-life. The environmental half-life varies significantly with soil chemistry; in general, organic contaminants with short half-lives can be essentially completely removed by chemical decay.

Dilution Attenuation Factor (DAF)

As described in the USEPA Soil Screening Guidance documentation (USEPA, 1996a,b), contaminant dilution in groundwater is estimated from a site-specific DAF. The DAF, which is defined as the ratio of soil leachate concentration to receptor point concentration, is minimally equal to 1. Dilution in groundwater is derived from a simple mixing zone equation (Equation 6) and relies upon estimation of the mixing zone depth (Equation 7).

$$DAF = 1 + \frac{(K \times g \times d)}{(I \times L)} \qquad \text{(Equation 6)}$$

where:

DAF	=	dilution attenuation factor (unitless)
K	=	aquifer hydraulic conductivity (m/yr)
g	=	horizontal hydraulic gradient (m/m)
I	=	infiltration rate (m/yr)
L	=	source length parallel to groundwater flow (m)
d	=	mixing zone depth (m) - which is defined below

$$d = \sqrt{0.0112 \times L^2} + d_a \times \left[1 - \exp\left(\frac{-L \times I}{K \times g \times d_a}\right)\right] \qquad \text{(Equation 7)}$$

where:

d_a = aquifer thickness (m)

$d \leq d_a$

If the aquifer thickness is less than the calculated mixing zone depth, then the aquifer thickness is used for "d" in the DAF calculation.

4.2 Soil Leachability Modeling

Vertical transport through the vadose zone is modeled with SESOIL (Bonazountas and Wagner, 1984). SESOIL is a one-dimensional, vertical transport computer application that can model chemical migration in the vadose zone over time. Input parameters used in SESOIL modeling are presented on Table 1 and Tables 9 through 12. SESOIL results are presented on Table 13.

Model Input Parameters and Assumptions

For SESOIL modeling, the input data are grouped into four types: climatic, chemical, soil, and application data. Wherever possible, site-specific parameter values are used for modeling. In the absence of unit-specific values, the parameter values are estimated based on pertinent scientific literature, geochemical investigations, and consistency checks between model results and historical data. Conservative estimates are used when a range of values is indicated or when a parameter value is unavailable. Table 1 and Tables 9 through 12 identify parameters used in SESOIL modeling; these parameters are described in the text below.

Climate Data

The climatic data file of SESOIL consists of an array of values for various climatic parameters (Table 9). As shown, these monthly data span one year and are derived from three sources: (1) the Wenatchee experiment station, (2) the Lakeside experiment station, and (3) calculations within SESOIL using the first two sources. Monthly cloud cover, humidity, albedo, and precipitation event frequency and duration data derived from Wenatchee were used because this is the closest point where these data have been measured and made available. Although Wenatchee is approximately 52 km (33 mi) southwest of Chelan, the uncertainty introduced by use of these data is negligible due to the low sensitivity of SESOIL runs to these particular parameters. Monthly air temperature and the most critical climatic parameter, monthly precipitation, are specific to Lakeside. The town of Lakeside is approximately 3.2 km (2 mi) southwest of the site. These data, and other calculated parameters, are used within SESOIL to generate the hydrologic model responsible for contaminant transport.

Chemical Data

The pollutant fate cycle of SESOIL utilizes several chemical transport and transformation processes that occur in the soil zone. The processes of volatilization/diffusion and adsorption/desorption are used in SESOIL modeling for the purpose of the soil leachability analysis. SESOIL modeling can incorporate additional processes, but the resulting output is less conservative. The molecular weight, solubility, Henry's Law constant, organic carbon partitioning coefficient, soil partitioning coefficient, biodegradation rates, and target groundwater concentration are presented on Table 1.

A SESOIL model was conducted for the BTEX compounds and each included the biodegradation process.

Henry's Law constant is required to determine the concentration of pollutant in the soil air (gaseous phase). The air diffusion coefficient is used to calculate pollutant loss through volatilization and diffusion.

Soil Data

The soil data file of SESOIL contains input parameters describing the physical characteristics of the subsurface soil. The parameters include bulk density, intrinsic permeability, soil disconnectedness index, Freundlich Exponent, total porosity, and organic carbon content (Table 10).

The groundwater recharge rate (Table 10) is used in SESOIL modeling as a calibration target.

The intrinsic permeability for the vadose zone is a critical model parameter – it permits calibration to the target recharge rate. The intrinsic permeability was varied in iterative runs until the groundwater recharge rate predicted by the model matched the recharge rate determined with the HELP model.

Site-specific data were not available for some of the parameters in Table 10; therefore, WDOE default values or literature values were used as input to the model. There is no measurement method for the soil disconnectedness index (described below) nor is there a measured value of the related Freundlich Exponent (used in calculating the adsorbed contaminant concentrations). Thus, SESOIL default values were used for these two parameters.

The soil disconnectedness index replaces moisture retention curves (or characteristic curves) used by other unsaturated zone leaching models. The soil disconnectedness index was calibrated for four different soil types ranging from sandy loam to clay (Hetrick et al., 1986). This parameter has a minor impact upon the recharge rate and is varied (within the range specified for the corresponding soil type) in the final stages of model calibration.

Application Data

The SESOIL model was arranged in layers and sublayers that facilitate contaminant loading at intervals closely approximating the actual sampling points and analytical results (Tables 11 and 12). They represent constituent loading or leaching zones, as appropriate. The initial loading

concentrations (source term) for SESOIL modeling are maximum detected concentrations for each layer; the initial loading concentrations are presented in Table 12.

The SESOIL model contains four major layers to model leaching through the vadose zone. Layer 1 and layer 2 are 6.1 m (20 ft) thick and are subdivided into 4 sublayers each. Layer 3 is 12.2 m (40 ft) thick and consists of 4 sublayers. Layers 1, 2, and 3 represent the vadose zone and are contaminant loading and leaching layers. Layer 4 is the lowest layer and consists of two sublayers. Layer 4 is very thin (0.5 ft [15.2 cm]) and represents the interface of the vadose zone and underlying deep water-table aquifer. The predicted concentration is determined in the lowest sublayer of Layer 4.

4.3 Soil Leachability Model Uncertainty Analysis

Predictions of future conditions require that a set of assumptions be made regarding the physical and chemical conditions present at the site. Use of these assumptions introduces some uncertainties in the predictions. In addition, some mechanisms that affect contaminant mobility are ignored in order to limit the complexity and cost of site characterization required to support the contaminant migration analysis. The main assumptions that introduce uncertainty are:

- Infiltration of water through vadose zone soil consists of one-dimensional, steady flow through soil with uniform average soil properties. This represents average flow over the period of interest. Dispersion is not incorporated into the vadose zone estimate because it does not affect the maximum predicted groundwater concentration or the arrival time of the constituent. More complex flow may either increase or decrease contaminant mobility and transport to the water table.

- The use of soil with uniform, or homogeneous, soil properties accurately reflects percolation through the soil column. The assumption of constant percolation rate is necessary because a balanced hydrologic model is required in both the soil screening and soil modeling.

- Soil sample analytical results accurately reflect the chemical, physical, and hydrologic characteristics of the transport media (vadose zone soil) and the contaminants that are present. The analysis of sample results is configured to present a conservative interpretation of site conditions.

- Contaminant degradation occurs according to a first-order rate constant. The biological decay rate is a highly variable and sensitive parameter. It is therefore set to the most conservative value published in the Handbook of Environmental Degradation Rates (Howard et al., 1991). The value may represent either aerobic or anaerobic conditions – depending on which condition results in the more conservative value.

- Synthesis of contaminants through processes available to organics (i.e. in-growth, decay, and serial transformations) does not significantly alter the concentrations of site-specific constituents or introduce new site-specific constituents.

- Default, generic, or literature values for selected parameters (including the soil-water partitioning coefficient) accurately reflect site conditions. The values selected for this analysis were intended to produce conservative results. This in turn reduces the uncertainty in the leachability model.

- The human receptor is located in the immediate vicinity of the exposure site, with negligible lateral transport occurring between the source and the point of exposure. This assumes, in effect, that a residential water table well is installed directly beneath the exposure site. Attenuation of leachate entering the groundwater occurs through dilution and is described by the DAF – which is calculated according to USEPA protocol with conservative parameters.

In selecting modeling parameters, conservative assumptions were used in order to bias the analysis toward a false positive rather than a false negative result.

4.4 Soil Leachability Model Results

The results of contaminant fate and transport analysis are summarized in Table 13. This table includes the SESOIL results with biodegradation. Contaminant concentrations were evaluated at the interface with the groundwater aquifer. The predicted concentrations include the maximum leachate concentration (no dilution in groundwater) and the maximum groundwater concentration. The maximum groundwater concentration is calculated by dividing the predicted maximum leachate concentration by the DAF.

The time required to exceed the MTCA Method A CUL and the time required to reach peak concentration are also predicted. If a contaminant exceeds its respective MTCA Method A CUL within 1,000 years, it is reported as a constituent posing a leachability threat. Based on the SESOIL leachability analysis, no constituents posing a leachability threat have been identified.

5.0 General Conclusions

The results above demonstrate that contaminants will take a significant amount of time to reach the deeper aquifer from either the perched aquifer or the vadose zone to the south where the perched aquifer is not present. Based on the estimated time and the calculations of leachability, it does not appear that BTEX contaminants are capable of reaching the deeper aquifer and impacting it at concentrations exceeding MTCA Method A cleanup levels.

Table 1. Physical and Chemical Parameters for BTEX Compounds

Constituent	Mol. Wt. (g/mol)	Solubility (mg/L)	Henry's Law Constant (Kh) (atm m^3/mol)	Air Diff. Coeff. (cm^2/s)	Koc (L/kg)	Kd (L/kg)	Groundwater Half-Life $T_{1/2}$ (Years)	Soil Half-Life $T_{1/2}$ (Years)	MTCA Method A CUL (mg/L)
Benzene	78.1	1.78E+03	5.55E-03	0.930	62	6.20E-02	2.00E+00	0.044	0.005
Ethylbenzene	106.2	1.52E+02	6.44E-03	0.075	204	4.08E-01	7.69E-02	0.027	0.7
Toluene	92.1	5.15E+02	5.92E-03	0.087	140	2.80E-01	6.24E-01	0.06	1.0
Xylenes	106.2	2.00E+02	5.25E-03	0.073	238	4.76E-01	1.00E+00	0.077	10

Table 2. Average Linear Groundwater Velocity for Baseline Case

Parameter	Symbol	Units	Input	Result	Comments
Average Linear Velocity	Vp	ft/yr		0.29	Calculated. Vp = $(K/n_e)*(dh/dl)$ (Freeze and Cherry, 1979)
Hydraulic Conductivity	K	cm/sec	1.00E-07		Average hydraulic conductivity for a glacial till (Freeze and Cherry, 1979). Based on general information provided by Analytical Resources Inc. (ARI), $1x10^{-7}$ is a conservative (high) estimate of hydraulic conductivity for glacial till.
	K	ft/yr	0.10		
Vertical Hydraulic Gradient	dh/dz	ft/ft	0.84		Potential vertical gradient (calculated with wells MW-6 and MW-30).
Effective Porosity	n_e	unitless	0.3		Based on laboratory analysis of glacial till conducted by ARI.

Table 3. Retardation Factors for Baseline Case

Parameter	Symbol	Units	Input	Result	Comments
Benzene					
Retardation Factor	Rf	unitless		1.46	Calculated. Rf = 1+((Koc*foc*Pb)/n_e) (Freeze and Cherry, 1979)
Organic Carbon Partitioning Coefficient	Koc	L/kg	6.60E+01		Average literature value (USEPA, 1996a)
Soil Organic Carbon Content as Mass Fraction	foc	unitless	0.001		WDOE Method B default value (WDOE, 2001)
Bulk Density	p_b	g/cm^3	2.1		Average bulk density for WA state glacial till; based on laboratory analyses conducted by ARI.
Effective Porosity	n	unitless	0.3		Typical effective porosity of WA state glacial till; based on laboratory analyses conducted by ARI.
Toluene					
Retardation Factor	Rf	unitless		2.02	Calculated. Rf = 1+((Koc*foc*Pb)/n_e) (Freeze and Cherry, 1979)
Organic Carbon Partitioning Coefficient	Koc	L/kg	1.45E+02		Average literature value (USEPA, 1996a)
Soil Organic Carbon Content as Mass Fraction	foc	unitless	0.001		WDOE Method B default value (WDOE, 2001)
Bulk Density	p_b	g/cm^3	2.1		Average bulk density for WA state glacial till; based on laboratory analyses conducted by ARI.
Effective Porosity	n	unitless	0.3		Typical effective porosity of WA state glacial till; based on laboratory analyses conducted by ARI.
Ethylbenzene					
Retardation Factor	Rf	unitless		2.45	Calculated. Rf = 1+((Koc*foc*Pb)/n_e) (Freeze and Cherry, 1979)
Organic Carbon Partitioning Coefficient	Koc	L/kg	2.07E+02		Average literature value (USEPA, 1996a)
Soil Organic Carbon Content as Mass Fraction	foc	unitless	0.001		WDOE Method B default value (WDOE, 2001)
Bulk Density	p_b	g/cm^3	2.1		Average bulk density for WA state glacial till; based on laboratory analyses conducted by ARI.
Effective Porosity	n	unitless	0.3		Typical effective porosity of WA state glacial till; based on laboratory analyses conducted by ARI.
Xylenes					
Retardation Factor	Rf	unitless		2.43	Calculated. Rf = 1+((Koc*foc*Pb)/n_e) (Freeze and Cherry, 1979)
Organic Carbon Partitioning Coefficient	Koc	L/kg	2.04E+02		Average literature value (USEPA, 1996a)
Soil Organic Carbon Content as Mass Fraction	foc	unitless	0.001		WDOE Method B default value (WDOE, 2001)
Bulk Density	p_b	g/cm^3	2.1		Average bulk density for WA state glacial till; based on laboratory analyses conducted by ARI.
Effective Porosity	n_e	unitless	0.3		Typical effective porosity of WA state glacial till; based on laboratory analyses conducted by ARI.

Table 4. Average Time to Migrate through Glacial Till for Baseline Case

Parameter	Symbol	Units	Input	Result	Comments
Benzene					
Travel Time	Tt	yr		117	Calculated. Tt = (H*Rf)/Vp (Whelan et al. 1987)
Thickness of Glacial Till	H	ft	23.25		Average thickness of till layers from borings MW-20, MW-30, MW-31, and MW-37.
Retardation Factor	Rf	unitless	1.46		Calculated (see Table 2).
Average Linear Velocity	Vp	ft/yr	0.29		Calculated (see Table 1).
Toluene					
Travel Time	Tt	yr		162	Calculated. Tt = (H*Rf)/Vp (Whelan et al. 1987)
Thickness of Glacial Till	H	ft	23.25		Average thickness of till layers from borings MW-20, MW-30, MW-31, and MW-37.
Retardation Factor	Rf	unitless	2.02		Calculated (see Table 2).
Average Linear Velocity	Vp	ft/yr	0.29		Calculated (see Table 1).
Ethylbenzene					
Travel Time	Tt	yr		196	Calculated. Tt = (H*Rf)/Vp (Whelan et al. 1987)
Thickness of Glacial Till	H	ft	23.25		Average thickness of till layers from borings MW-20, MW-30, MW-31, and MW-37.
Retardation Factor	Rf	unitless	2.45		Calculated (see Table 2).
Average Linear Velocity	Vp	ft/yr	0.29		Calculated (see Table 1).
Xylenes					
Travel Time	Tt	yr		195	Calculated. Tt = (H*Rf)/Vp (Whelan et al. 1987)
Thickness of Glacial Till	H	ft	23.25		Average thickness of till layers from borings MW-20, MW-30, MW-31, and MW-37.
Retardation Factor	Rf	unitless	2.43		Calculated (see Table 2).
Average Linear Velocity	Vp	ft/yr	0.29		Calculated (see Table 1).

Table 5. Sensitivity Analysis for Benzene

Constituent/Parameter	Input	Travel Time through Unit C Glacial Till (years)
Benzene		
Hydraulic Conductivity (cm/sec)[1]		
Baseline Hydraulic Conductivity	1.00E-07	117
Minimum Hydraulic Conductivity	1.00E-10	117,205
Maximum Hydraulic Conductivity	5.00E-07	23
Effective Porosity[2]		
Baseline Effective Porosity	0.30	117
Minimum Effective Porosity	0.10	64
Maximum Effective Porosity	0.35	131
Soil Organic Carbon Content[3]		
Baseline Soil Organic Carbon Content	0.001	117
Minimum Soil Organic Carbon Content	0.0001	84
Maximum Soil Organic Carbon Content	0.01	451
Thickness of Till (feet)[4]		
Baseline Thickness of Till	23.25	117
Minimum Thickness of Till	18.00	91
Maximum Thickness of Till	33.00	166

[1] Range in hydraulic conductivity based on general information provided by ARI laboratory.

[2] Minimum effective porosity based on Fetter (1980). Maximum effective porosity based on general information provided by ARI laboratory.

[3] Range in soil organic carbon content is based one order of magnitude greater and one order of magnitude less than the WDOE default value used in the baseline case.

[4] The baseline case is the average thickness of glacial till from wells MW-20, MW-30, MW-31, and MW-37. The minimum thickness of the glacial till is based on the combined thickness of two till layers above the deep water table in well MW-37. The maximum thickness of the glacil till is based on the thickness of one till layer to the deep water table in well MW-30.

Table 6. Sensitivity Analysis for Toluene

Constituent/Parameter	Input	Travel Time through Unit C Glacial Till (years)
Toluene		
Hydraulic Conductivity (cm/sec)[1]		
Baseline Hydraulic Conductivity	1.00E-07	162
Minimum Hydraulic Conductivity	1.00E-10	161,537
Maximum Hydraulic Conductivity	5.00E-07	32
Effective Porosity[2]		
Baseline Effective Porosity	0.30	162
Minimum Effective Porosity	0.10	108
Maximum Effective Porosity	0.35	175
Soil Organic Carbon Content[3]		
Baseline Soil Organic Carbon Content	0.001	162
Minimum Soil Organic Carbon Content	0.0001	88
Maximum Soil Organic Carbon Content	0.01	894
Thickness of Till (feet)[4]		
Baseline Thickness of Till	23.25	162
Minimum Thickness of Till	18.00	125
Maximum Thickness of Till	33.00	229

[1] Range in hydraulic conductivity based on general information provided by ARI laboratory.

[2] Minimum effective porosity based on Fetter (1980). Maximum effective porosity based on general information provided by ARI laboratory.

[3] Range in soil organic carbon content is based one order of magnitude greater and one order of magnitude less than the WDOE default value used in the baseline case.

[4] The baseline case is the average thickness of glacial till from wells MW-20, MW-30, MW-31, and MW-37. The minimum thickness of the glacial till is based on the combined thickness of two till layers above the deep water table in well MW-37. The maximum thickness of the glacil till is based on the thickness of one till layer to the deep water table in well MW-30.

Table 7. Sensitivity Analysis for Ethylbenzene

Constituent/Parameter	Input	Travel Time through Unit C Glacial Till (years)
Ethylbenzene		
Hydraulic Conductivity (cm/sec)[1]		
Baseline Hydraulic Conductivity	1.00E-07	196
Minimum Hydraulic Conductivity	1.00E-10	196,330
Maximum Hydraulic Conductivity	5.00E-07	39
Effective Porosity[2]		
Baseline Effective Porosity	0.30	196
Minimum Effective Porosity	0.10	143
Maximum Effective Porosity	0.35	210
Soil Organic Carbon Content[3]		
Baseline Soil Organic Carbon Content	0.001	196
Minimum Soil Organic Carbon Content	0.0001	92
Maximum Soil Organic Carbon Content	0.01	1,242
Thickness of Till (feet)[4]		
Baseline Thickness of Till	23.25	196
Minimum Thickness of Till	18.00	152
Maximum Thickness of Till	33.00	279

[1] Range in hydraulic conductivity based on general information provided by ARI laboratory.

[2] Minimum effective porosity based on Fetter (1980). Maximum effective porosity based on general information provided by ARI laboratory.

[3] Range in soil organic carbon content is based one order of magnitude greater and one order of magnitude less than the WDOE default value used in the baseline case.

[4] The baseline case is the average thickness of glacial till from wells MW-20, MW-30, MW-31, and MW-37. The minimum thickness of the glacial till is based on the combined thickness of two till layers above the deep water table in well MW-37. The maximum thickness of the glacil till is based on the thickness of one till layer to the deep water table in well MW-30.

Table 8. Sensitivity Analysis for Xylenes

Constituent/Parameter	Input	Travel Time through Unit C Glacial Till (years)
Xylenes		
Hydraulic Conductivity (cm/sec)[1]		
Baseline Hydraulic Conductivity	1.00E-07	195
Minimum Hydraulic Conductivity	1.00E-10	194,646
Maximum Hydraulic Conductivity	5.00E-07	39
Effective Porosity[2]		
Baseline Effective Porosity	0.30	195
Minimum Effective Porosity	0.10	141
Maximum Effective Porosity	0.35	208
Soil Organic Carbon Content[3]		
Baseline Soil Organic Carbon Content	0.001	195
Minimum Soil Organic Carbon Content	0.0001	92
Maximum Soil Organic Carbon Content	0.01	1,225
Thickness of Till (feet)[4]		
Baseline Thickness of Till	23.25	195
Minimum Thickness of Till	18.00	151
Maximum Thickness of Till	33.00	276

[1] Range in hydraulic conductivity based on general information provided by ARI laboratory.

[2] Minimum effective porosity based on Fetter (1980). Maximum effective porosity based on general information provided by ARI laboratory.

[3] Range in soil organic carbon content is based one order of magnitude greater and one order of magnitude less than the WDOE default value used in the baseline case.

[4] The baseline case is the average thickness of glacial till from wells MW-20, MW-30, MW-31, and MW-37. The minimum thickness of the glacial till is based on the combined thickness of two till layers above the deep water table in well MW-37. The maximum thickness of the glacil till is based on the thickness of one till layer to the deep water table in well MW-30.

Table 9. SESOIL Climate Data

Month	Air Temp. (°C)	Cloud Cover	Humidity	Albedo	Precipitation (cm)	Storms per Month	Storm Duration (days)
Source[1]	(B)	(A)	(A)	(A)	(B)	(A)	(A)
October	10.33	0.6	0.65	0.14	1.63	1.93	0.282
November	3.39	0.8	0.8	0.15	3.94	3.43	0.417
December	-1.39	0.8	0.8	0.19	4.55	4.53	0.495
January	-2.33	0.8	0.8	0.23	3.84	3.83	0.529
February	0.83	0.8	0.8	0.16	2.82	2.79	0.430
March	5.44	0.7	0.6	0.16	2.26	2.28	0.324
April	10.22	0.65	0.55	0.14	1.93	1.50	0.362
May	15.00	0.6	0.5	0.14	1.78	1.54	0.280
June	19.22	0.6	0.5	0.14	1.80	1.54	0.243
July	22.56	0.3	0.4	0.14	0.84	0.48	0.150
August	22.28	0.4	0.4	0.14	1.04	1.27	0.261
September	17.06	0.4	0.5	0.14	1.07	0.83	0.255

[1] Climate data is from the following sources:
A: 1996 data from Wenatchee, Washington
B: 2004 data from Lakeside, Washington

Evapotranspiration is calculated by SESOIL from climate data.

SESOIL assumes that there are 30.4 days in each month.

Table 10. Soil Input Parameters for SESOIL

Parameter	Units	Input	Source
Bulk Density	kg/L	2.1	Average bulk density for glacial till; based on analyses of WA state tills conducted by ARI laboratory.
Intrinsic Permeability	cm^2 (ft^2)	$1.9x10^{-10}$ ($2.0x10^{-13}$)	Calibrated
Disconnectedness Index	unitless	10	Calibrated
Freundlich Equation Exponent	unitless	1	SESOIL Default
Porosity (effective)	unitless	0.30	Typical effective porosity of glacial till; based on analyses of WA state tills conducted by ARI laboratory.
Fraction Organic Carbon	unitless	0.001	WDOE default value (WDOE, 2001).
Recharge Rate (Calibration Target)	cm/yr (ft/yr)	4.11 (0.135)	HELP Model (Attachment 1)
Application Area	cm^2 (ft^2)	77,300,000 (83,205)	Area Map (Figure 1)
Dilution Attenuation Factor (DAF) (Equation 6)	unitless	28.79	Based on a mixing zone depth of 26.34 ft (Equation 7)

Table 11. Modeling Input and Assumptions: SESOIL Layer Parameterization

Model Layer	Thickness	Sublayers	Purpose
Layer 1	609.6 cm (20 ft)	4	Contaminant Loading
Layer 2	609.6 cm (20 ft)	4	Contaminant Loading and Leaching
Layer 3	1219.2 cm (40 ft)	4	Contaminant Loading and Leaching
Layer 4	15.2 cm (0.5 ft)	2	Determine Leachate Concentration

Table 12. Modeling Input and Assumptions: Initial Soil Concentrations

Constituent	Layer	Layer Thickness (ft)	Sublayer	Maximum Soil Concentration (mg/kg)
Benzene	1	20	1	0.00E+00
			2	0.00E+00
			3	0.00E+00
			4	0.00E+00
	2	20	1	2.00E-02
			2	2.56E+00
			3	3.00E-02
			4	1.00E-01
	3	40	1	0.00E+00
			2	0.00E+00
			3	0.00E+00
			4	0.00E+00
	4	0.5	1	0.00E+00
			2	0.00E+00
Ethylbenzene	1	20	1	0.00E+00
			2	0.00E+00
			3	0.00E+00
			4	0.00E+00
	2	20	1	2.00E-01
			2	8.25E+01
			3	1.70E+00
			4	4.00E-01
	3	40	1	0.00E+00
			2	0.00E+00
			3	0.00E+00
			4	0.00E+00
	4	0.5	1	0.00E+00
			2	0.00E+00
Toluene	1	20	1	0.00E+00
			2	0.00E+00
			3	0.00E+00
			4	0.00E+00
	2	20	1	4.00E-01
			2	5.37E+01
			3	2.20E+00
			4	1.60E+00
	3	40	1	0.00E+00
			2	0.00E+00
			3	0.00E+00
			4	0.00E+00
	4	0.5	1	0.00E+00
			2	0.00E+00
Xylenes	1	20	1	0.00E+00
			2	0.00E+00
			3	0.00E+00
			4	0.00E+00
	2	20	1	1.60E+00
			2	4.82E+02
			3	1.10E+01
			4	2.40E+00
	3	40	1	0.00E+00
			2	0.00E+00
			3	0.00E+00
			4	0.00E+00
	4	0.5	1	0.00E+00
			2	0.00E+00

Table 13. Summary of Leachate Modeling Results

Constituent	Predicted Maximum Leachate Concentration $C_{L,max}$ (mg/L)	Dilution Attenuation Factor (unitless)	Predicted Time for $C_{L,max}$ $T_{L,max}$ (yr)	Predicted Time for C_W to exceed MTCA Method A CUL $T_{L,max}$ (yr)	Predicted Maximum Groundwater Concentration $C_{W,max}$ (mg/L)	MTCA Method A CUL (mg/L)	Contaminant Migration Leachability Threat? $C_{W,max}$ > MTCA Method A CUL
Benzene	1.00E-10	28.79	63.1	--	3.47E-12	0.005	**No**
Ethylbenzene	1.00E-10	28.79	119.5	--	3.47E-12	0.7	**No**
Toluene	1.00E-09	28.79	95.3	--	3.47E-11	1.0	**No**
Xylenes	1.00E-09	28.79	119.5	--	3.47E-11	1.0	**No**

$C_{L,max}$ = maximum leachate concentration onsite just above the deep water table,
or concentration at time = 1,000 years if no maximum is reached.

$T_{L,max}$ = elapsed time since loading to attain $C_{L,max}$ onsite just above the deep water table.

$C_{W,max}$ = maximum groundwater concentration onsite just below the deep water table.

-- = Not predicted to exceed MTCA Method A cleanup levels.

Appendix I

Attachment: Help Model

```
**********************************************************************************
**********************************************************************************
**                                                                              **
**                                                                              **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE                   **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                    **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                       **
**                    USAE WATERWAYS EXPERIMENT STATION                         **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY                  **
**                                                                              **
**                                                                              **
**********************************************************************************
**********************************************************************************

PRECIPITATION DATA FILE:    C:\HELP\CHELAN.D4
TEMPERATURE DATA FILE:      C:\HELP\CHELAN.D7
SOLAR RADIATION DATA FILE:  C:\HELP\CHELAN.D13
EVAPOTRANSPIRATION DATA:    C:\HELP\CHELAN.D11
SOIL AND DESIGN DATA FILE:  C:\HELP\CHELAN.D10
OUTPUT DATA FILE:           C:\HELP\CHELAN.OUT

TIME:  15:35     DATE:  10/20/2004

**********************************************************************************

     TITLE:  Chelan Recharge Rate

**********************************************************************************

     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.

                                  LAYER  1
                                  --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER   5
          THICKNESS                     =     96.00   INCHES
          POROSITY                      =      0.4570 VOL/VOL
          FIELD CAPACITY                =      0.1310 VOL/VOL
          WILTING POINT                 =      0.0580 VOL/VOL
          INITIAL SOIL WATER CONTENT    =      0.1677 VOL/VOL
          EFFECTIVE SAT. HYD. COND.     =  0.100000005000E-02 CM/SEC
        NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  1.80
                 FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

                                  LAYER  2
                                  --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER   0
          THICKNESS                     =    408.00   INCHES
          POROSITY                      =      0.4710 VOL/VOL
          FIELD CAPACITY                =      0.3420 VOL/VOL
          WILTING POINT                 =      0.2100 VOL/VOL
          INITIAL SOIL WATER CONTENT    =      0.3420 VOL/VOL
```

EFFECTIVE SAT. HYD. COND. = 0.999999997000E-06 CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	444.00	INCHES
POROSITY	=	0.4710	VOL/VOL
FIELD CAPACITY	=	0.3420	VOL/VOL
WILTING POINT	=	0.2100	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.3420	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS USER-SPECIFIED.

SCS RUNOFF CURVE NUMBER	=	0.00	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.910	ACRES
EVAPORATIVE ZONE DEPTH	=	10.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	3.177	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	4.570	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	0.580	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	307.488	INCHES
TOTAL INITIAL WATER	=	307.488	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
SEATTLE WASHINGTON

STATION LATITUDE	=	47.50	DEGREES
MAXIMUM LEAF AREA INDEX	=	1.00	
START OF GROWING SEASON (JULIAN DATE)	=	126	
END OF GROWING SEASON (JULIAN DATE)	=	287	
EVAPORATIVE ZONE DEPTH	=	10.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	9.10	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	75.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	69.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	79.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR LAKESIDE, WASHINGTON

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
1.51	1.11	0.89	0.76	0.70	0.71
0.33	0.41	0.42	0.64	1.55	1.79

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR LAKESIDE, WASHINGTON

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
27.80	33.50	41.80	50.40	59.00	66.60
72.60	72.10	62.70	50.60	38.10	29.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SEATTLE WASHINGTON
AND STATION LATITUDE = 47.50 DEGREES

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES		CU. FEET	PERCENT
PRECIPITATION	10.74	(1.361)	74478.9	100.00
RUNOFF	1.248	(0.6243)	8649.36	11.613
EVAPOTRANSPIRATION	6.918	(0.8144)	47961.32	64.396
PERCOLATION/LEAKAGE THROUGH LAYER 3	1.61971	(1.27668)	11229.924	15.07798
CHANGE IN WATER STORAGE	0.957	(1.6157)	6638.29	8.913

APPENDIX J: MONITORED NATURAL ATTENUATION

APPENDIX J
MONITORED NATURAL ATTENUATION AT CHELAN SITE

Monitored natural attenuation (MNA), also termed intrinsic remediation, refers to the observed reduction in subsurface contaminant concentrations without the aid of human intervention, as contaminants migrate from their source in environmental media. Although this remedial method occurs naturally, it does not involve a no-action approach. This method includes modeling, active monitoring (sampling and analysis), and evaluation of contaminant reduction to determine whether it remains a feasible method for plume treatment.

During the process of natural attenuation, the decrease of contaminant concentrations in soil and groundwater can be attributed to a variety of physical, chemical, and biological processes, including biodegradation, dilution, dispersion, volatilization, sorption, and transformation or stabilization of contaminants (U.S. EPA, 1997). The mechanisms of natural attenuation can be classified as destructive and non-destructive. Destructive processes include biodegradation and abiotic degradation mechanisms. Non-destructive attenuation mechanisms include sorption, dispersion, dilution, and volatilization. The use of MNA at petroleum-contaminated sites usually implies that biodegradation is occurring.

Natural attenuation processes typically occur at all contaminated sites, but to varying degrees of effectiveness depending on the types and concentrations of contaminants present and the physical, chemical, and biological characteristics of the soil and groundwater. Natural attenuation processes may reduce the potential risk posed by site contaminants in three ways:

1. The contaminant may be converted to a less toxic form through destructive processes such as biodegradation, biotransformation, or abiotic degradation.
2. Potential exposure levels may be reduced by the lowering of concentration levels through destructive processes, or by dilution or dispersion.
3. Contaminant mobility and bioavailability may be reduced by sorption to the soil or rock matrix.

One of the most important components of natural attenuation at a petroleum-contaminated site is biodegradation. It is the primary process that contributes to the decay of the mono-aromatic compounds benzene, toluene, ethylbenzene, xylene (BTEX), and other gasoline constituents. Biodegradation, also called bioremediation, is a process in which naturally occurring microorganisms, such as yeast, fungi and bacteria, break down target substances into less toxic or non-toxic substances. The biological degradation of hydrocarbons such as BTEX compounds can occur under either aerobic conditions where oxygen is the electron acceptor, or anaerobic conditions where (instead of oxygen) nitrate, ferrous iron, carbon dioxide or sulfate is the electron acceptor.

Contaminant biodegradation is largely based upon microbial respiration. In respiration, microbes gain energy from the consumption or oxidation of electron donors coupled to the utilization or reduction of electron acceptors. Contaminants will either serve as electron donors or electron acceptors. For example, during the aerobic metabolism of petroleum hydrocarbons in

the biodegradation process, oxygen is the electron acceptor, while hydrocarbons are the electron donors and may eventually be oxidized completely to CO_2. Under anaerobic conditions, alternative electron acceptors, such as nitrate and sulfate, may be utilized in contaminant oxidation in the absence of oxygen. In general, biodegradation processes follow an order of favorable electron acceptor availability: $O_2 \rightarrow Mn^{4+} \rightarrow NO_3^- \rightarrow Fe^{3+} \rightarrow SO_4^{2-} \rightarrow CH_4 \rightarrow CO_2$. The microbes will utilize the next available electron acceptor in the above order when one acceptor is scarce or absent (Wiedemeier et al., 1999).

Indicators of Natural Attenuation at Field Sites

Some biological and chemical indicators have been used in recent years to demonstrate the occurrence of contaminant biodegradation (National Research Council, 1994; Wiedemeier et al., 1995, 1996). These indicators include:

1. Contaminant and geochemical analytical data, including:
    a. Depletion of electron acceptors and donors
    b. Increasing metabolic by-product concentrations
    c. Decreasing parent compound concentrations (e.g., contaminants)
    d. Increasing daughter compound concentrations (e.g., breakdown product of the contaminants)
2. Microbiological data that document the occurrence of biodegradation

The occurrence of biodegradation can be determined from site analytical monitoring of the changes in groundwater bulk geochemistry, the presence of metabolic by-products, and the depletion of electron acceptors and donors. Several chemical species such as nitrate, ferrous iron, sulfate, and methane that are specific starting or end products of microbial metabolism are generally measured in groundwater samples. Their presence, or their absence, in comparison to background levels and dissolved oxygen levels can therefore be used to infer biodegradative processes. These parameters are commonly used in site studies to construct conceptual zones to indicate that various stages of biodegradation are occurring within a contaminant plume. A general conceptualization of electron-acceptor zones in the subsurface is shown in Figure 1. This figure shows a vertical zonation, but this pattern may also occur in a horizontal zonation around a high-concentration dissolved or NAPL plume.

The conceptual zones can be classified into five stages, depending on the availability of electron acceptors. These stages may progress through time with changing chemistry, or may occur laterally within a single plume at the same time. Aerobic respiration typically occurs first or at the margins of a plume, where microbes consume oxygen to break down contaminants. The indicator for this process is a decrease (through time or toward the source) in dissolved oxygen (DO) concentrations in groundwater. As oxygen is depleted, anaerobic biodegradation will then occur, indicated by a decrease in groundwater oxidation-reduction potential (ORP). The next step, denitrification, indicates the reduction of nitrate to N_2, as nitrate was used as an electron acceptor. Nitrite, an intermediate in denitrification, may also be an indicator of this process. In the process of iron reduction, Fe^{3+} is reduced to Fe^{2+}. Thus, elevated levels of Fe^{2+} in groundwater may be indicative of microbial iron reduction. In the sulfate-reduction zone, sulfate depletion or the presence of sulfide (or hydrogen sulfide, H_2S) may indicate sulfate-reducing

activity. The last stage is complete biodegradation of hydrocarbons, which will result in the formation of CO_2, or CH_4 (methane) in the process of methanogenesis. Elevated concentrations of these dissolved gases will also indicate microbial activity in groundwater samples. The biodegradation of benzene will likely result in the formation of carbonate, which produces higher alkalinity in the groundwater (AFCEE, 1994), and elevated levels of alkalinity can be used as an indicator of aerobic and anaerobic benzene biodegradation. The processes described above are shown in the terminal electron-accepting processes diagram in Figure 2.

The breakdown products or daughter products of BTEX compounds, can also serve as indicators of biodegradation in the subsurface using a ternary BTX diagram. During the initial stages of BTEX breakdown, an increase of benzene and xylene proportions can be observed due to the biodegradation or volatilization of toluene and ethylbenzene (Jorgensen et al., 1995). In the later stages, the concentrations of benzene and xylenes will then decrease as they are degraded to catechol.

Groundwater Monitoring of Natural Attenuation at Chelan

Several electron acceptors or metabolic by-products are being used as onsite parameters at Chelan to determine if natural attenuation is presently occurring. In addition, the breakdown of BTEX compounds and changes in proportions of BTEX were also used to determine if natural attenuation is occurring through time using ternary BTX diagrams, as described below.

Groundwater samples analyzed for MNA parameters were collected from monitoring wells at the Chelan site between April 2004 and October 2005. In the classical case of MNA documentation, wells would be positioned in a linear transect from a location with uncontaminated groundwater outside the dissolved-phase plume, extending through the dissolved plume, toward the higher-concentration center of the plume (or possibly to the margin of a NAPL plume). However, at Chelan the plumes and monitoring wells are not conveniently situated to allow for a simple transect and resultant evaluation. The number of site wells that are dry or with NAPL also limited the available wells for groundwater sampling. Consequently, wells were sampled in various areas of the dissolved halo and in uncontaminated groundwater, not in a linear transect, but instead scattered around the NAPL plume at varying distances from the approximate plume boundary.

The MNA parameters measured for this RI/FS are dissolved oxygen, nitrate, ferrous iron, sulfate, and alkalinity. These parameters are interpreted by plotting their concentrations in two different ways: (1) MNA parameters versus gasoline-range petroleum hydrocarbons (TPH-G), and (2) MNA parameters versus the approximate distance of the well from the approximate boundary of the nearest NAPL plume. These plots were constructed in order to depict varying levels of biodegradation within the dissolved plume and uncontaminated groundwater, in order to evaluate possible stages of biodegradation at various distances from the NAPL plume. This method assumes a model of a dissolved contaminant halo around the NAPL plume. This situation seems to exist at Chelan on the northern, western, and eastern sides of the NAPL plume, but the southern boundary of the plume is dry and groundwater data in that area cannot be used. The relative degree of contamination in each well can be measured either by the amount of TPH-G dissolved in groundwater or by the distance from the monitoring well to the approximate edge of

the NAPL plume (applies to either the main gasoline plume or the diesel-rich plume in the vicinity of MW-22).

Monitored Natural Attenuation Analytical Results

The various MNA parameter concentrations described below were measured or analyzed from groundwater in monitoring wells at Chelan during seven sampling rounds between April 2004 and October 2005. Plots of MNA parameters for various wells are presented following this text.

Dissolved oxygen data from Chelan were measured in the field using a multi-parameter meter with a low-flow cell or a downhole DO meter. DO in graphs is plotted versus TPH-G and approximate distance from the NAPL plume. DO versus TPH-G indicate an exponential decrease of DO content with increasing TPH-G concentration. DO versus distance shows a decrease in the DO content of groundwater with decreasing distance to the approximate boundary of the NAPL plume. Both the exponential decrease of DO with increasing TPH-G concentrations, and the decrease in DO with decreasing distance to the NAPL plume, suggest that natural attenuation due to aerobic respiration is occurring onsite.

Nitrate (NO_3) data from Chelan were collected from monitoring wells between April 2004 and October 2005. Nitrate is plotted against TPH-G and approximate distance from the NAPL plume in graphs. Nitrate trends mimic DO in both graphs with an exponential decrease in nitrate concentrations with increasing TPH-G concentration, and an increase in nitrate concentrations with increasing distance from the NAPL plume. This reveals that denitrification is likely occurring. MW-28 has elevated nitrate levels with respect to other sampled monitoring wells although the cause is uncertain.

Ferrous iron (Fe^{2+}) data from Chelan were collected from monitoring wells between April 2004 and October 2005. Graphs are plotted for ferrous iron concentration versus TPH-G and approximate distance from the NAPL plume. At the Chelan site, available data appear to show an increasing trend in ferrous iron concentration with increasing TPH-G, and an increasing trend in ferrous iron concentration with decreasing distance to the NAPL plume. This reveals that biodegradation via iron reduction may be occurring.

Sulfate (SO_4) data from Chelan were collected from monitoring wells between April 2004 and October 2005. Graphs are plotted for sulfate concentration versus TPH-G and approximate distance from the NAPL plume. Sulfate versus TPH-G shows an exponential decrease of sulfate concentration with increasing TPH-G concentration. Sulfate versus distance shows a decrease in the sulfate content of groundwater with decreasing distance to the approximate boundary of the NAPL plume. These data reveal that biodegradation via sulfate reduction is likely occurring.

Alkalinity data from Chelan were collected from monitoring wells between April 2004 and October 2005. Graphs are plotted for total alkalinity concentration versus TPH-G and approximate distance from the NAPL plume. At the Chelan site, available data for total alkalinity appear to show an increasing trend with decreasing distance to the NAPL plume. These data correspond to elevated alkalinity in the NAPL plume as carbonate is the metabolic by-product of microbial activity.

BTX Ternary Diagrams

The ternary BTX diagrams can be useful in determining the fate of gasoline-related products through time (Lipson and Siegel, 2000). This method uses a triangular diagram to plot the relative proportions of benzene, toluene and total xylenes in groundwater (see plots following text). This technique relates the differing characteristics of BTX and how the decrease of one or more of these aromatic hydrocarbons, and the resultant change in BTX ratios, can determine if natural attenuation processes such as volatilization and biodegradation are occurring. Ternary diagrams showing BTX compositions that are xylene-rich are indicative of an environment where volatilization is dominant because toluene and benzene are stripped out (xylene is the least volatile followed by toluene and benzene). Sampled wells with results clustering around benzene are indicative of an environment where biodegradation is the dominant natural attenuation process (xylene being the most biodegradable, followed by toluene, and benzene being the least).

Ternary BTX diagrams for 1993, 1999, 2003, and 2005 sampling rounds in Chelan are included. BTX results from five monitoring wells in March 1993 indicate that two of the wells (MW-6, MW-7) are near the original percentage of gasoline. However, MW-2 is situated close to 100% xylene, and thus has undergone volatilization. BTX results from MW-5 and MW-8 are more benzene-rich, indicative of biodegradation processes. BTX from four wells sampled in September 1999 indicate both volatilization and biodegradation processes have occurred, with MW-2, MW-5 and MW-7 being xylene-rich and MW-6 benzene-rich. BTX results from five wells in both July 2003 and July 2005 appeared to have moved toward a biodegradation-dominated process. This is a reasonable fate, because benzene is the last BTEX compound to be broken down during biodegradation and transformed into catechol by microbial action.

Conclusions

Monitored natural attenuation is the unaided reduction of contaminant concentration and mass by using the natural assimilative capacity (physical, chemical, or biological attributes) of a groundwater/soil system *in situ*. This ubiquitous process relies predominantly on biodegradation to reduce the toxicity, mobility, and concentration of contaminants. Natural attenuation is usually evidenced by the depletion of dissolved oxygen, nitrate, Fe^{3+} and sulfate, with an increase of alkalinity, Fe^{2+} and methane in the contaminant plume as a result of biodegradation processes. These changes typically can be identified as progressing from the outside of a dissolved-phase groundwater plume to the interior (or to a NAPL plume).

Analytical groundwater results at Chelan do generally show decreasing concentrations of dissolved oxygen, nitrate and sulfate and increasing concentrations of ferrous iron and alkalinity with decreasing distance to the approximate boundary of the NAPL plume. Additional groundwater results generally show increasing nitrate concentrations with increasing TPH-G concentrations, and decreasing dissolved oxygen and sulfate concentrations with increasing TPH-G concentrations in groundwater. Ternary diagrams show the changes in relative proportions of benzene, toluene and total xylenes due to biodegradative processes and volatilization through time in the NAPL plume. Thus, these groundwater analytical results suggest that natural attenuation due to biodegradation processes is occurring in the dissolved-

phase, extending at least up to the margin of the NAPL plume at Chelan. This supports the long-term plan in the Feasibility Study of utilizing monitored natural attenuation to reduce contaminant concentrations in groundwater.

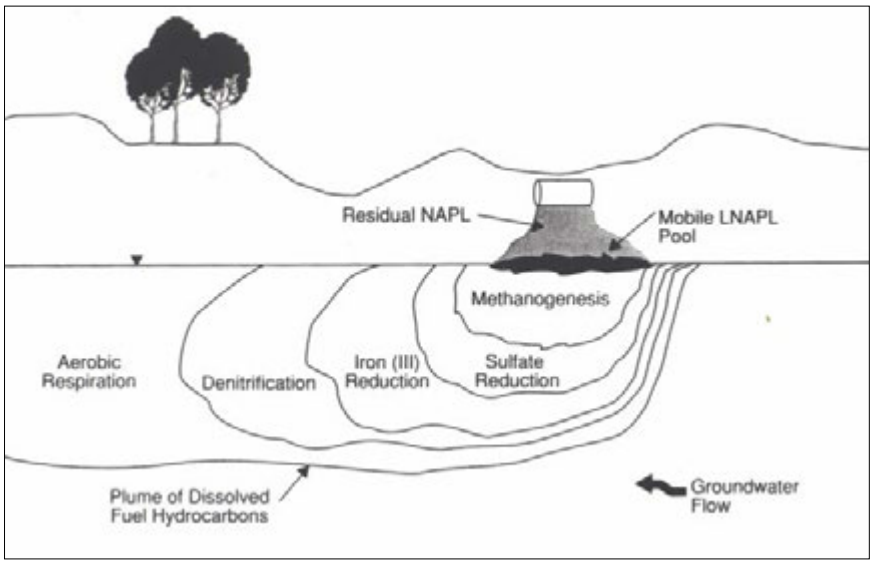


Figure 1. Conceptualization of electron-acceptor biodegradation zones at a leaking underground storage tank site. (Lovley et al., 1994)

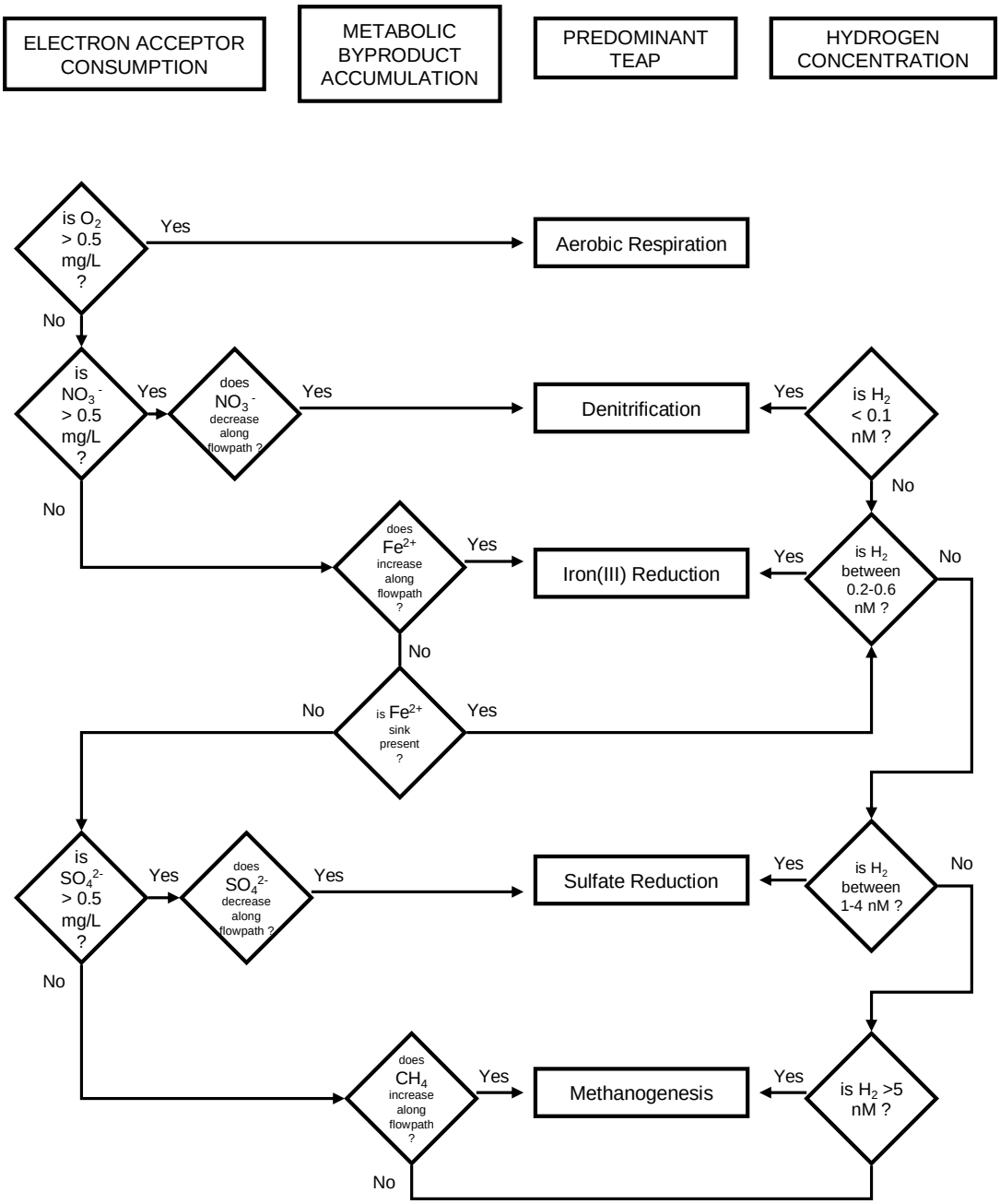
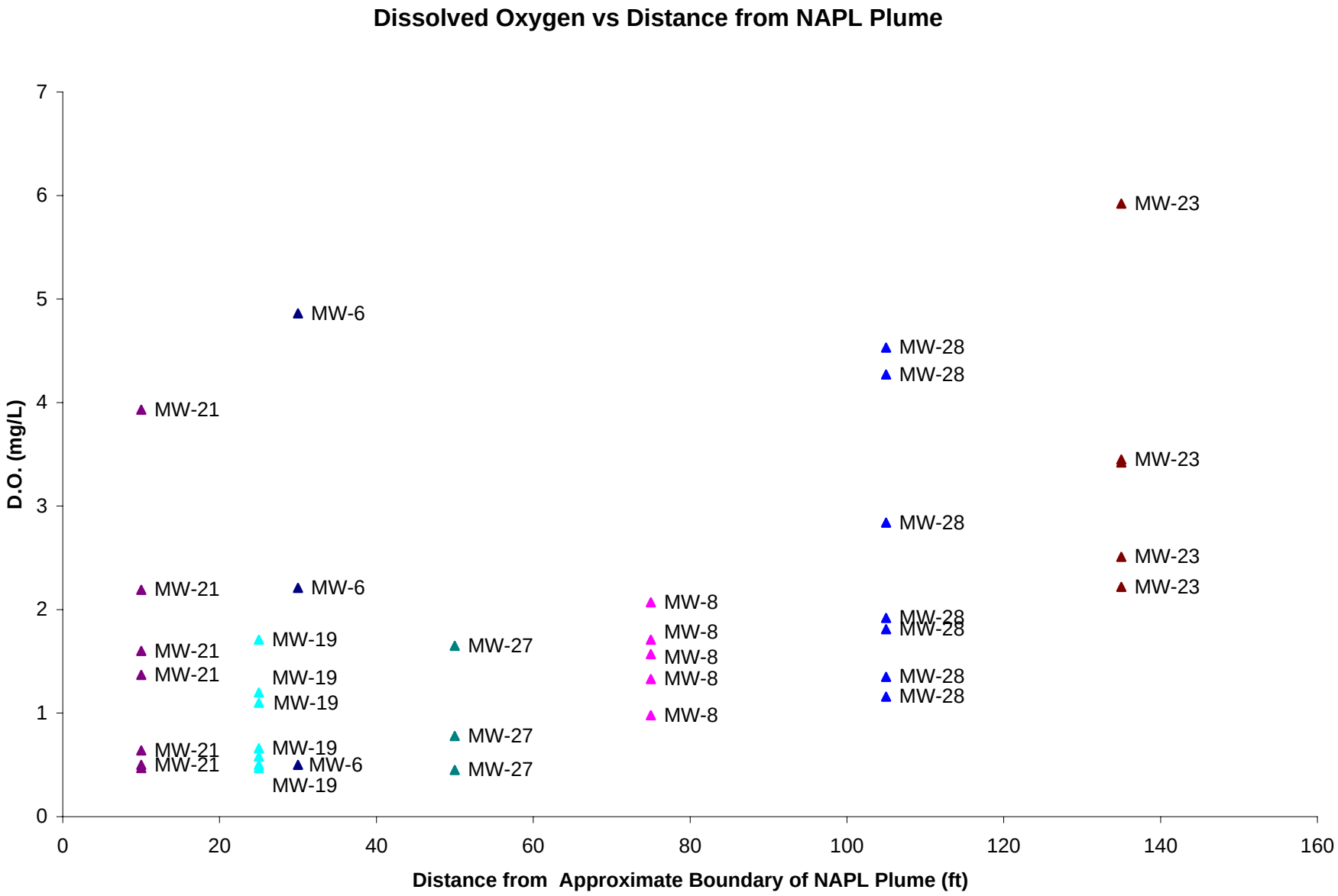
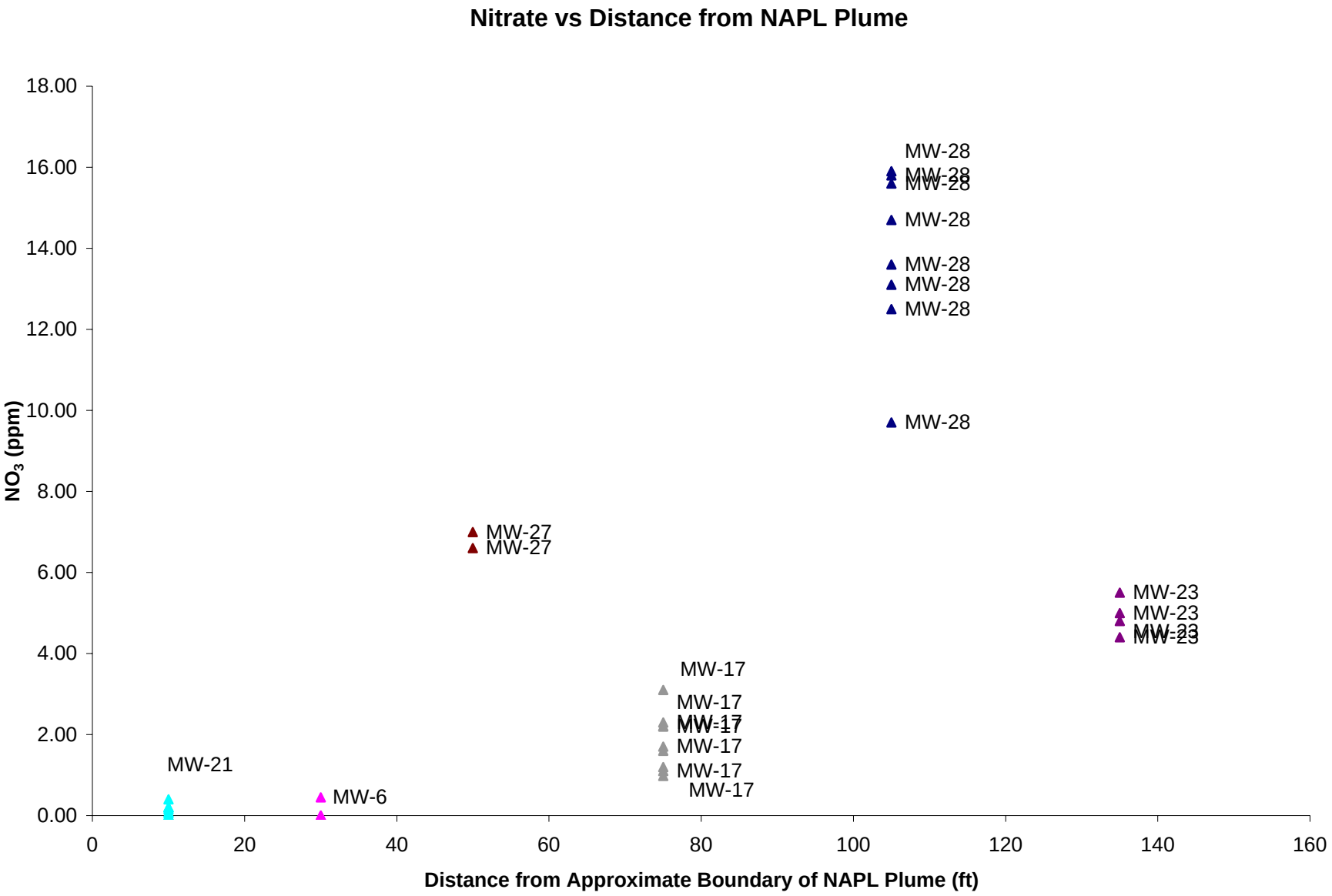
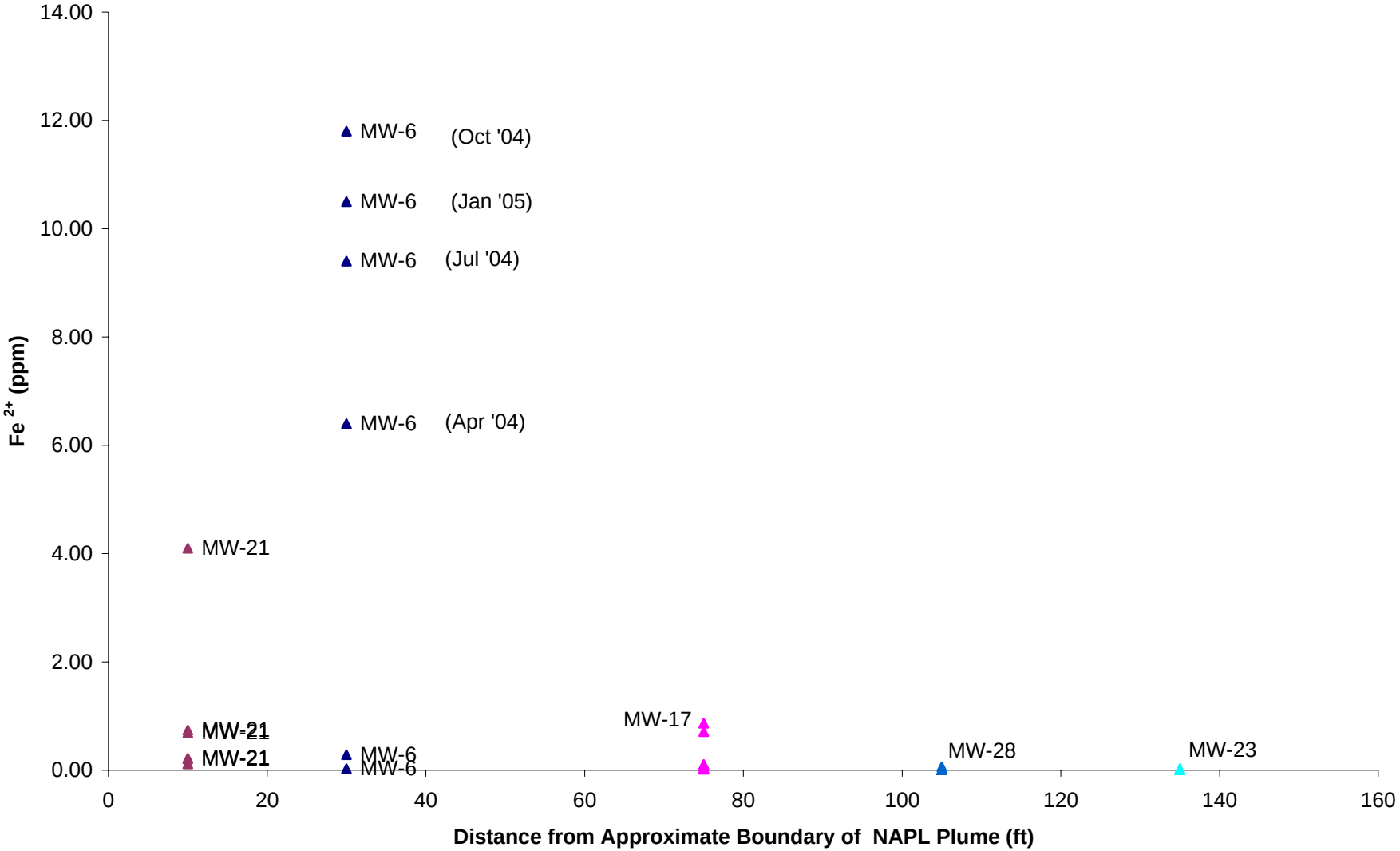


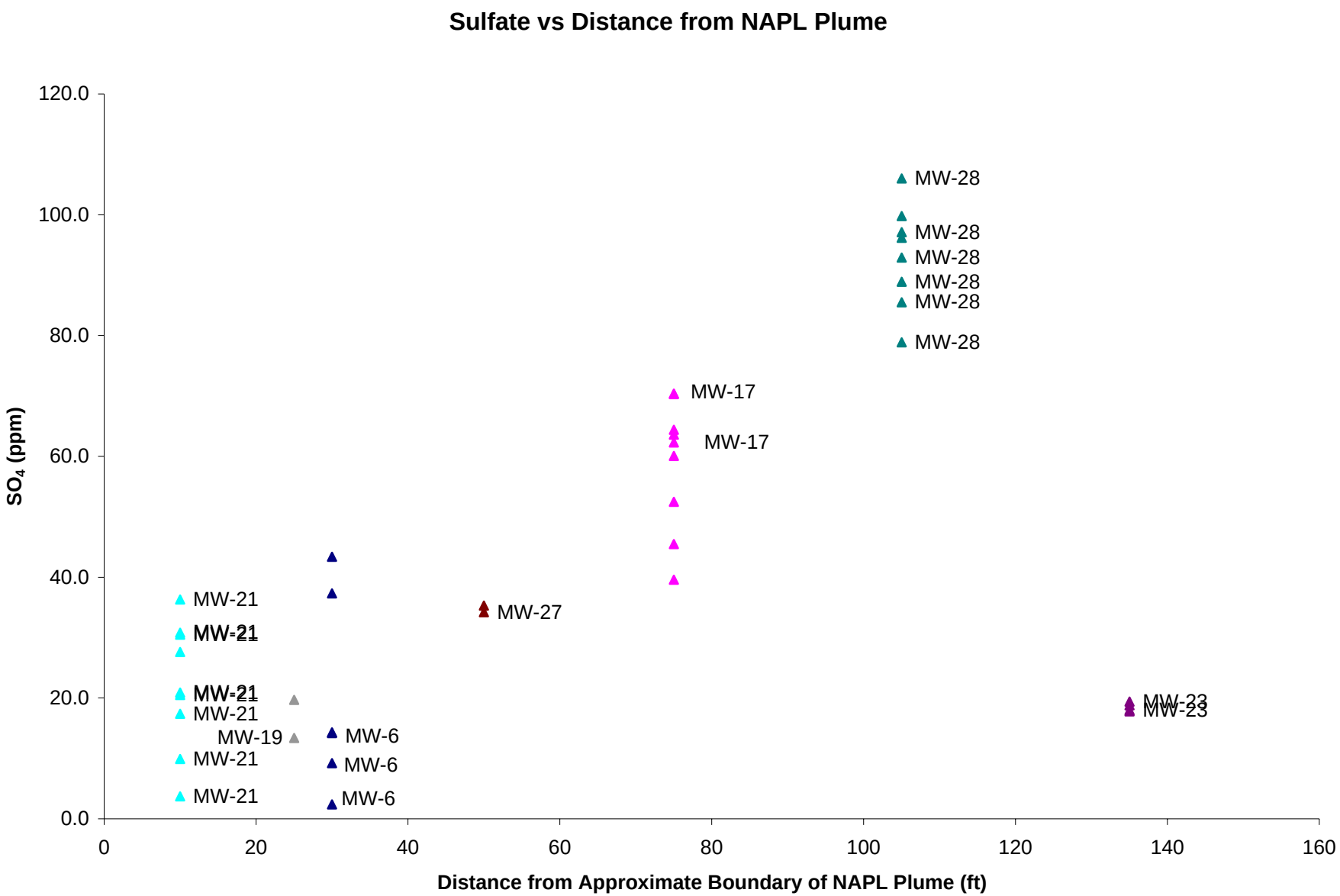
Figure 2. The distribution of terminal electron-accepting processes in groundwater system. (Modified from Chapelle et al., 1995)

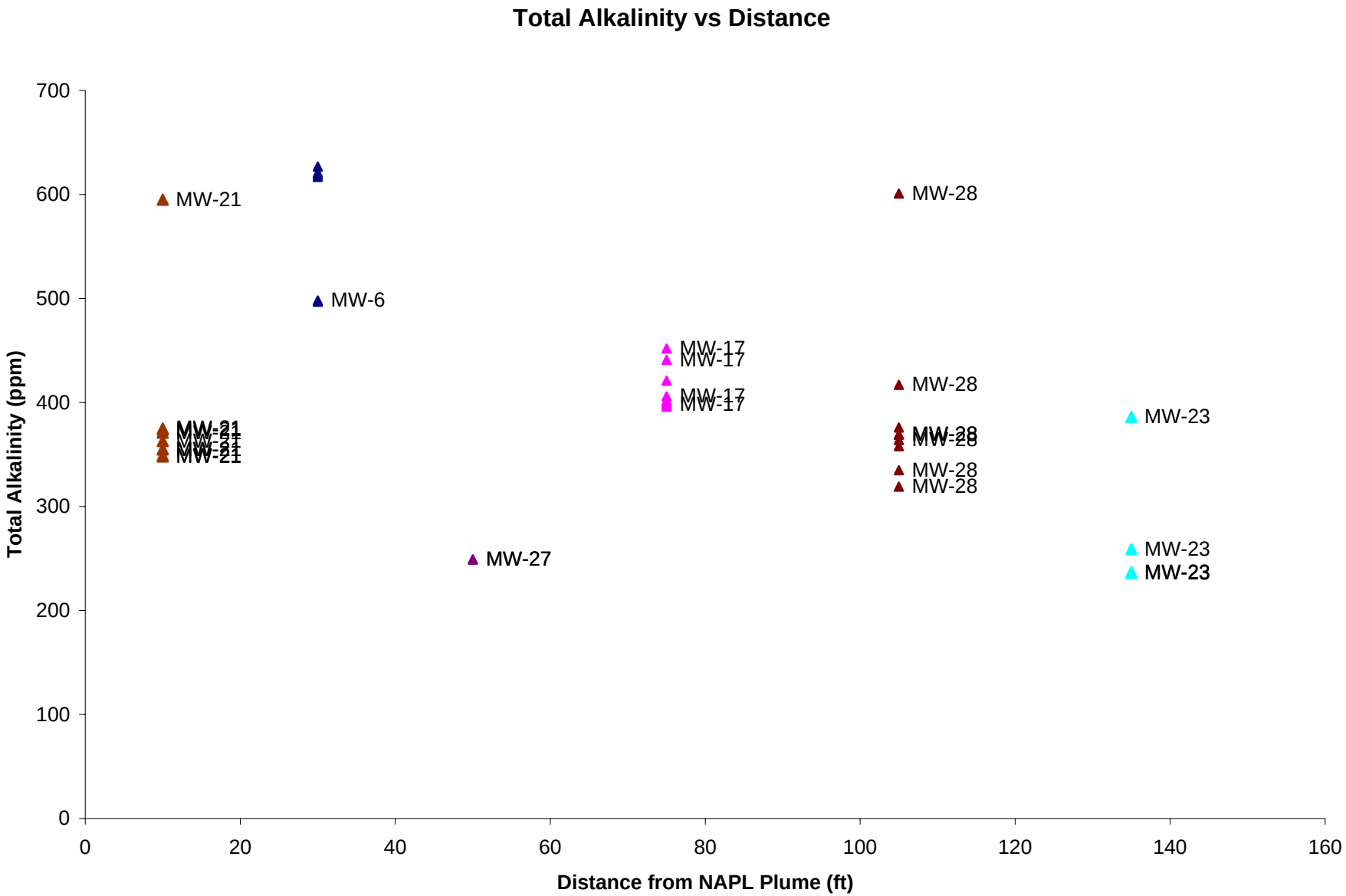

Dissolved Oxygen vs Distance from NAPL Plume
D.O. (mg/L)
Distance from Approximate Boundary of NAPL Plume (ft)
0
1
2
3
4
5
6
7
0
20
40
60
80
100
120
140
160
MW-21
MW-21
MW-21
MW-21
MW-21
MW-6
MW-6
MW-6
MW-19
MW-19
MW-19
MW-19
MW-19
MW-27
MW-27
MW-27
MW-8
MW-8
MW-8
MW-8
MW-8
MW-28
MW-28
MW-28
MW-28
MW-28
MW-28
MW-23
MW-23
MW-23
MW-23

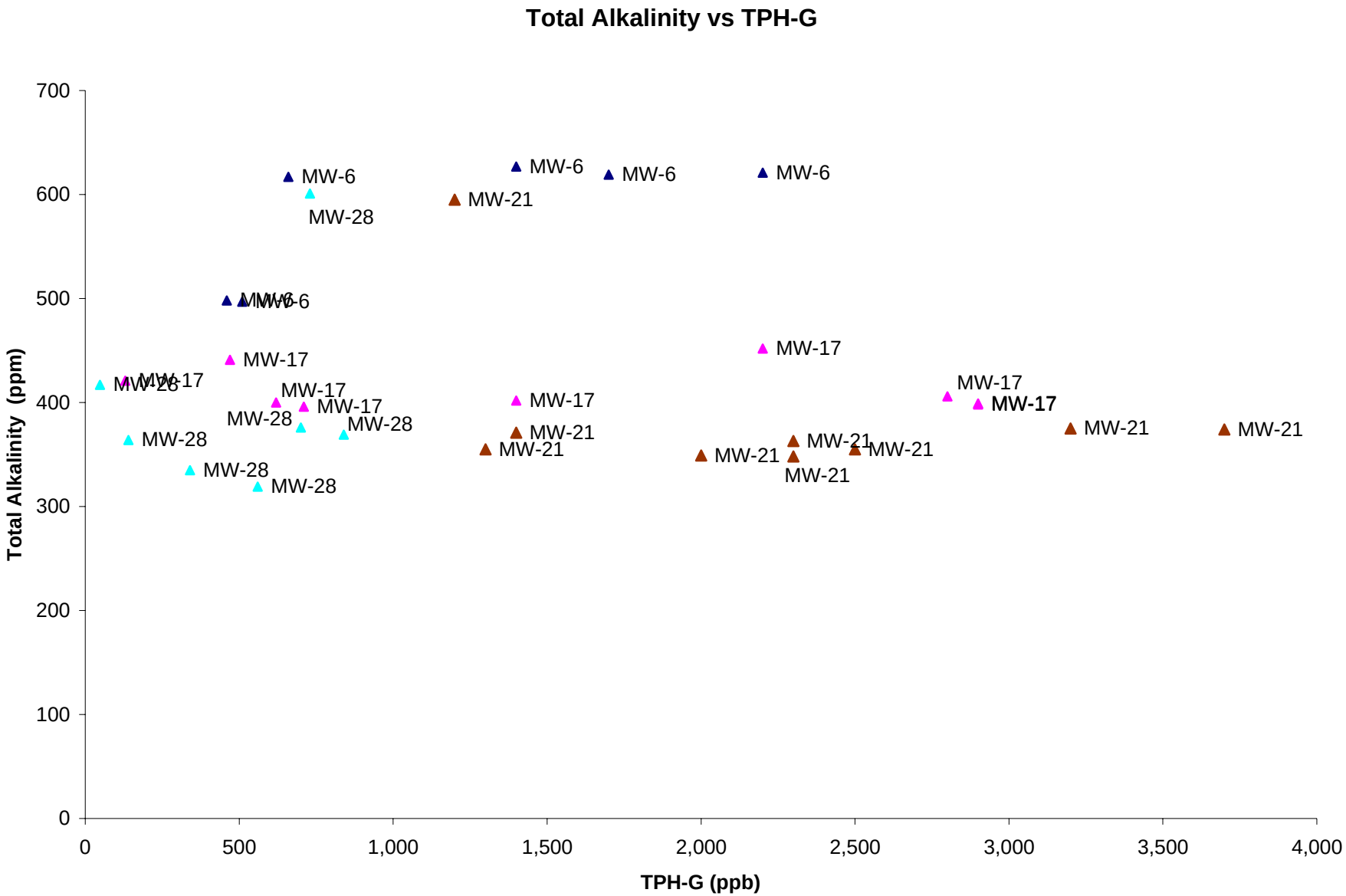

Nitrate vs Distance from NAPL Plume
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
NO3 (ppm)
0
20
40
60
80
100
120
140
160
Distance from Approximate Boundary of NAPL Plume (ft)
MW-28
MW-28
MW-28
MW-28
MW-28
MW-28
MW-28
MW-28
MW-27
MW-27
MW-23
MW-23
MW-23
MW-23
MW-17
MW-17
MW-17
MW-17
MW-17
MW-17
MW-17
MW-21
MW-6

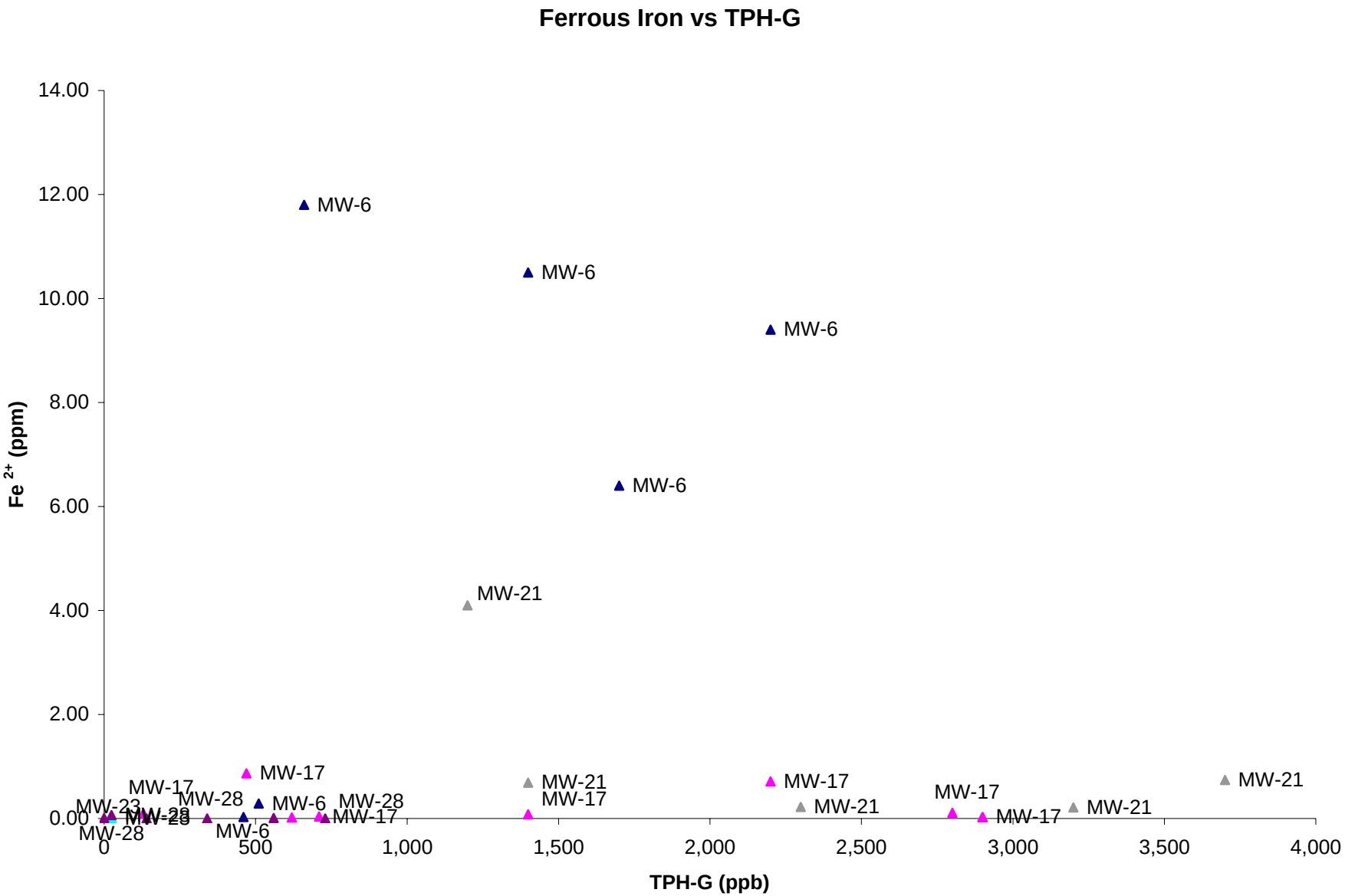
Ferrous Iron vs Distance from NAPL Plume

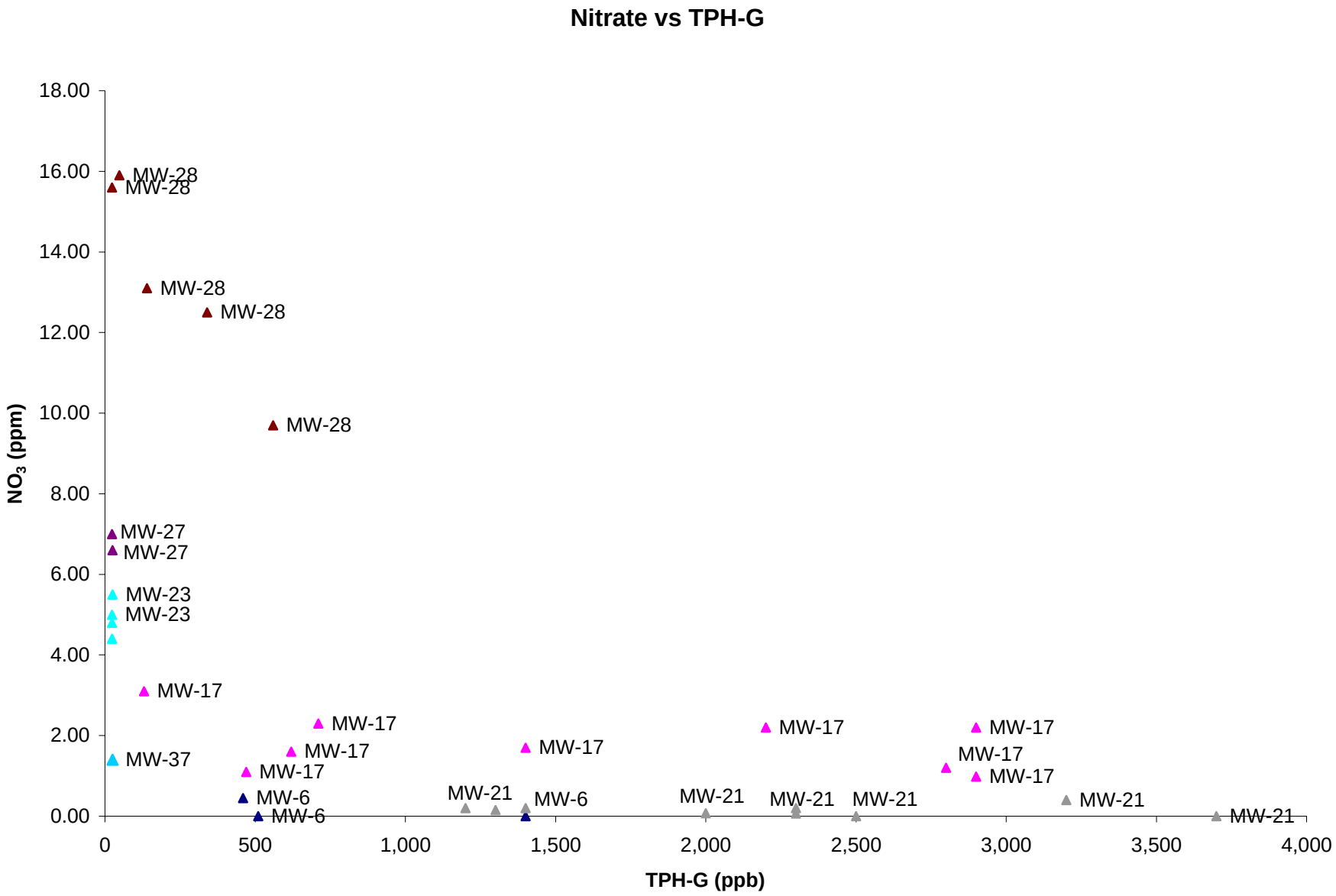


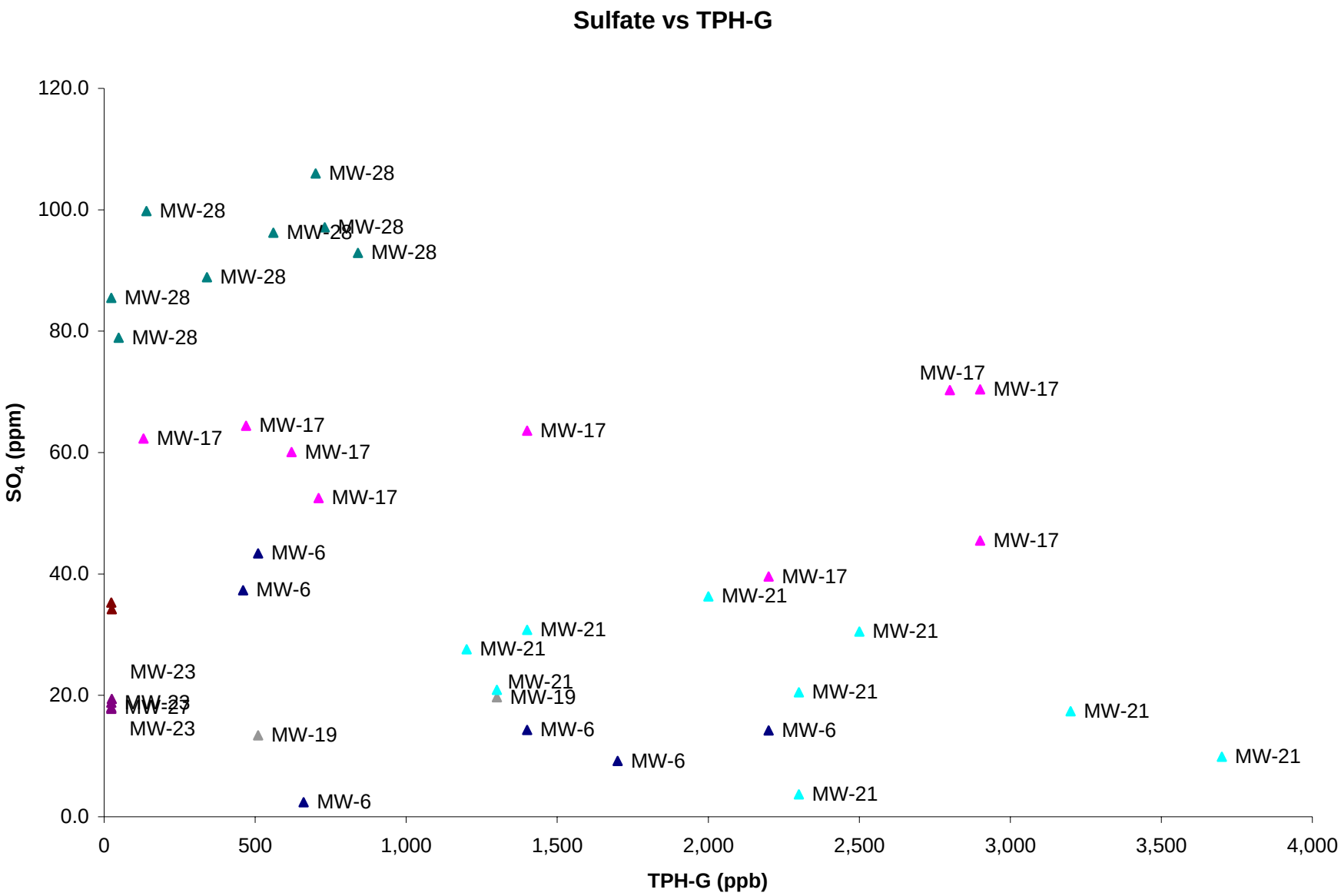

Sulfate vs Distance from NAPL Plume
120.0
100.0
80.0
60.0
40.0
20.0
0.0
SO4 (ppm)
0
20
40
60
80
100
120
140
160
Distance from Approximate Boundary of NAPL Plume (ft)
MW-28
MW-28
MW-28
MW-28
MW-28
MW-28
MW-17
MW-17
MW-27
MW-23
MW-23
MW-21
MW-21
MW-21
MW-21
MW-19
MW-21
MW-21
MW-6
MW-6
MW-6

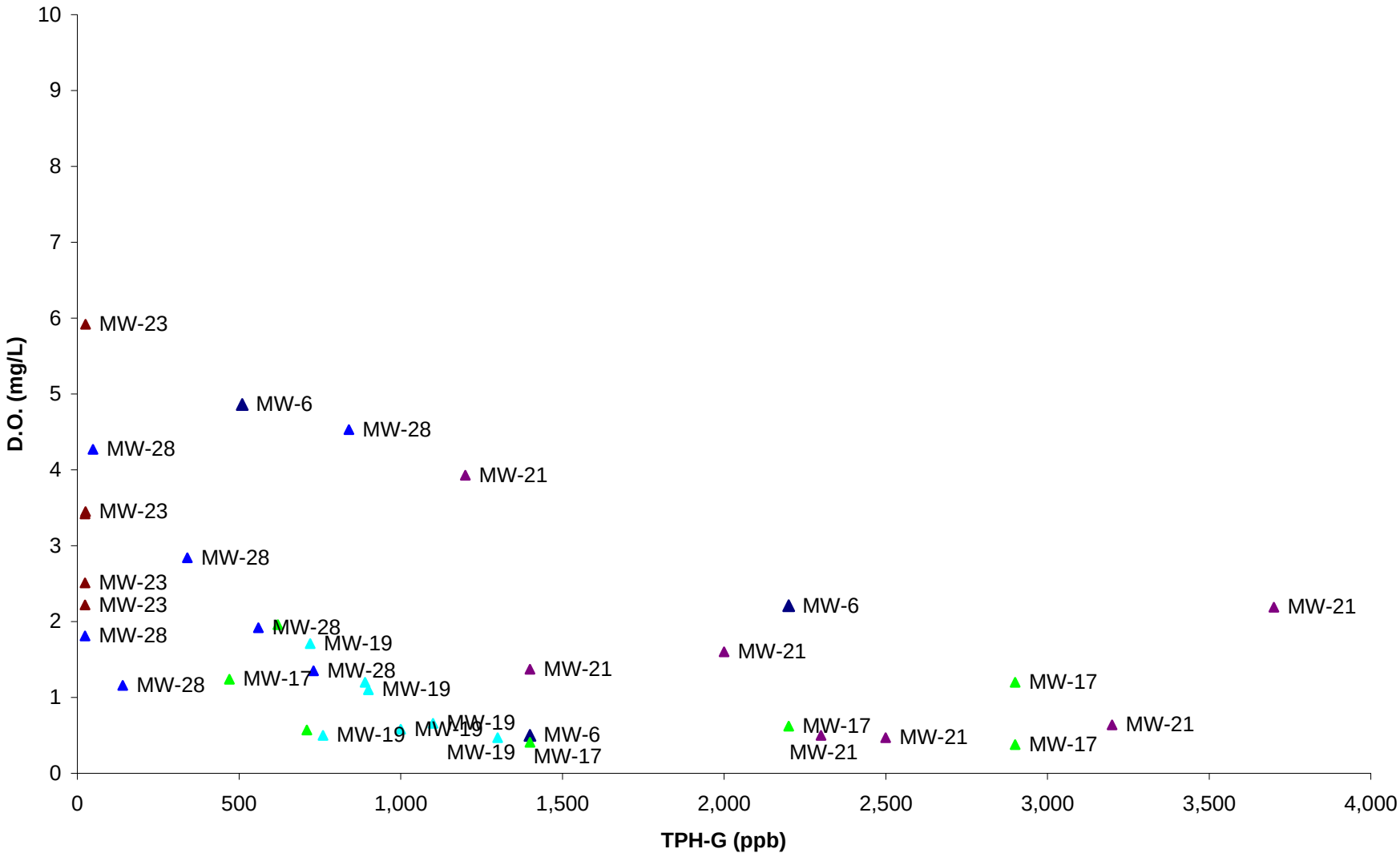

Total Alkalinity vs Distance
Total Alkalinity (ppm)
Distance from NAPL Plume (ft)
0
100
200
300
400
500
600
700
0
20
40
60
80
100
120
140
160
MW-21
MW-6
MW-27
MW-17
MW-28
MW-23

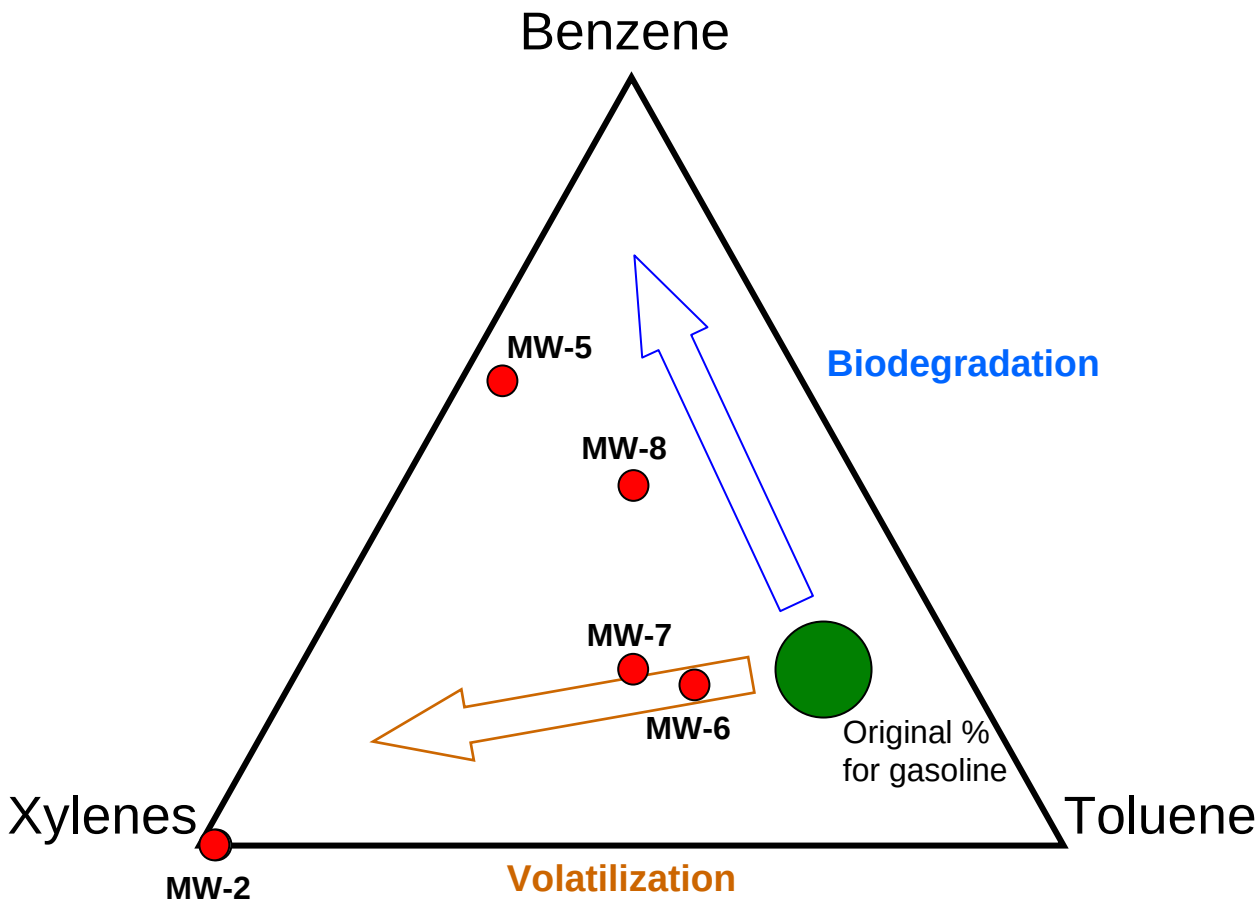

Total Alkalinity vs TPH-G
Total Alkalinity (ppm)
TPH-G (ppb)
0
100
200
300
400
500
600
700
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
MW-6
MW-28
MW-21
MW-17
MW-21
MW-21
MW-21
MW-21
MW-21
MW-21
MW-21
MW-21


Ferrous Iron vs TPH-G
Fe 2+ (ppm)
TPH-G (ppb)
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
MW-6
MW-6
MW-6
MW-6
MW-21
MW-17
MW-17
MW-28
MW-6
MW-28
MW-17
MW-6
MW-21
MW-17
MW-21
MW-17
MW-21
MW-17
MW-21

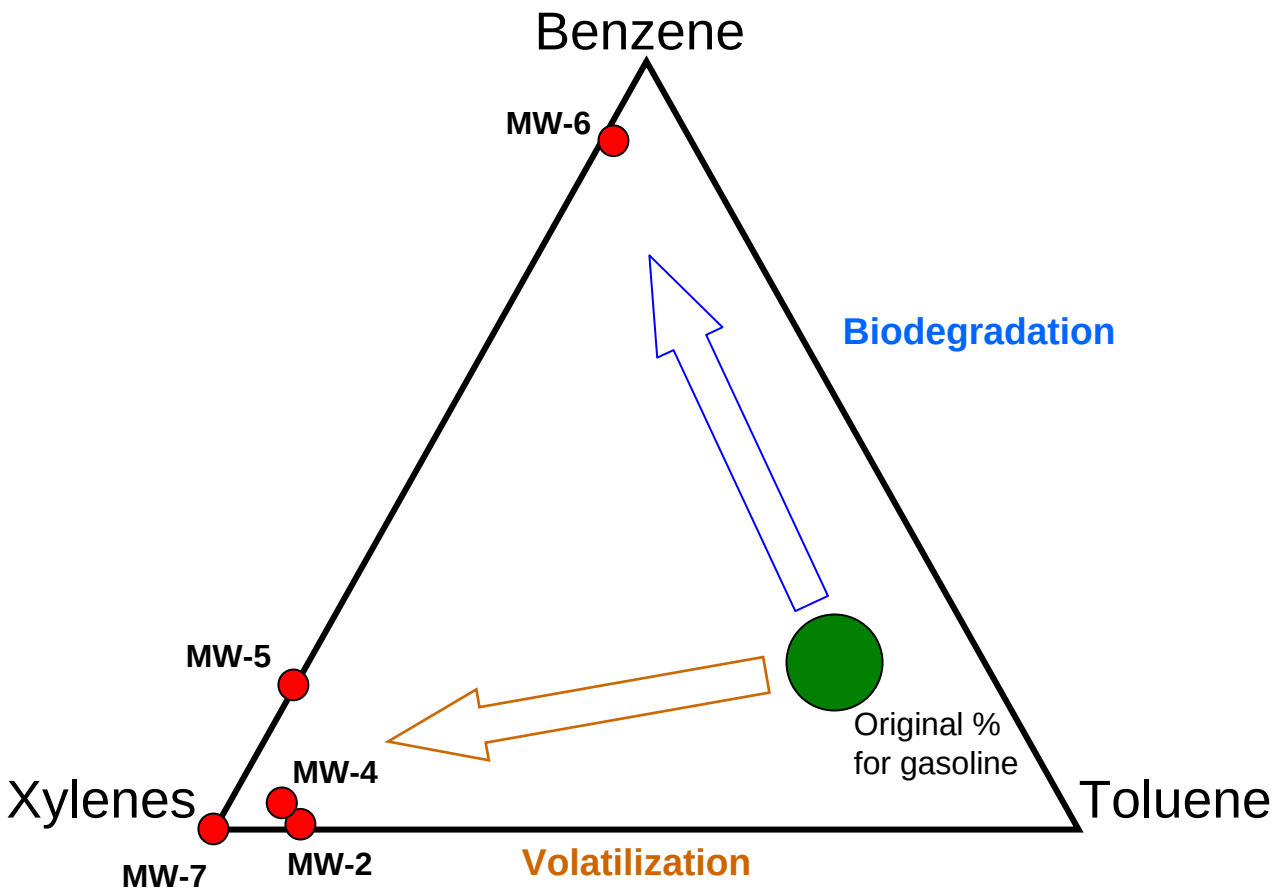

Nitrate vs TPH-G
NO3 (ppm)
TPH-G (ppb)
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
MW-28
MW-28
MW-28
MW-28
MW-28
MW-27
MW-27
MW-23
MW-23
MW-17
MW-37
MW-17
MW-17
MW-17
MW-6
MW-6
MW-17
MW-21
MW-6
MW-21
MW-17
MW-21
MW-21
MW-17
MW-17
MW-17
MW-21
MW-21


Sulfate vs TPH-G
SO4 (ppm)
TPH-G (ppb)
120.0
100.0
80.0
60.0
40.0
20.0
0.0
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
MW-28
MW-17
MW-6
MW-21
MW-23
MW-19

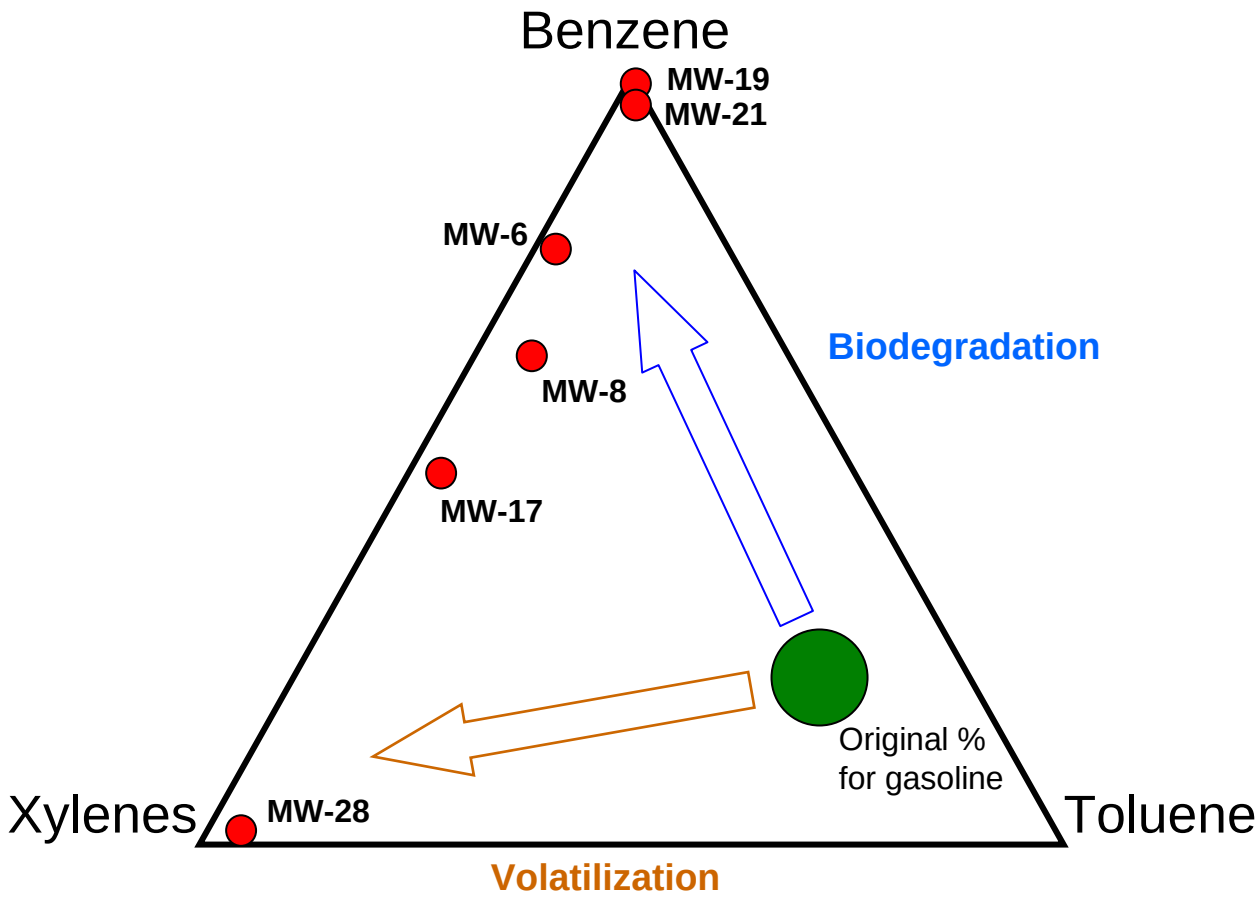

Dissolved Oxygen vs TPH-G
D.O. (mg/L)
TPH-G (ppb)
0
1
2
3
4
5
6
7
8
9
10
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
MW-23
MW-6
MW-28
MW-28
MW-21
MW-23
MW-28
MW-23
MW-23
MW-6
MW-21
MW-28
MW-28
MW-19
MW-21
MW-28
MW-17
MW-28
MW-19
MW-21
MW-17
MW-19
MW-19
MW-19
MW-19
MW-6
MW-17
MW-17
MW-21
MW-21
MW-17
MW-21



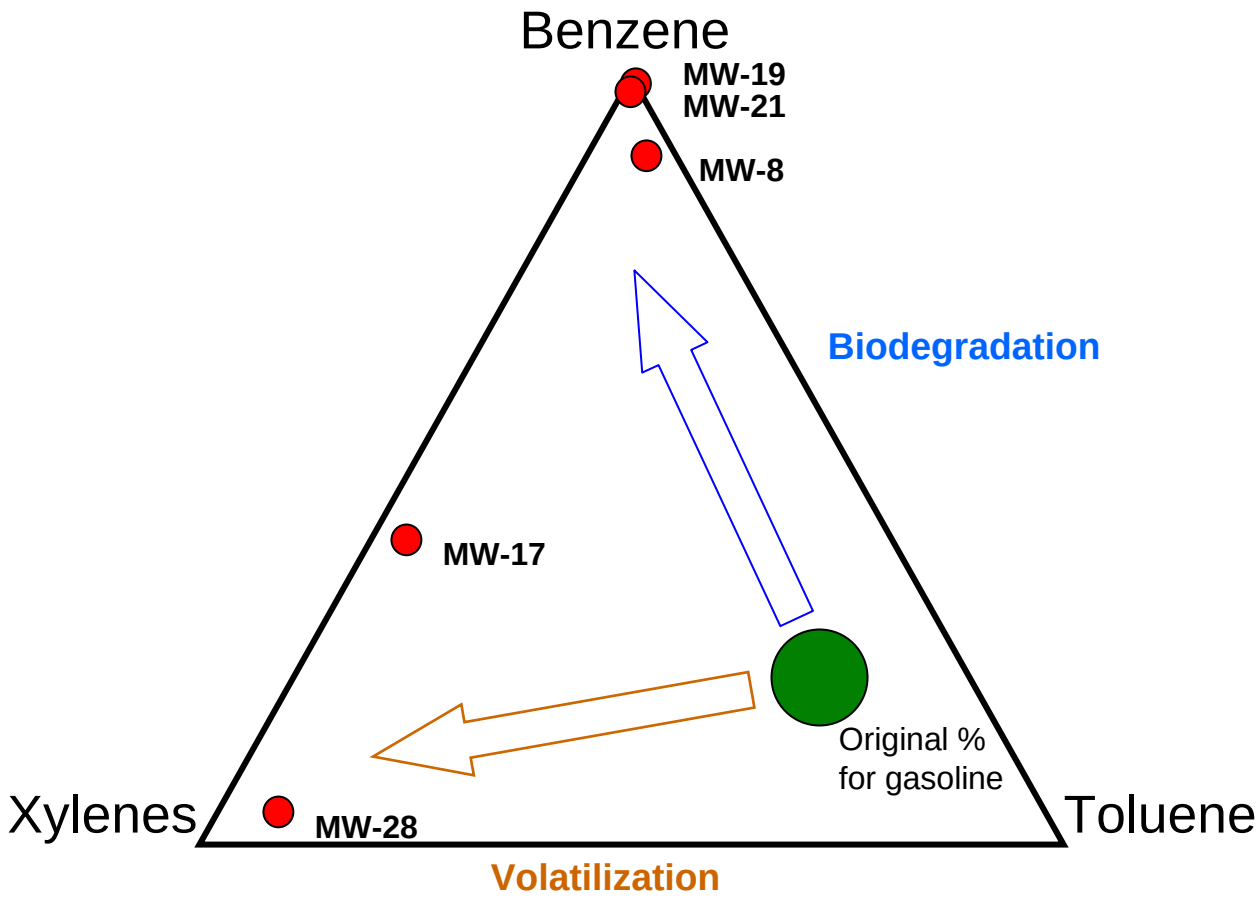
Ternary Diagram of BTX Proportions from Groundwater Sampling in March 1993
(Except MW-5 sampled in March 1992)



Ternary Diagram of BTX Proportions from Groundwater Sampling in September 1999



Ternary Diagram of BTX Proportions from Groundwater Sampling in July 2003
(BTX Constituents in MW-5 are non-detectable)



Ternary Diagram of BTX Proportions from Groundwater Sampling in July 2005
(BTX Constituents in MW-6 are non-detectable)