ENVIRONMENTAL SITE ASSESSMENT: PHASE I

at

2805 West Commodore Way
Seattle, Washington

Prepared for

Time Oil Company

August 25, 2000

Prepared by

FOSTER WHEELER

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1. INTRODUCTION

Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) has been retained by the Time Oil Company (TOC) to conduct Phase I Environmental Site Assessments (ESAs) at seven properties located on West Commodore Way. The properties are all owned by TOC and are located within a ¼-mile radius.

This report presents the results of the Phase I ESA of the property located at 2805 West Commodore Way, Seattle, Washington (the Property), shown in Figure 1. This report was prepared by Foster Wheeler Environmental for the sole use of TOC and with the express limitations detailed in Section 1.2. The format of this report is generally consistent with the recommended format in "Standard Practice for Environmental Site Assessment: Phase I," issued by the American Society for Testing Materials (ASTM) Standard E 1527-97.

1.1 PURPOSE

Pursuant to the scope of work, the purpose of this ESA was to identify recognized environmental conditions in connection with the property. As defined in Standard E 1527-97, "recognized environmental conditions" means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

1.2 LIMITING CONDITIONS AND METHODOLOGY USED

The ESA was performed by Bryan S. Graham, RG, of Foster Wheeler Environmental. The scope of services for this project was limited to the following tasks:

- Task 1–Property Reconnaissance
- Task 2–Interview of Land Owner(s), Current Lessees, and Tenants
- Task 3–Regulatory Agency Database Search
- Task 4–Data Analysis and Report Preparation



Figure 1

Time Oil Company Phase 1
Environmental Site Assessment

Location of
Target Property

c:\projects\time_oil\vic_map.apr June 2000

Historical photographs were purchased from Walker & Associates. Available records and files were reviewed from:

- Seattle Department of Design, Construction, and Land Use
- Washington State Department of Ecology (Ecology)
- King County Tax Assessors Office
- Puget Sound Regional Archives

The above tasks were accomplished in accordance with ASTM Standard E 1527-97. The ESA did not include wetlands evaluation; testing for or surveying of asbestos and radon, lead in tap water, or lead paint; or soil or groundwater sampling.

2. PROPERTY LOCATION AND DESCRIPTION

2.1 PROPERTY LOCATION AND LEGAL DESCRIPTION

TOC owns the Property located at 2805 West Commodore Way, Seattle, Washington. The Property is currently leased to ASKO Hydraulic. The Property is within Section 11, township 25 north, range 3 east, Lawton Park, portions of Blocks 3, 4, and 5.

2.2 PROPERTY DESCRIPTION

Figure 2 shows the layout of the Property. Two structures are located on the Property. The main structure is a metal frame building with corrugated sheet metal siding. The interior of the main building is divided into separate areas including a storage area (location of oil/water separator, paint room, and sand blasting area). Offices are located on the north side of the building. The second structure located on the Property is a petroleum storage shed situated on the east portion of the Property. At the time of the visit there were six 55-gallon drums of machine/lube oil and coolant in secondary containment and seven 55-gallon drums of used oil. This open-air shed is used to store lube oils and petroleum products (oil and gas) prior to disposal. A small brick room is in the center of shed. The drum storage shed was constructed in approximately 1996. The area surrounding the building is paved, with the exception of the back of the property, which is a grassy bank leading toward the Burlington Northern rail line.

According to interviews with current and previous TOC employees, the Property owner, the current tenant (ASKO Hydraulic), and available regulatory files, there are no known or

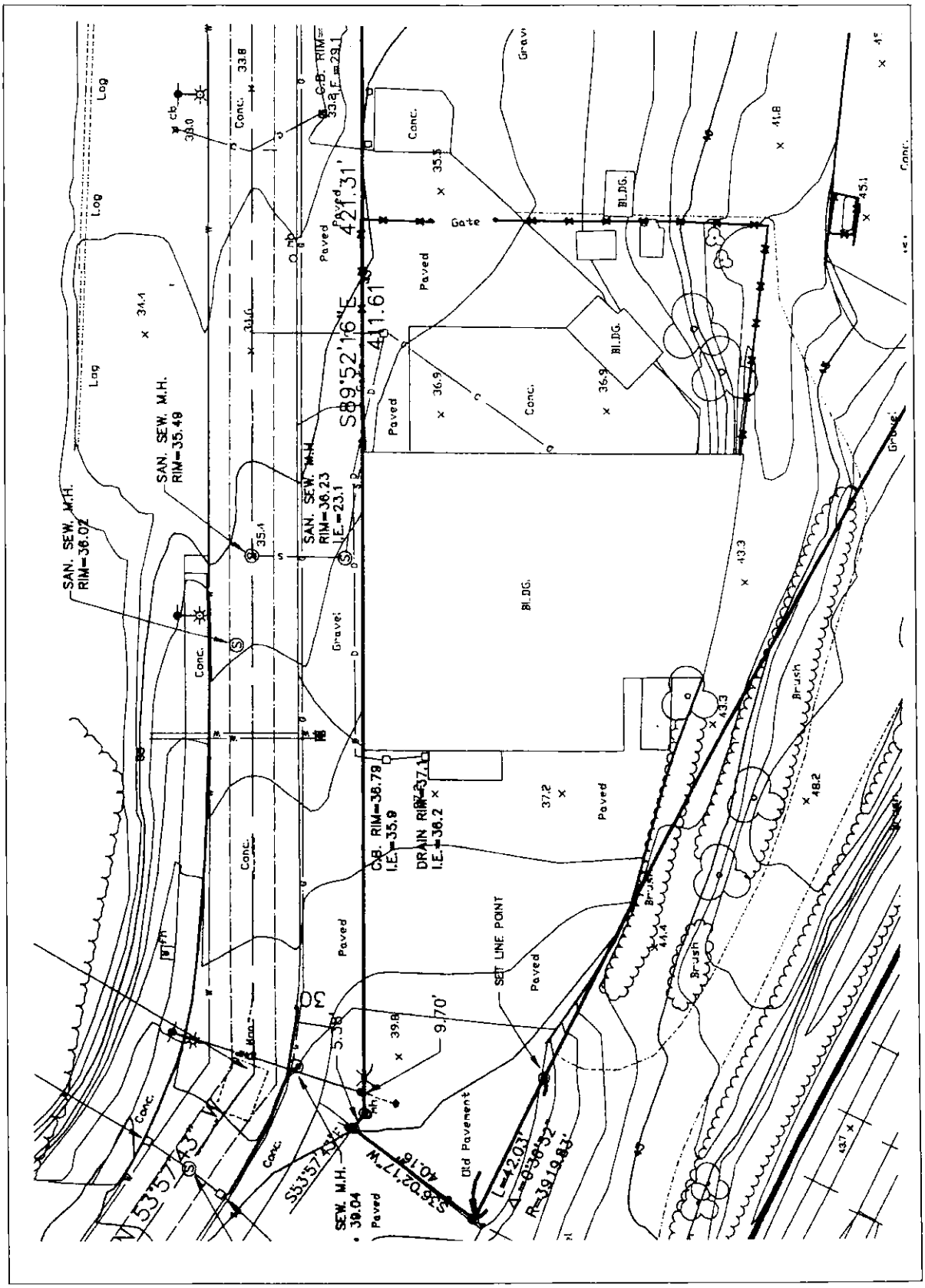

Figure 2. Layout of the Property at 2805 West Commodore Way

recorded wells or underground storage tanks on the Property. Appendix A shows photographs taken at the Property.

2.3 ADJOINING PROPERTIES

The area surrounding the Property generally consists of light industrial businesses, condominiums, and the ship canal. The Property is bounded on the northwest by Norpol Trawl; to the southwest by the Burlington Northern rail line; to the southeast by TOC's fuel storage facility; and to the northeast by West Commodore Way.

2.4 PROPERTY OPERATIONS

ASKO Hydraulic currently leases the Property from TOC and operates a machining and grinding business. Metal parts and equipment are brought to the shop where they are finished or re-tooled. The main shop houses drills, lathes, cutting racks, and sanding booths. Excess petroleum-based lubricants used in the grinding and machining process are contained by means of 5-gallon drip pails for recycling and reuse.

A steam cleaning area is located on the east side of the building. Parts are cleaned in this bermed area and the water is collected in a sump and transferred via subsurface piping to an oil water separator. Approximately 100 to 200 gallons of petroleum products are removed from the Property each month by a disposal company.

2.5 PROPERTY HISTORY

Information about the history of the Property was derived from a review of available documents, historical photographs, and regulatory records. Former and current employees of TOC were also interviewed.

The Property, which was originally broken into smaller lots, was acquired by the Time Oil Company from 1946 to 1950. Appendix B contains historical photographs taken from 1936 to 1997 of the Property and surrounding area. The earliest available photograph (1936) shows the Property as an undeveloped parcel. The 1946 photograph indicates that the Property had been cleared and was being used by TOC for the staging of empty 55-gallon drums. This information was verified during interviews of TOC personnel conducted on June 16, 2000. The aerial photograph dated 1960 shows the Property being used as a vehicle storage and parking lot. The current facility on the Property appears for the first time in the photograph from 1974. According to the King County Department of Design, Construction, and Land Use files, the building on the Property was planned as early as 1964.

However, according to TOC employees interviewed, the building wasn't constructed until the late 1960s. The original purpose of the building was to service TOC's vehicles. According to the TOC real estate department, the Property was used by:

- Precision Engineering Specialists for marine and trucking rebuilds from 1974 to 1976
- Select Industries used the building as a warehouse and machine shop from 1976 to 1979. Select Industries became ASKO in 1979. ASKO has leased the building from 1979 to present.

Mr. Bill Thompson (ASKO) was interviewed regarding the evolution of operations at the Property. According to Mr. Thompson, several changes have occurred at the Property since it was originally built. The oil storage shed was added around 1996. Until then petroleum products were stored in a rack in that area. According to Mr. Thompson, the change was made in response to current regulations and the request of the local fire marshal. At some time, though documentation was not available to clarify when, the wash rack on the south side of the building was enclosed and converted to a storage area. According to interviews with TOC employees and Mr. Bill Thompson, a small (< 600-gallon) heating oil underground storage tank (UST) was removed outside the northeast corner of the building. No reports were available regarding the removal of this UST. However, the King County Department of Design, Construction, and Land Use does have a permit application from 1964 on file for the installation of two 550-gallon oil tanks at the Property. A second UST at the Property could not be confirmed.

3. RESULTS OF INVESTIGATION AND RECORDS REVIEW

3.1 PROPERTY INSPECTION OBSERVATIONS

On June 6, 2000, Foster Wheeler Environmental conducted a reconnaissance of the Property. The purpose of the visit was to obtain information relating to recognized environmental conditions, if any, associated with the Property.

In general, the interior of the main building was well kept. There were no visible cracks or stains on the floor. A few of the machines had sorbent material placed near them on the floor to absorb lube oils. The area near the oil/water separator had small quantities of oil on the floor near the base of the separator. It was not clear whether the oil originated from the separator or was transferred there from another area and subsequently spilled. The area

where the steam cleaning takes place was blackened from use; as was the wall of the building.

The drum storage shed was in good shape. Drums were stored in secondary containment. The floor of the petroleum storage drum area showed some staining from use.

3.2 RECORDS REVIEW

Because all of the properties for which Phase I ESAs were conducted are in close proximity to one another, one central point was used for the database search; that central point was the TOC property at 2737 West Commodore Way. The results of the database search are relative the property at 2737 West Commodore Way, located just a few blocks east of the target Property. Consequently, the information is transferable to the Property at 2805 West Commodore Way. The Phase I database search was performed by EDR, Inc. EDR searched readily available state, federal, regional, and local agency database listings. The results of the database search are presented in the following subsections. The entire EDR report is presented in the ESA for 2737 West Commodore Way (Foster Wheeler Environmental, 2000). As specified in ASTM E 1527-97, the following government records were reviewed:

- EPA National Priorities List (NPL) within 1.0 mile
- EPA Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) within ½ mile
- EPA Resource Conservation and Recovery Act (RCRA) Corrective Action Reports (CORRACTS) within 1.0 mile
- EPA RCRA non-CORRACTS Treatment, Storage, and Disposal Facilities within ½ mile
- EPA RCRA generators list on the Property and adjoining properties
- Emergency Response Notification System (ERNS) list on the Property
- State Hazardous Waste Site List within 1.0 mile
- Leaking Underground Storage Tanks (LUST) list within ½ mile
- State Registered UST list on the Property and adjoining properties
- Solid Waste/Landfills within ½ mile.

3.2.1 EPA National Priorities List (NPL)

The NPL identifies federal Superfund Sites with the highest priority for cleanup. ASTM Standards require the identification of NPL sites within 1 mile of the subject property. There were no NPL sites identified within a 1-mile radius of the Property.

3.2.2 EPA Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)

The CERCLIS list identifies sites that the USEPA has investigated or is in the process of investigating for potential hazardous substance contamination. A CERCLIS site may or may not become a NPL site. ASTM Standards require the identification of CERCLIS sites within ½ mile of the subject property. The EDR report did not identify any CERCLIS sites within a ½ mile radius of the Property.

3.2.3 EPA Resource Conservation and Recovery Act (RCRA) Corrective Action Reports (CORRACTS)

RCRA tracks the status and filing of any corrective actions that have taken place at a facility. ASTM Standards require the identification of RCRA CORRACTS facilities within 1 mile of the subject property. The EDR report did not identify any such facilities within a 1-mile radius of the Property.

3.2.4 EPA RCRA non-CORRACTS Treatment, Storage, and Disposal Facilities

RCRA non-CORRACTS Treatment, Storage, and Disposal (TSD) Facilities are those facilities on which treatment, storage, and/or disposal of hazardous wastes takes place and at which corrective remedial action has not been required by EPA, as defined and regulated by RCRA. The ASTM Standards require the identification of RCRA non-CORRACTS TSD Facilities within ½ mile of the subject property. This information is listed in the EDR report under the heading of Resource Conservation and Recovery Information System (RCRIS) TSD Facilities, which are substantively the same. The EDR report did not identify any such facilities within ½ mile of the Property.

3.2.5 EPA RCRA Generators List

The ASTM Standards require the identification of RCRA generators on or adjacent to the subject property. RCRIS includes information on facilities that generate, transport, store, treat and/or dispose of hazardous wastes as defined and regulated by RCRA, and as listed in the EDR report. The EDR report showed 11 RCRIS small quantity generators (SQGs) within ¼ mile of the site. The SQGs include:

- Aickinstrut Incorporated 2901 West Commodore Way
- ASKO Hydraulic Repair 2805 West Commodore Way

• Icicle Seafoods, Inc. (no longer in operation)	2752 West Commodore Way (also listed as 2770 West Commodore Way)
• Northwest Awning Fabric, Inc.	2600 West Commodore Way
• Tosco Corp. Seattle Terminal	2740 West Commodore Way
• Seattle Port Maritime Industries	2700 West Commodore Way
• U.S. DOT CG Support Center	2700 West Commodore Way
• Sea Coast Towing, Inc.	2700 West Commodore Way
• Rapp Hydema U.S., Inc.	4433 27th Avenue West
• Abella Woodworking, Inc.	2600 West Commodore Way
• Gilman Pl. Waste Pain	4439 Gilman PL W

ASKO is listed as an SQG according to the EDR database search and according to Ecology's Facility/Site Identification System (FSIS). As previously mentioned, the facility does generate approximately 100 to 200 gallons of petroleum waste each month. Ecology's FSIS lists the operations as "active" and shows that their waste discharge permit is "inactive."

3.2.6 Federal Emergency Response Notification System (ERNS) List

The ERNS list records and stores information on reported releases of oil and hazardous substances. ASTM Standards require the identification of ERNS on the subject property. The EDR report did not identify the Property as appearing on the ERNS list.

3.2.7 State Hazardous Waste List

The State of Washington lists potential or confirmed hazardous substance release properties on Ecology's Confirmed and Suspected Contaminated Sites List (CSCSL) Database. The ASTM Standard requires the identification of these sites within 1 mile of the subject property. There were 20 sites on the CSCSL identified within 1 mile of the Property. The sites listed on the EDR report are:

• Springer Dave	4459 26th Avenue West
• Washington Marine Engine Co.	4403 24th Avenue West (listed twice on database)
• U.S. Army Corps of Engineers	3015 NW 54th Street
• Dyno Battery Co.	4248 23rd Avenue West
• NW Market Street Site	2801 NW Market Street
• Salmon Bay Center	5301-5309 Shilshole Avenue

• Weiman Property	5332 Ballard Avenue NW
• Thordarson Property	2200 West Emerson Place
• Chevron 60090968	2021 NW Market Street
• Ballard Auto Wrecking	1515 NW Leary Way
• Ballard Recycling	1509 NW 49th Street
• Interbay Prints	1809 West Emerson
• Discovery Park Old Maint Yd	Discovery Park 40th West
• The Tux Shop	5409 15th Avenue NW
• Mamco MFG Bldg.	1415/1427 NW 49th Street (listed twice on database)
• General Disposal Corp.	1415 NW Ballard Way
• Bardahl	1400 NW 52nd Street
• Anderson Marine Repair	2360 West Commodore Way

3.2.8 EPA Leaking Underground Storage Tank (LUST) Sites

The LUST list show the sites containing one or more underground storage tanks that have been identified as having leaked or are potentially leaking their contents into the ground or groundwater. The ASTM Standards require the identification of LUST sites within ½ mile of the subject property. There are eight LUST Sites within ½ mile of the Property. The sites listed in the EDR report are:

• Time Oil Co.	2754 West Commodore Way
• Time Oil Co.	2750 West Commodore Way
• USCG Support Center	2700 West Commodore Way
• Time Oil Co.	3031 West Commodore Way
• Ric's Automotive and Texaco	3317 West Government Way
• Hiram Chittenden Locks	3015 Northwest 54th Street
• Northwest Market Street	2801 NW Market Street
• Sabroe Refrigeration, Inc.	4401 23rd Avenue West

3.2.9 EPA Underground Storage Tank (UST) Sites

The UST list shows the sites containing one or more underground storage tanks that have been identified as being located on the subject property. The ASTM Standards require the identification of USTs on the subject property and adjoining properties. There are five USTs within ¼ mile of the Property. The sites listed in the EDR report are:

• Time Oil Co.	2754 West Commodore Way

- Time Oil Co. 2752 West Commodore Way
- USCG Support Center 2700 West Commodore Way
- Time Oil Co. 3031 West Commodore Way
- Northwest Instrument Co. 2525 West Commodore Way

3.2.10 Solid Waste/Landfill Facilities

Solid waste/landfill facilities are those sites that currently accept, or have in the past accepted, waste of any kind for disposal on site. The ASTM Standards require the identification of solid waste/landfill sites within ½ mile of the subject property. The EDR report did not identify any such sites within ½ mile of the Property.

4. CONCLUSIONS AND RECOMMENDATIONS

Foster Wheeler Environmental conducted a Phase I ESA of the Property at 2805 West Commodore Way, Seattle, Washington. The purpose of this Phase I ESA was to identify, to the extent feasible pursuant to the processes described herein, recognized environmental conditions, if any, associated with the Property. Our findings are summarized below.

According to available information, the Property has been used for light industrial activities (automobile maintenance, marine engine and hydraulic equipment repair) since the late 1960s. There are no registered USTs on the Property, though a permit is on file for the installation of two USTs and interviews confirmed the removal of only one UST. The Property has not been subject to any state or federal investigations relating to potential environmental contamination.

The EDR report listed four LUST sites near the target Property. The USTs and associated contaminated soil were removed from the TOC and Coast Guard properties. The sites remain on the LUST database because they have not been formally reviewed by Ecology.

Additional subsurface investigation may be necessary to determine the condition of soil beneath the steam cleaning area, near the drum storage shed, and the former heating oil UST.

4.1 LIMITATIONS

This report is prepared for the sole use of TOC, pursuant to their contract with Foster Wheeler Environmental. The scope of work and the findings should not be considered suitable for other potential users, and any use by other parties shall be at their sole risk.

This report is based on the review of limited data, as described herein, in accordance with generally accepted professional practices, applicable to work of similar nature and complexity in similar localities, at the time the services were performed. No warranty, expressed or implied, is made. The scope of this report is limited in nature and intended to provide a preliminary evaluation of the current conspicuous environmental conditions at the Property at the time of the report, and does not constitute definitive or in-depth review of all the potential environmental impairments and situations. Foster Wheeler Environmental assumes no responsibility for conditions of which it is unaware and/or as to which there was no opportunity or request for review.

It is important to recognize that even the most comprehensive scope of services may not detect all the environmental liabilities at a particular Property. Therefore, nothing herein shall be construed as a representation or certification that the Property is either fully characterized or is free of environmental impairments and/or contamination.

In order to conduct the investigation for this report, Foster Wheeler Environmental relied upon readily available information, as discussed in the report, and unless explicitly included in our scope, included no verification of the accuracy or completeness of documentation or data or possible withholding of information by the interviewees, agencies, or other parties. [Please also refer to the EDR Disclaimer.]

5. REFERENCES

EDR (Environmental Data Resources). 2000. The EDR-Radius Map with GeoCheck®, prepared for Time Oil Company. Inquiry Number 502304.1s. June 2, 2000.

EPA (U.S. Environmental Protection Agency). 2000. CERCLIS, RODS, & Archive (NFRAP) Information Database. Downloaded June 19, 2000. www.epa.gov/superfund/sites/cursites/index.htm.

Foster Wheeler Environmental. 2000. Environmental Site Assessment: Phase I for Time Oil Company, 2737 West Commodore Way, Seattle, Washington. August 4, 2000.

National Priorities List (NPL) Sites in Washington. Downloaded June 19, 2000. www.epa.gov/superfund/sites/npl/wa.htm.

Washington State Department of Ecology Web Site. Downloaded on May 12, 2000. Facility/Site Identification System. www.wa.gov/ecology/iss/fsweb/fshelp.html.

APPENDIX A

PROPERTY PHOTOGRAPHS

Property Photographs from 2805 West Commodore Way

1. West side of ASKO located at 2805 West Commodore Way.
2. South side of ASKO building, former wash rack behind container.
3. Norpol Trawl is located to the west of the Property.
4. East side of ASKO building located on the Property.
5. Parts cleaning area. Water is collected in an oil/water separator.
6. Drum storage area on the east side of the Property.
7. Waste oil drums in drum storage area.
8. Miscellaneous debris on east side of the Property.
9. Looking inside shop. Oil from machinery is collected in 5-gallon bucket under the bench.



1


2


3


ASK
MACHINING GRINDING
WELDING FABRICATION
CHROME PLATING
HYDRAULIC REPAIR
284-2659
4


5


6


7


8



APPENDIX B

HISTORICAL PHOTOGRAPHS

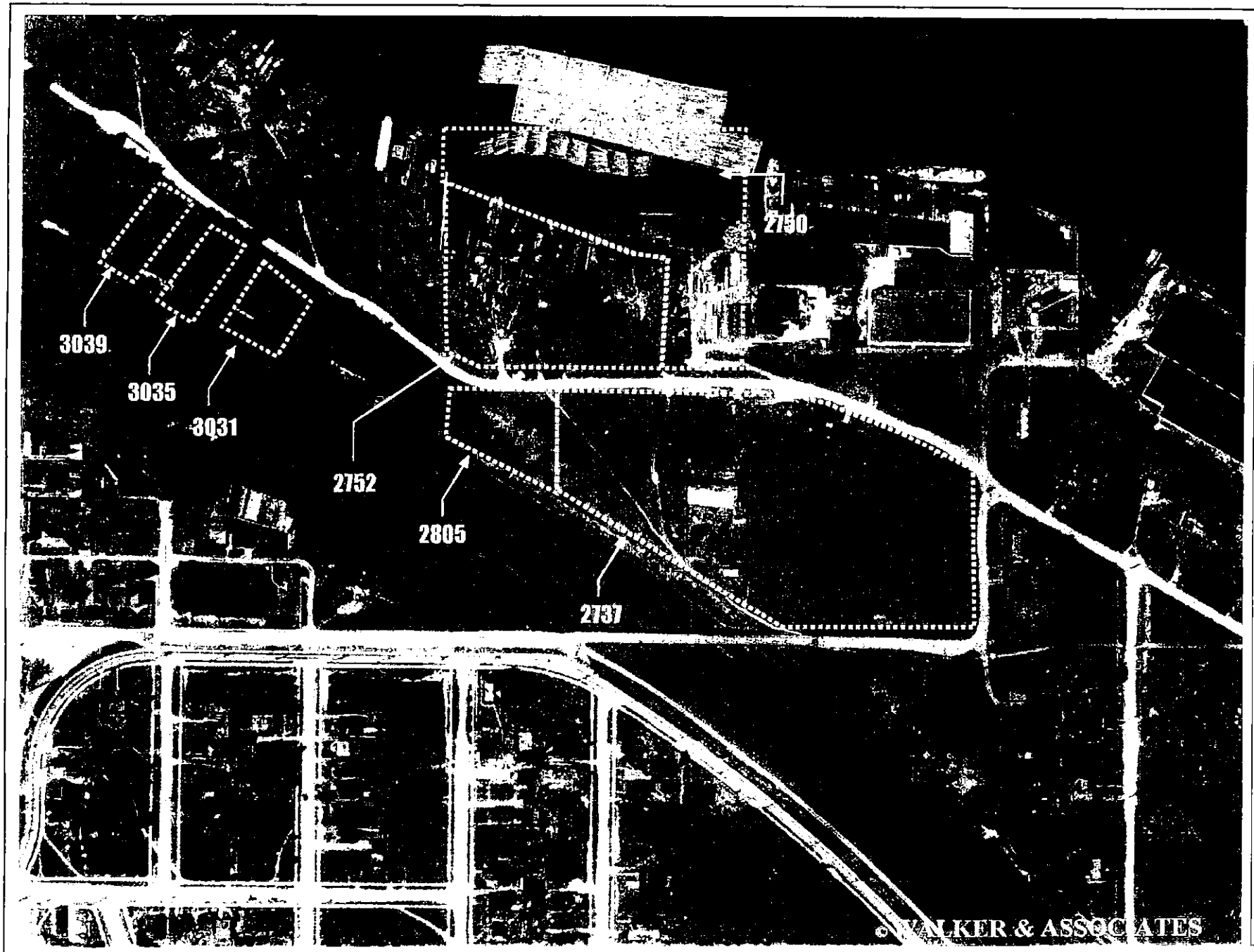

Figure B-1 Aerial Photo of West Commodore Way (1936)



Figure B-2 Aerial Photo of West Commodore Way (1946)

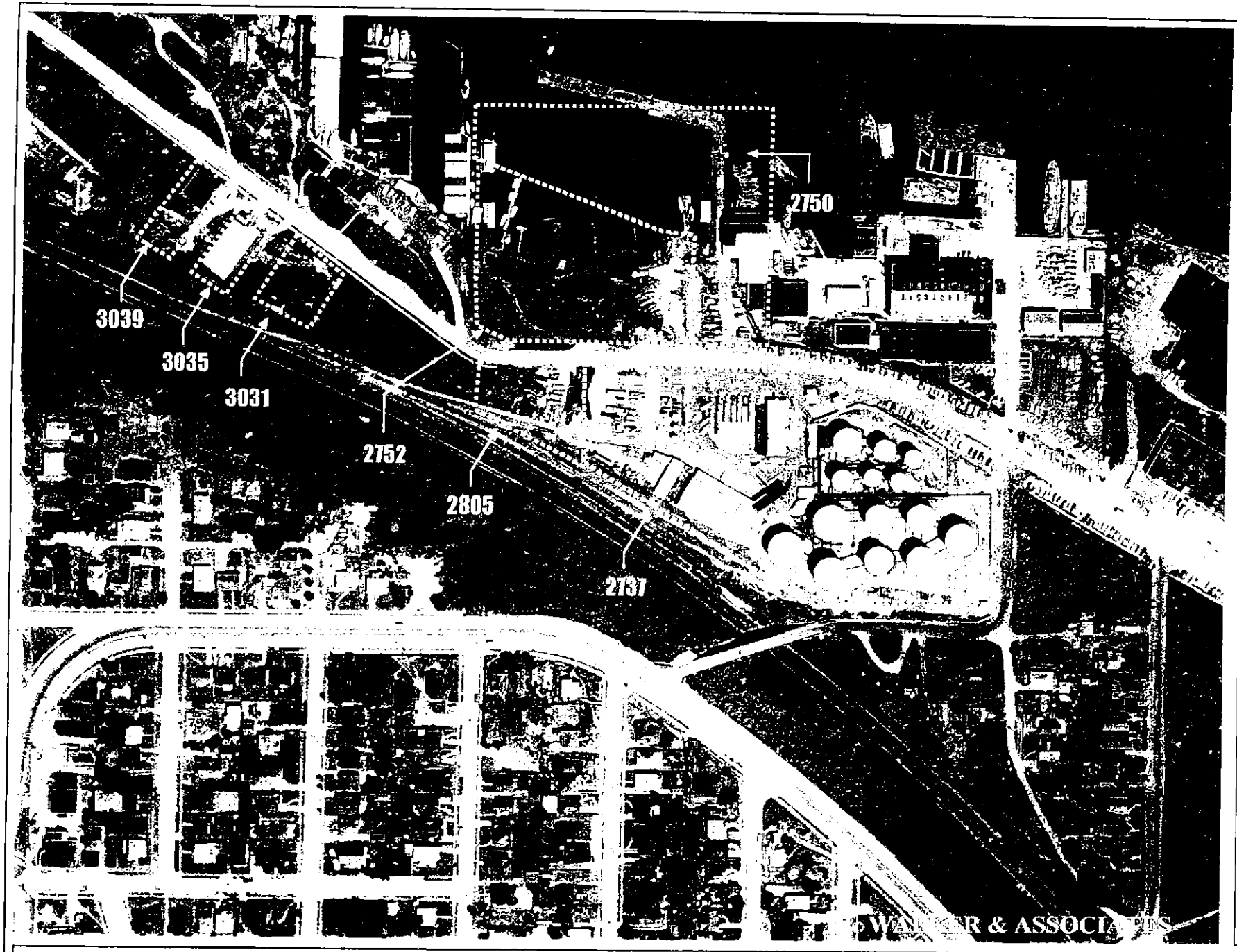

Figure B-3 Aerial Photo of West Commodore Way (1960)

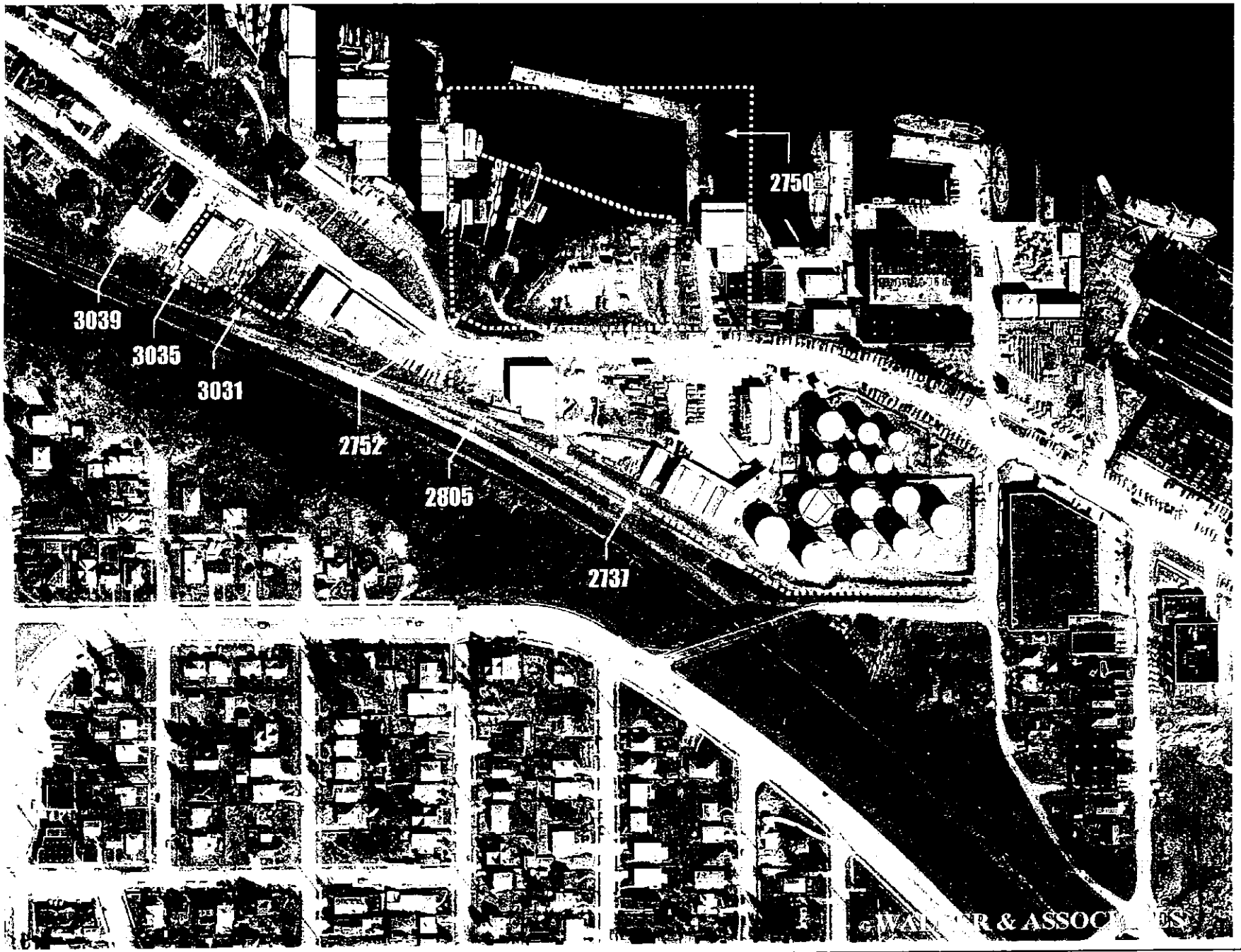

Figure B-4 Aerial Photo of West Commodore Way (1974)



Figure B-5 Aerial Photo of West Commodore Way (1997)

FINAL
ENVIRONMENTAL SITE ASSESSMENT: PHASE II

at

2805 West Commodore Way
Seattle, Washington

Prepared for

Time Oil Company

April 6, 2001

Prepared by

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GREEN DOVE AWARD ISO 14001 BGB

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1. INTRODUCTION

In November 2000, Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) completed Phase I Environmental Site Assessments (ESAs) at seven properties owned by the Time Oil Company (TOC) located along West Commodore Way, in Seattle, Washington. The results of the Phase I ESA activity were documented in Phase I ESA reports prepared for each of the seven properties (Foster Wheeler Environmental 2000).

The Phase I ESA report prepared for the property located at 2805 West Commodore Way (Property) (Figure 1-1) indicated that additional investigation was required to better understand subsurface conditions in three areas of the Property. Consequently, Phase II ESA activities were initiated at the Property in November 2000. This report presents the results of the Phase II ESA activities of the property located at 2805 West Commodore Way, Seattle, Washington.

1.1 PURPOSE AND REPORT ORGANIZATION

The purpose of the Phase II field activities is to evaluate the subsurface conditions in specific areas identified during the Phase I ESA. This report is organized into six sections and two appendices as follows:

- Section 1 – Introduction
- Section 2 – Property History and Previous Investigations
- Section 3 – Field Activities
- Section 4 – Analytical Results
- Section 5 – Conclusions and Recommendations
- Section 6 – References
- Appendix A – Soil Boring Logs
- Appendix B – Laboratory Data Packages

1.2 PROJECT OBJECTIVES

The results of the Phase I ESA conducted at the Property suggested that further action be conducted at three areas at the Property to better quantify conditions in the subsurface. Figure 1-2 shows the layout of the Property and the areas investigated. These three areas and the justification for additional investigation are as follows:

1) Steam Cleaning Area—A steam cleaning area is located near the southeast corner of the ASKO Hydraulic, Inc. (ASKO) building. Oily water is collected in a floor drain and transferred to an oil/water separator located in the building immediately to the west. One soil boring was recommended in this area to evaluate the subsurface conditions.
2) Heating Oil Underground Storage Tank (UST)—During the employee interview process, it was discovered that a 500-gallon or smaller heating oil UST had been removed from the northeast corner of the ASKO building. There were no records or reports available to confirm this action or what the subsurface conditions were at the time of removal. Subsequently, soil borings were recommended to evaluate the subsurface conditions in the area of the suspected former UST.
3) Oil and Solvent Storage Area—An oil and solvent storage area is located just northeast of the steam cleaning area. Two soil borings were recommended in this area to evaluate the subsurface conditions.

1.3 PROPERTY DESCRIPTION

Site Address:	ASKO Hydraulic, Inc. 2805 West Commodore Way Seattle, Washington 98199
Property Owner:	Time Oil Company 2737 West Commodore Way Seattle, Washington 98199
Legal Description:	Section 11, township 25 north, range 3 east, Lawton Park, portions of Blocks 3, 4, and 5.

2. PROPERTY HISTORY AND PREVIOUS INVESTIGATIONS

Information about the history of the Property was derived from a review of available documents, historical photographs, and regulatory records. Former and current employees of TOC were also interviewed.

The Property, which was originally divided into smaller lots, was acquired by TOC from 1946 to approximately 1950. According the historical photographs, the Property was undeveloped in 1936. By 1946 the Property had been cleared and was used by TOC for the staging of empty 55-gallon drums. A photograph from 1960 showed the Property being

used as a parking lot. The current facility on the Property appears for the first time in the 1974 photograph, after being constructed in the late 1960s. The facility was originally built to service TOC's vehicles. From 1974 to 1976 the facility was used by Precision Engineering Specialists for marine and truck engine rebuilding. From 1976 to 1979 the facility was used as a warehouse and machine shop by Select Industries. Select Industries became ASKO Hydraulic in 1979.

Mr. Bill Thompson (ASKO) was interviewed during the Phase I ESA. According to Mr. Thompson, several changes have occurred at the Property since it was originally built. The oil storage shed was added around 1996. Until then petroleum products were stored on a rack in the area. The change was made in response to current regulations and the local fire marshal directives. According to Mr. Thompson, a small (<500 gallons) heating oil UST was removed outside the northeast corner of the building. No reports were available regarding the removal of this UST. However, the King County Department of Design, Construction, and Land Use has a permit application from 1964 on file for the installation of two 55-gallon USTs on the Property. The presence of a second UST could not be confirmed.

No previous investigations have been conducted at the facility.

3. FIELD ACTIVITIES

Field activities at 2805 West Commodore Way included soil borings, soil sampling, and surveying. The following sections describe the methodology used to complete the field activities.

3.1 SOIL BORINGS

3.1.1 Soil Boring Locations

Six soil borings were drilled at the following locations as part of the Phase II ESA at the Property (Figure 3-1):

Steam Cleaning Area:

- Boring SB-40 was located in the steam cleaning area and advanced to a depth of 15 feet (groundwater was not contacted).

Former Heating Oil UST:

- Boring SB-46 was located to the north of the former heating oil tank and advanced to a depth of 25 feet where groundwater was contacted.
- Boring SB-47 was located in the center of the former heating oil tank and advanced to a depth of 25 feet (groundwater was not contacted).
- Boring SB-48 was located to the east of the former heating oil tank and advanced to a depth of 25 feet (groundwater was not contacted).

Oil and Solvent Storage Area:

- Boring SB-49 was located west of the oil rack and advanced to a depth of 15 feet (groundwater was not contacted).
- Boring SB-50 was located east of the oil rack and advanced to a depth of 15 feet (groundwater was not contacted).

3.1.2 Soil Boring Methods

Five of the six soil borings drilled at the Property were drilled with a CME 75 high torque drill rig operated by Cascade Drilling. The soil boring located in the steam cleaning area was drilled with a limited access rig. The augers used on both rigs were 4.25-inch inner diameter (ID) hollow stem. Split-spoon samples were driven every 5 feet to describe lithologies and collect soil samples. An extra split-spoon sample was driven at the 2-foot-depth interval. Split-spoon samples were 12 inches long (not including the shoe), 2-inch ID, and driven by a 300-pound down-hole jar hammer. Appendix A contains the soil boring logs for the Property.

3.1.3 Soil Sampling Methods

Soil samples were collected directly from the split-spoon and placed in the appropriate laboratory-supplied sample container. The samples were analyzed for gasoline; benzene, toluene, ethylbenzene, and xylene (BTEX) using NWTPH-Gx/BTEX Method; diesel and oil using NWTPH-Dx; total metals using U.S. Environmental Protection Agency (EPA) 6010A/7000A series; and volatile organic compounds (VOCs) using EPA Method 8260. The gasoline/BTEX and VOCs samples were collected first out of each spoon. The sample containers were placed in sealed plastic bags and placed directly into a chilled cooler for transport to the laboratory. North Creek Analytical (Bothell, Washington) received the samples at the end of each day in the field.

The split-spoons were decontaminated by thoroughly washing them in soapy water, rinsing with water, rinsing with methanol, and finally rinsing with deionized water supplied by the analytical laboratory.

3.1.4 Field Screening Methods

Soil samples were screened in the field using a photoionization detector (PID) HNu Model P101 equipped with a 10.2 electron volt lamp. A few of the samples were screened using a Hanby Field Test Kit designed for detecting petroleum in soil. The Hanby Kit is a semi-quantitative kit where 5 grams of soil are mixed with a proprietary extract, then the extract is decanted and mixed with a catalyst and agitated for 4 minutes. The extract reacts with the catalyst. The color change in the extract indicates the type of fuel present and approximate concentration.

3.2 SURVEYING

The surveying of the soil boring locations was conducted by Inca Engineering, Inc. Horizontal control was specified to 0.1 foot, based on Washington State Plane Coordinate System, North America Datum (NAD) 83/91 City of Seattle. Vertical control was specified to 0.01 foot, based on the National Geodetic Vertical Datum, North America Vertical Datum (NAVD) 88 City of Seattle. Table 3-1 lists the soil borings, survey data, and total depths of each boring.

3.3 INVESTIGATION-DERIVED WASTE

Soil cuttings from the Property were collected in the bucket of a loader and taken to the stockpile on the west end of the parking lot at 2737 West Commodore Way for disposal by TOC. Decontamination water was collected by the drilling company in 55-gallon type 1A drums, transferred to TOC, and stored behind the warehouse at 2737 West Commodore Way.

4. ANALYTICAL RESULTS

Soil samples were analyzed by North Creek Analytical Labs in Bothell, Washington. Where applicable, results were compared to Washington State Department of Ecology's (Ecology) proposed Method A soil cleanup levels for unrestricted land use. Ecology's proposed rule does not differentiate between industrial property and unrestricted land use, and is expected to be adopted within 6 months. Proposed soil cleanup levels for diesel and oil are higher

than the current MTCA Method A cleanup levels, and proposed soil cleanup levels for gasoline have been divided into two categories: gasoline without benzene and less than 20 percent aromatics between EC8 and EC16 (proposed soil cleanup level of 100 mg/kg); and all other gasoline mixtures (proposed soil cleanup level of 30 mg/kg). Proposed BTEX cleanup levels for soil have been lowered. Groundwater concentrations were compared to the MTCA Method A cleanup levels for groundwater. Appendix B contains the laboratory data packages for the samples collected at the Property. In addition to the data from 2805 West Commodore Way, data packages B0K0576 and B0K0638 contain results for samples collected at other properties not related to this Property. The data packages are presented in their entirety to allow the reader to evaluate the environmental data with the associated quality assurance/quality control data.

4.1 FORMER HEATING OIL UST

Three soil borings were located near the former heating oil UST. Seventeen soil samples were collected from three soil borings and analyzed for gasoline, diesel, and oil. Summaries for the analytical results are presented in Tables 4-1 through 4-3. Gasoline was not detected above the method reporting limit (5.00 mg/kg) in any of the samples collected. Diesel was detected at 2 feet (90.8 mg/kg) and at 10 feet (10.7 mg/kg) in boring SB-46. Oil was also detected at 2 feet (147 mg/kg) in SB-46. Diesel and oil were detected at 2 feet in SB-47 at concentrations of 87.9 mg/kg and 160 mg/kg, respectively. The concentrations detected were below the Model Toxics Control Act (MTCA) Method A cleanup levels for residential soil. None of the other samples from SB-46 and SB-47 contained concentrations of gasoline, diesel, or oil above the method reporting limit.

VOCs were not detected above the method reporting limit in any of the soil samples collected near the former heating oil UST.

None of the metals detected exceeded the MTCA Method A cleanup levels for residential soil.

4.2 STEAM CLEANING AREA

One soil boring (SB-40) was installed in the center of the steam cleaning area. Gasoline was detected at a depth of 10 feet (8.05 mg/kg). Diesel and oil were not detected in the soil samples from this boring. The concentration of gasoline detected was below the MTCA Method A cleanup level for residential soils.

Trichloroethene (TCE) was detected (0.170 mg/kg) at a depth of 10 feet. Samples from the other depth intervals did not contain concentrations of VOCs above the method reporting limit.

None of the metals detected exceeded the MTCA Method A cleanup levels for residential soil.

4.3 OIL STORAGE AREA

Two soil borings (SB-49 and SB-50) were installed near the oil storage area. Gasoline, diesel, and oil were detected at a depth of 2 feet in SB-49 at concentrations above the MTCA cleanup level. Gasoline was also detected at a depth of 10 feet at concentrations above the cleanup level. Samples from the 10-foot and 15-foot-depth interval did not contain concentrations of petroleum above the method reporting limit. The drilling of soil boring SB-49 was terminated at a depth of 15 feet to reduce the potential of carrying contamination down the hole and into the groundwater. Petroleum contaminants were not detected above the method reporting limit in SB-50.

Ethylbenzene, toluene, and xylene were detected in the soil samples collected from the 2-foot and 5-foot depth interval in SB-49. The concentrations of ethylbenzene and xylene exceeded the proposed MTCA Method A cleanup levels for soil (unrestricted land use). 1,2,3-trimethylbenzene and 1,3,5-trimethylbenzene were also detected in the 2-foot and 5-foot samples in SB-49. Samples from the 10-foot and 15-foot interval in boring SB-49 contained concentrations below the method reporting limit. TCE was detected in SB-49 at a depth of 10 feet and at a level slightly above the reporting limit and above the proposed cleanup level. None of the other samples reported TCE above the method reporting limit. VOCs were not detected above the method reporting limit in SB-50.

None of the metals detected exceeded the MTCA Method A cleanup levels for residential soil in either of the soil borings.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 SITE GEOLOGY

The stratigraphy beneath the site appears fairly consistent based on the six soil borings installed on the east side of the ASKO facility. In general, the upper 10 to 15 feet of the site consists of silty fine-grained sand. The sand is dense, tan to gray, and odorless. From 15 to

25 feet the site consists of well-sorted fine-grained sand. The color changes from brown to gray, with a slight increase in grain size at the water table.

5.2 NATURE AND EXTENT OF CONTAMINATION

Concentrations of diesel and oil were detected in SB-46 and SB-47 at a depth of 2 feet, and diesel was detected in SB-46 at a depth of 10 feet. None of the concentrations detected exceeded the MTCA Method A cleanup levels for residential soil. Petroleum-impacted soil was not detected in contact with the groundwater near the former heating oil UST.

Gasoline was detected at 10 feet in the steam cleaning area at concentrations below the MTCA Method A cleanup level. None of the other petroleum or VOC analytes were detected above the method reporting limit. The concentrations of metals detected were below the MTCA Method A cleanup levels for residential soil.

Concentrations of gasoline, diesel, and oil were detected above the proposed MTCA Method A cleanup levels for unrestricted land use in the samples collected from SB-49 (gasoline, diesel, and oil) at a depth of 2 feet and in SB-49 (gas) at a depth of 5 feet. Ethylbenzene, toluene, and xylene were also detected above the proposed MTCA Method A cleanup levels for unrestricted land use in the samples collected from 2 feet and 5 feet in SB-49; however, concentrations of these constituents in the 10-foot and 15-foot samples were below the method reporting limit. In addition, the Hanby Field Test Kit, from the 15-foot-depth interval, detected no petroleum-impacted soil. When samples SB-49-2 and SB-49-5 were analyzed for BTEX using NWTPH-Gx1BTEX Method, they did not contain concentrations of BTEX above the method reporting limit; VOC analysis (EPA Method 8260B) did show detections. The difference in the analytical results between the two methods could be due to nonhomogeneity of the soil samples or the differences between the two analytical methods. None of the analytes were detected above the method reporting limits in SB-50.

5.3 RECOMMENDATIONS FOR FUTURE ACTIONS

Based on the findings of the recent field activities, contaminant concentrations beneath the former heating oil UST location and steam cleaning area appear to be below the proposed MTCA Method A cleanup levels for unrestricted soil. Subsequently, no future investigation or remedial activities are recommended for these areas. Best management practices should continue to be followed in the steam cleaning area to ensure all systems are in proper working order.

Subsurface contamination above the proposed MTCA Method A cleanup levels for residential soil was detected near the oil storage rack in SB-49. The contamination was limited to the 2-foot to 5-foot-depth interval. Because the contamination is at least 20 feet from groundwater, with clean soil in between, and capped by 4 inches of concrete, no future activities are recommended for this area.

6. REFERENCES

Foster Wheeler Environmental Corporation. 2000. Phase I Environmental Site Assessments for the 7 West Commodore Way Properties, Seattle, Washington. Prepared for Time Oil Company. Bothell, Washington. August 2000.

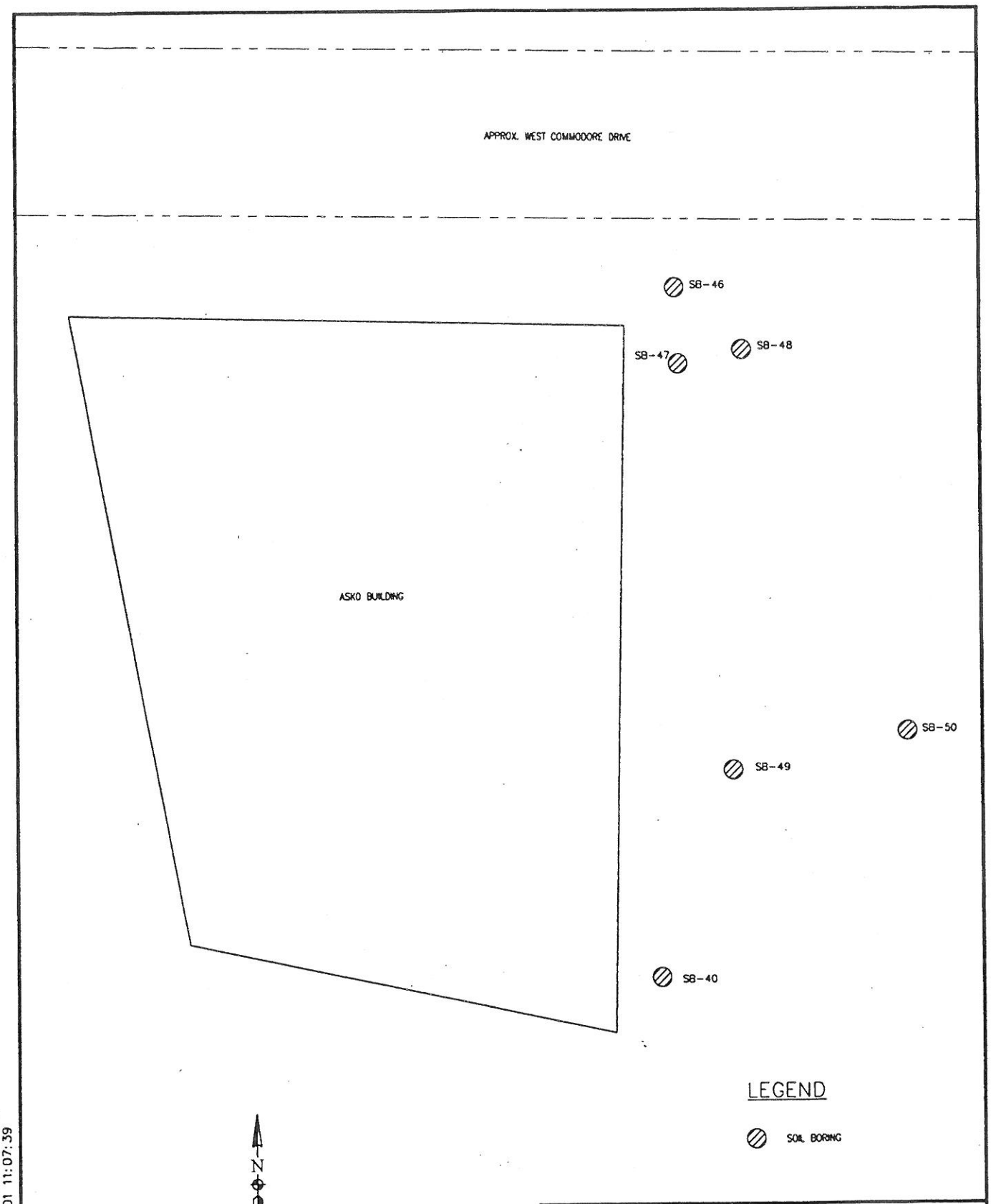

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Figure 3-1
Locations of Soil Borings at
2805 West Commodore Way
Seattle, Washington

FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase II Site Assessment

BORING NUMBER: SB-40

LOCATION: 2805 West Commodore Way

AREA: ASKO Steam Cleaning Area

CLIENT: Time Oil Company

SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA

DRILLING CONTRACTOR: Cascade

DATE/TIME STARTED: 11/21/00 1315

DATE/TIME COMPLETED: 11/21/00 1350

TOTAL DEPTH: 15 feet

WATER DEPTH: 15 feet

DEPTH	ELEVATION	SAMPLES feet	BLOW COUNTS	SAMPLE NUMBER	Diesel in Soil PPM 20 30 40	PID	MOISTURE	GRAPHIC LOG	USCS SYMBOL	WELL DETAILS	DESCRIPTION AND REMARKS
0	46								SM		Concrete 0 to 3 inches Silty Sand 2 ft. Dense, moist, brown/grey, silty SAND, organics, no odor
2	44	X	25 22	SB-40-2		0	Moist				
4											
6	42	X	16 13	SB-40-5		0	Moist		SM	NA	Silty Sand 5 ft. Dense, moist, grey, medium to fine silty SAND, organics, no odor
8	40										
10	38	X	50:6"	SB-40-10		0	Moist		SM		Silty Sand 10 ft. Dense, moist, grey, silty fine grained SAND, no odor
12	36										
14	34										
16	32	X	50:6"	SB-40-15		0	Moist		CL		Clay 15 ft. Dense, moist, grey, silty CLAY with fine sand, no odor
18	30										
20	28										

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FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase II Site Assessment

BORING NUMBER: SB-46

LOCATION: 2805 West Commodore Way

AREA: North of former UST

CLIENT: Time Oil Company

SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA

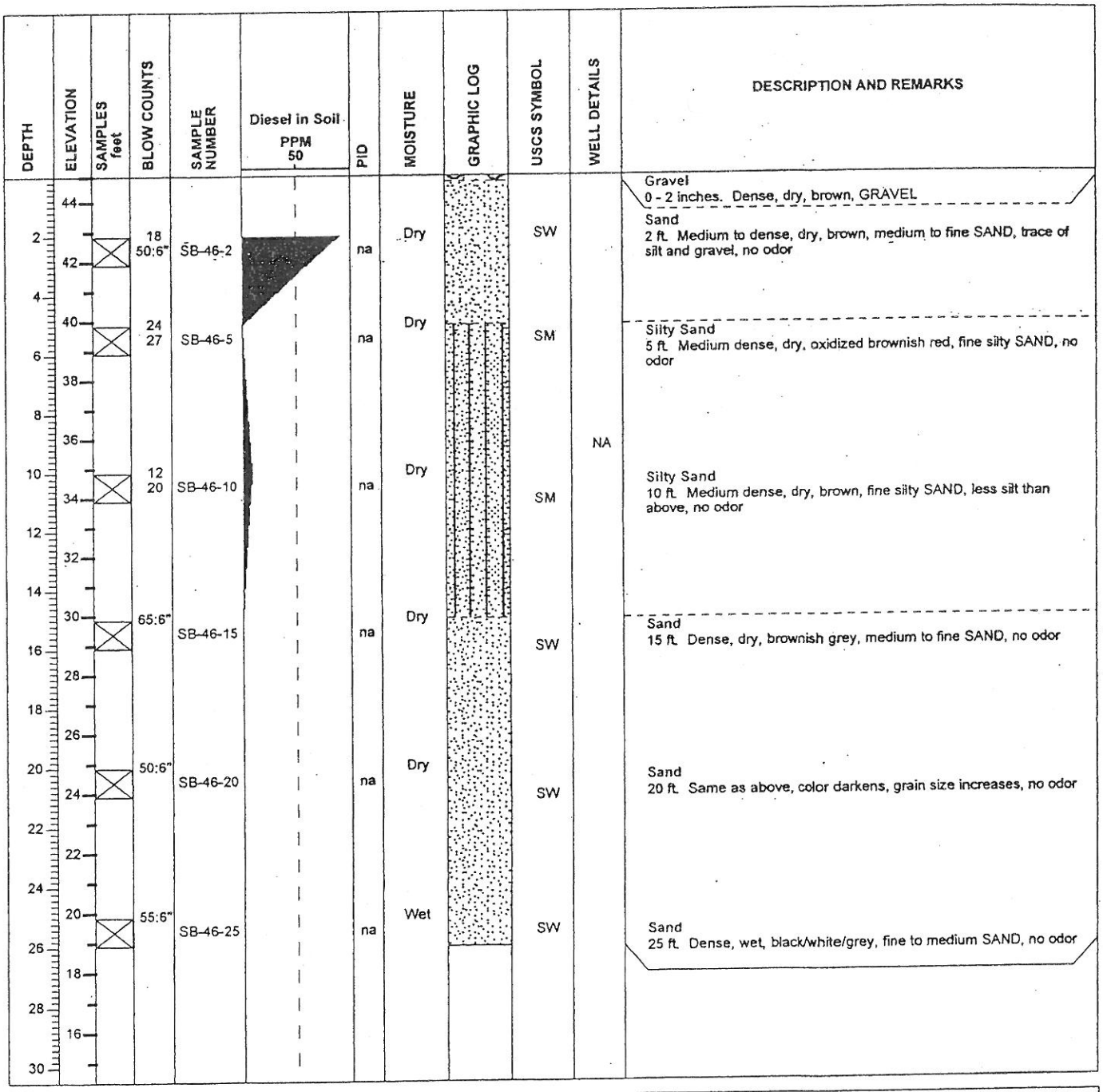
DRILLING CONTRACTOR: Cascade

DATE/TIME STARTED: 11/28/00 1230

DATE/TIME COMPLETED: 11/28/00 1310

TOTAL DEPTH: 25 feet

WATER DEPTH: 25 feet



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FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase II Site Assessment
BORING NUMBER: SB-47
LOCATION: 2805 West Commodore Way
AREA: Center of former UST
CLIENT: Time Oil Company
SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA
DRILLING CONTRACTOR: Cascade
DATE/TIME STARTED: 11/28/00 1400
DATE/TIME COMPLETED: 11/28/00 1440
TOTAL DEPTH: 25 feet
WATER DEPTH: na

DEPTH	ELEVATION	SAMPLES feet	BLOW COUNTS	SAMPLE NUMBER	Diesel in Soil PPM 50	PID	MOISTURE	GRAPHIC LOG	USCS SYMBOL	WELL DETAILS	DESCRIPTION AND REMARKS
											Asphalt 0 - 3 inches.
2	44	X	15 26	SB-47-2		na	Dry		GP		Gravel 2 ft. Medium dense, dry, greyish brown, GRAVEL, fill material ???
4	42										
6	40	X	10 17	SB-47-5		na	Dry		GP		Gravel 5 ft. Same as above, fill material ??
8	38										Sand 10 ft. Dense, dry, tan/brown/grey, fine SAND with silt and minor medium sand, no odor
10	36	X	50:6"	SB-47-10		na	Dry		SW	NA	
12	34										
14	32										
16	30	X	50:6"	SB-47-15		na	Dry		SM		Silty Sand 15 ft. Dense, dry, tan/brown/grey, silty fine SAND, no odor
18	28										
20	26	X	50:6"	SB-47-20		na	Dry		SW		Sand 20 ft. Dense, dry, brownish grey, fine SAND, minor medium sand, no odor
22	24										
24	22										
26	20	X	50:6"	SB-47-25		na	Dry		SW		Sand 25 ft. Same as above, color darkens, increase in grain size
28	18										
30	16										

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FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase II Site Assessment

BORING NUMBER: SB-48

LOCATION: 2805 West Commodore Way

AREA: East of former UST

CLIENT: Time Oil Company

SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA

DRILLING CONTRACTOR: Cascade

DATE/TIME STARTED: 11/29/00 0800

DATE/TIME COMPLETED: 11/28/00 0845

TOTAL DEPTH: 25 feet

WATER DEPTH: na

DEPTH	ELEVATION	SAMPLES feet	BLOW COUNTS	SAMPLE NUMBER	Diesel in Soil PPM 20 30 40	PID	MOISTURE	GRAPHIC LOG	USCS SYMBOL	WELL DETAILS	DESCRIPTION AND REMARKS
0											Asphalt 0 - 3 inches.
2	44	X	27 25	SB-48-2		na	Dry		SM		Silty Sand 2 ft. Medium dense, dry, dark brown, silty fine SAND, trace organics, no odor
4	42										
6	40	X	25 30	SB-48-5		na	Dry		SW		Sand 5 ft. Medium dense, dry, brown, fine SAND with minor silt, minor medium sand, no odor
8	38										
10	36	X	65:6"	SB-48-10		na	Dry		SM	NA	Sandy Silt 10 ft. Dense, dry, tan/brown/grey, fine sandy SILT, organics, layering, no odor
12	34										
14	32										
16	30	X	50:6"	SB-48-15		na	Dry		SW		Sand 15 ft. Dense, dry, brown, fine SAND, minor medium sand, trace of silt, no odor
18	28										
20	26	X	55:6"	SB-48-20		na	Dry		SW		Sand 20 ft. Same as above
22	24										
24	22										
26	20	X	50:6"	SB-48-25		na	Dry		SW		Sand 25 ft. Same as above, color darkens, increase in grain size
28	18										
30	16										

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PHASE III
Environmental Site Assessment

2737 and 2750
West Commodore Way Properties
Seattle, Washington

prepared for
TIME OIL COMPANY

December 2001



prepared by:
FOSTER WHEELER ENVIRONMENTAL CORPORATION

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ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
AST	above-ground storage tank
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
cPAH	carcinogenic polyaromatic hydrocarbon
DPE	dual-phase extraction
EC	equivalent carbon
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
Foster Wheeler Environmental	Foster Wheeler Environmental Corporation
HDPE	high-density polyethylene
ID	inner diameter
IT	IT Corporation
LUST	leaking underground storage tank
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MNA	monitored natural attenuation
mS/cm	millisiemens per centimeter
MTCA	Model Toxics Control Act
NAD	North America Datum
NAVD	National America Vertical Datum
NOAA	National Oceanic Atmospheric Administration
NTU	nephelometric turbidity unit
NWTPH-D_x	Northwest total petroleum hydrocarbon-diesel extended
NWTPH-G_x	Northwest total petroleum hydrocarbon-gasoline
OSWER	Office of Solid Waste and Emergency Response
PAH	polyaromatic hydrocarbons
PCP	pentachlorophenol
PID	photoionization detector
ppb	parts per billion

ACRONYMS AND ABBREVIATIONS

ppm	parts per million
Property	2737 West Commodore Way
PVC	polyvinyl chloride
RBCA	Risk Based Corrective Action
SQuiRT	Screening Quick Reference Table
TOC	Time Oil Company
TPH	total petroleum hydrocarbon
UST	underground storage tank

1. INTRODUCTION

In August 2000, Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) completed Phase I Environmental Site Assessments (ESAs) at seven properties owned by the Time Oil Company (TOC) that are located along West Commodore Way in Seattle, Washington. The results of the Phase I ESA activity were documented in Phase I ESA reports prepared for each of the seven properties (Foster Wheeler Environmental 2000).

The Phase I ESA report prepared for the property located at 2737 West Commodore Way (Property) concluded that additional investigation was required to better understand subsurface conditions. Phase II ESA activities were subsequently conducted at the Property in November and December 2000, and results are documented in Phase II's Final ESA (Foster Wheeler Environmental 2001a). The Phase II report recommended additional subsurface sampling at 2737 West Commodore Way and quarterly groundwater sampling at 2737 and 2750 West Commodore Way; consequently, investigation activities and quarterly sampling were conducted in July 2001.

Figure 1-1 depicts the general location of the project area. Figure 1-2 illustrates the locations of 2737 and 2750 West Commodore Way.

1.1 PURPOSE AND ORGANIZATION

The purpose of Phase III field activities was to evaluate subsurface conditions at 2737 West Commodore Way in specific areas identified during the Phase II ESA. This report includes the results from the subsurface investigation and from quarterly groundwater sampling at 2737 and 2750 West Commodore Way.

This report is organized into six sections and three appendices:

- Section 1 – Introduction
- Section 2 – Property History and Previous Investigations
- Section 3 – Field Activities
- Section 4 – Analytical Results
- Section 5 – Conclusions and Recommendations

- Section 6 – References
- Appendix A – Soil Boring Logs
- Appendix B – Surveyor's Report
- Appendix C – Laboratory Data Packages

1.2 PROJECT OBJECTIVES

The results of the Phase II ESA conducted at 2737 West Commodore Way suggested that additional investigation activities be conducted at five areas to further evaluate subsurface conditions and to conduct quarterly groundwater sampling at both properties (i.e., 2737 and 2750 West Commodore Way). A layout of the property at 2737 West Commodore Way and the areas investigated is provided in Figure 1-3. The areas and the justification for additional investigation are as follows:

1. Upper Rail Line Spur Area – Historical photographs show stained soil along the former rail line spur on the south side of the Upper Tank Yard Area. Previous investigations did not show extensive petroleum-impacted soil. Petroleum-impacted groundwater was detected beneath the tank yards north of the Upper Rail Line Spur Area. A monitoring well was planned in the area to evaluate up-gradient (background) groundwater conditions.
2. Former PCP/Diesel Mixing Area – The Former PCP/Diesel Mixing Area is a sub-area of the Lower Tank Yard Area. An above-ground storage tank (AST) was used in the Lower Tank Yard Area to mix pentachlorophenol (PCP) and diesel during a short period of time in the late 1960s. Soil borings, near subsurface sampling, and a monitoring well were planned to evaluate the potential for petroleum-impacted and PCP-impacted soil and groundwater.
3. Former Barrel Shed Area – The Former Barrel Shed Area was between the warehouse and the office building. The pipeline from the PCP/diesel mixing tank also ran underground in this area. During the Phase II activities (December 2000), several borings and a monitoring well were installed in this area. Soil samples were not analyzed for PCP but the groundwater sample from the monitoring well (01MW-06) did contain low levels of PCP. A soil boring was planned near 01MW-06 to evaluate the potential for petroleum-impacted and PCP-impacted soil from the former structure.
4. New Barrel Shed Area – The New Barrel Shed Area is west of the warehouse. The area was used for a short time during the late 1960s to fill 55-gallon barrels with the

PCP/diesel mixture through an overhead distribution system. The pipeline ran from the Former PCP/Diesel Mixing Area, beneath the Former Barrel Shed Area, and into the New Barrel Shed Area. A soil boring was drilled on the north end of the New Barrel Shed Area near the pipeline, and a well was installed. Samples were analyzed for petroleum products, lead, and PCP.

5. West Commodore Way Perimeter Area – Historical releases from a leaking underground storage tank (LUST) used to store petroleum products have affected the subsurface soil and groundwater in this area. A soil boring and monitoring well were planned to evaluate the extent of petroleum-impacted soil and groundwater in the area.

2. PROPERTY HISTORY AND PREVIOUS INVESTIGATIONS

The following sections describe the history of the Property and summarize previously conducted investigations.

2.1 PROPERTY DESCRIPTION

The Property runs from West Commodore Way south to the Burlington Northern rail line. Except for the area of the former rail lines behind the warehouse, and the Upper and Lower Tank Yard Areas on the east side of the Property, the Property has been paved. A two-story office building is located in the center of the Property toward West Commodore Way. A three-section warehouse is located behind the office building, and a former boiler room is connected to the east side of the warehouse via a covered loading dock. An open-air barrel shed is located to the northwest of the warehouse. The Tank Yard is divided into two sections, the Lower Tank Yard Area and the Upper Tank Yard Area, each constructed at a different time. The Lower Tank Yard Area contains six ASTs. The Upper Tank Yard Area contains eight ASTs that are larger in volume than those in the Lower Tank Yard Area. The south side of the Upper Tank Yard Area, banks steeply upward to the fence line and former rail line spur. The surface of the Tank Yards is unpaved gravel with patches of grass. Immediately to the west of the Tank Yards are a pump shed and foamite shed (used for fire suppression).

According to available regulatory records and interviews with TOC personnel, there are several underground storage tanks (USTs) on the Property. Two USTs are located on the north side of the office building: an unused heating oil tank is located on the east side of the office building adjacent to the former furnace room, and a gasoline vapor knock-out tank is located along the north side of the Lower Tank Yard Area. The knock-out tank is associated with the overhead fuel loading racks located just north of the Lower Tank Yard Area of the tank farm. There are no known drinking water wells on the Property, but several monitoring wells from previous site investigations are installed within the shallow water-bearing zone beneath the Property.

2.2 PROPERTY OPERATION

The Property is used by TOC for a variety of purposes: it is the site of the TOC administrative offices; it previously served as a tank farm for petroleum products; and

portions are used to store equipment and supplies for service stations, such as fuel dispensers, fascia, signs, and miscellaneous supplies (most of these materials are kept near the New Barrel Shed Area or in part of the warehouse). The ASTs range in size from approximately 5,225 barrels to 23,000 barrels. Fuel distribution lines connect the ASTs to an extensive manifold system that is connected to the truck loading rack and a waterfront dock located in the ship canal across West Commodore Way. When the tank farm was operating, fuel was off-loaded from barges and tankers in the ship canal and transferred to the ASTs. From there, the fuel was transferred to tanker trucks via the overhead loading rack outside of, and just north of, the Lower Tank Yard Area.

Operation of the TOC Seattle Terminal as a petroleum storage and transfer facility was discontinued in October 2001. The ASTs and pipelines have been purged of petroleum products, appropriately cleaned, and are currently empty. Although the terminal improvements remain in place, there are currently no plans to use the facility for petroleum storage and/or transfer again; thus, the potential for additional hydrocarbon releases is believed to be very low.

2.3 PROPERTY HISTORY

Information about the history of the Property was derived from a review of available documents, historical photographs, and regulatory records. Former and current employees of TOC were also interviewed.

The Property was acquired by TOC around 1941. Before 1936, the Property appears to have been used for agricultural purposes. Historical aerial photographs and fire insurance maps presented in the Phase I reports (Foster Wheeler Environmental 2000) show the Rattan Furniture factory, a sawmill, dry kiln, and a U.S. Coast Guard facility located across West Commodore Way.

A 1946 photograph shows the original office building, the Lower and Upper Tank Yard Areas of the tank farm, the pump shed and foamite building, a former barrel shed located immediately west of the office building, and overhead fuel loading racks. The unpaved surface of the Lower Tank Yard Area is noticeably dark, and it is unclear whether this darkness is an artifact of the photograph or is indicative of site operations. Numerous rows of empty 55-gallon drums are located to the west of the Property, which, according to interviews with TOC employees, were filled with petroleum products in the Former Barrel Shed Area, rolled under West Commodore Way via a barrel incline and tunnel to the TOC

dock in the ship canal, and loaded onto ships. This operation was conducted primarily to support World War II efforts. According to the interviewees, laborers were hired to fill the barrels and load them onto ships. The filling apparatus was controlled by pulling a line to dispense fuel into a drum. One pull of the line would automatically dispense 50 gallons of fuel into the 55-gallon drums via an overhead nozzle at a very high rate and if the line was pulled twice, then twice as much fuel would be dispensed (and so on). The interviewees stated they had heard of many times when drums were overfilled and fuel spilled on the ground.

In 1946, a large volume of fuel arrived at the Property via rail cars. There were four rail spurs off the main Burlington Northern line leading onto the TOC property: one spur ran behind the Former Barrel Shed Area and the other lines led toward the southwest end of the tank farm's Upper Tank Yard Area. One of these lines ran all the way behind the Upper Tank Yard Area toward 27th Avenue West. Fuel was transferred from tanker cars via hoses to a subsurface line, from which it was pumped into the ASTs. Careful examination of the historical photograph from 1946 shows what appear to be equally spaced dark patches of soil on the rail spur on the south side of the tank farm's Upper Tank Yard Area. According to the interviewees, the tank cars were off-loaded with hoses; therefore, these dark patches may be related to petroleum leaks and spills that occurred during off-loading operations. After the lines were disconnected, it was not uncommon for residual fuel to drain from the lines and onto the ground.

The historical photograph from 1960 depicts the Property largely as it is today. A warehouse building, built in the late 1940s according to information in the Puget Sound Regional Archives, is located south of the office building parallel to the rail spurs (several of the rail spurs were deactivated by the time of this photograph). A new barrel shed, built in 1952 according to the Puget Sound Regional Archive files, is located just northwest of the warehouse; the boiler house was added in 1950 (Puget Sound Regional Archive files). The barrel shed seen in the 1946 photograph is no longer on the Property in the 1960 photograph.

According to interviewees, TOC operated a fleet of fuel delivery service trucks that were serviced across the street at the vehicle maintenance facility at 2750 West Commodore Way. Historical photographs show three ASTs located north of the New Barrel Shed Area. According to TOC employees, these ASTs were used to store used motor oil. The immediate area surrounding the ASTs was unpaved, but an outer area was paved. The

interviewees also indicated that this area had been affected by several small spills and leaks related to used motor oil transfer and storage activities.

By 1974 a new vehicle maintenance facility was added on the adjacent property (2800 block) immediately west of the Property. After TOC terminated its fuel truck distribution service, this building was leased to Precision Engineering Specialists (a marine and engine repair facility) in 1976.

According to TOC employees, pentachlorophenol (PCP) was mixed in a small AST near the west wall of the tank farm's Lower Tank Yard Area. The PCP was transferred via underground lines to the new barrel shed where 55-gallon drums and 5-gallon drums were filled, rolled onto a loading dock between the warehouse and the barrel shed, and loaded onto rail cars. This operation reportedly ran for 3 to 4 months during 1967 as part of a military contract. A few of the interviewees also stated that the parking lot on the Property had subsided in the vicinity where the former barrel incline ducked under West Commodore Way; the area was leveled and patched with new asphalt. The 1997 photograph shows the Property as it exists today.

Several of the interviewees mentioned that TOC had wanted to demolish the existing office building to construct a new office building; however, there was concern about excavating to the west of the existing office building because of the potential presence of petroleum-impacted soil. A couple of the interviewees also mentioned that many of the ASTs had small weeps or leaks near the bases. While there were no reports of large releases, numerous small leaks could have had a cumulative impact. Some of the interviewees also indicated that the fuel line between the rail spurs was an area where there had been releases in the past. Other statements by the interviewees noted a release of gasoline near the northern (outer) overhead fuel-loading rack. During one incident, the driver of a tanker truck is reported to have struck a portion of the loading facilities, resulting in a spill of over 1,000 gallons of gasoline; most of the fuel was reportedly recovered. The overhead loading racks initially had a center island surrounded by sand with only the driveways paved. The southern (inside) rack was replaced in the mid-1980s, and the entire area surrounding both loading racks was paved. Interviewees identified the pipeline leading to the dock across the street as an area where petroleum releases may have occurred. The pipeline consists of several pipes encased in an outer conduit. The speculation was that the older 8-inch pipes had failed and newer 6-inch pipes were placed within the older pipes.

2.4 PREVIOUS INVESTIGATIONS

In September 1991 (TOC 1991), three USTs were removed from the Property, including a 4,000-gallon unleaded gasoline tank, a 2,500-gallon diesel fuel tank, and a 1,500-gallon regular leaded gasoline tank. Figure 2-1 shows the locations of the former USTs and soil sampling locations.

The diesel fuel and leaded gasoline tanks were part of a baffled system (one 4,000-gallon tank) that was installed in 1980. Following removal of the USTs, a new 4,000-gallon UST was installed at the same location. This new tank is baffled to provide two compartments (one 3,000-gallon compartment and one 1,000-gallon compartment) and is therefore registered with Washington State Department of Ecology (Ecology) as two tanks. Two new fuel dispensers were also installed. The TOC report from 1991 indicated that the soil in the excavation appeared discolored and a hydrocarbon odor was evident. In addition, water with a hydrocarbon sheen was encountered at a depth of 18 feet below ground surface (bgs).

Efforts to excavate the petroleum-impacted soil were impeded by the proximity of the TOC building to the excavation and the presence of groundwater in the excavation space. Water samples were not collected, but soil samples indicated that the highest concentration (12,000 parts per million [ppm]) of hydrocarbons was present in surficial soils beneath the former fuel dispensers (east side of the building).

Additional site assessment activities were conducted in 1999, including the installation of nine soil borings and five groundwater monitoring wells (IT Corporation [IT] 2000). The locations of the 1999 borings are shown in Figure 2-2. Soil boring logs included in the IT report indicate that soil composition beneath the Property from the surface to approximately 20 to 25 feet bgs consists of sands and silts, with varying amounts of clay and gravel. Very dense dry clay underlies this sand/silt unit and acts as an aquitard. Several soil samples contained diesel and gasoline at concentrations above the historic Model Toxics Control Act (MTCA) Method A level. The concentrations ranged from 381 ppm to 755,000 ppm. One soil sample (01SB-09 at 2.5 feet bgs) contained heavy oil above the historic MTCA Method A level and, although the analytical results for heavy oil on several other samples were below limits of detection, the detection limits exceed the historic MTCA cleanup level. Benzene was reported above the soil cleanup level in samples collected from borings 01SB-08, 01SB-09, and 01MW-05.

Table 2-1 presents the analytical results for soil samples with petroleum concentrations above the cleanup levels. Concentrations of benzene in soil samples ranged from 2.12 ppm to 5,590 ppm. Several soil samples also exceeded the cleanup level for toluene, ethylbenzene, and xylene.

Groundwater was encountered in eight of the nine borings and all of the monitoring wells. Depth to groundwater ranged from 14 to 17 feet bgs. The wells were sampled in September 1999; only one well (01MW-01) did not contain detectable concentrations of hydrocarbons.

Table 2-2 lists the analytical results from the groundwater monitoring well and boring water samples collected in 1999. Well 01MW-05 contained floating product with an apparent thickness of 0.78 feet; consequently, this well was not sampled. The concentrations of gasoline in wells 01MW-01 through 01MW-04 ranged from 12.2 milligrams per liter (mg/L) to 27.2 mg/L, and concentrations of diesel ranged from 0.7 mg/L to 1.32 mg/L. Heavy oil was not detected in any of the wells. Benzene ranged from 3,880 mg/L to 11,300 mg/L. Wells 01MW-02 through 01MW-04 contained concentrations of toluene, ethylbenzene, and xylene above the MTCA Method A level. Total lead exceeded the cleanup level in every well except 01MW-01, with the highest concentration (130 parts per billion [ppb]) detected in 01MW-04. Most of the elevated concentrations appear to be located near the northeast corner of the office building. The IT report recommended additional site characterization.

In May 2000, TOC submitted a letter (TOC 2000) to Mr. Joe Hickey of the UST division of Ecology that summarizes previous field activities. In the letter, TOC indicated that the extent of contamination beneath the Property would be assessed.

During November and December 2000, Foster Wheeler Environmental conducted additional investigation activities at 2805, 2750, and 2737 West Commodore Way. The findings of these investigations are documented in the Environmental Site Assessment (Foster Wheeler Environmental 2001a). The report concluded that additional subsurface investigations were not necessary at 2805 or 2750 West Commodore Way. Groundwater monitoring was recommended for 2737 and 2750 West Commodore Way.

The investigation at 2737 West Commodore Way focused on several distinct areas and recommended additional work in five areas:

- Upper Rail Line Spur Area
- Former PCP/Diesel Mixing Area

- Former Barrel Shed Area
- New Barrel Shed Area
- West Commodore Way Perimeter Area

3. FIELD ACTIVITIES

Field activities at 2737 West Commodore Way included soil borings, near subsurface soil sampling, well installation, soil sampling, quarterly groundwater sampling, fuel characterization, and surveying. The following sections describe the methodology used to complete the field activities.

3.1 SOIL BORINGS

3.1.1 Soil Boring Locations

Nine soil borings were drilled at 2737 West Commodore Way, as shown on Figure 3-1. The total depth of each soil boring and the depth groundwater encountered at each location is described below:

Upper Rail Line Spur Area:

- SB-61 was located between SB-21 and SB-22 and advanced to a depth of 32 feet. Groundwater was encountered at a depth of approximately 22 feet bgs during drilling. Monitoring well 01MW-17 was installed at this location as an up-gradient well.

Former PCP/Diesel Mixing Area (Lower Tank Yard Area):

- SB-52 was located south of the Former PCP/Diesel Mixing Area (near SB-01). The boring was advanced to a depth of 14 feet. Groundwater was encountered at a depth of approximately 11 feet bgs.
- SB-53 was located east of the Former PCP/Diesel Mixing Area (near SB-02). The boring was advanced to a depth of 12 feet. Groundwater was encountered at a depth of approximately 11 feet bgs.
- SB-54 was located west of the Former PCP/Diesel Mixing Area (near SB-04). The boring was advanced to a depth of 12 feet. Groundwater was encountered at a depth of approximately 10.5 feet bgs.

- SB-55 was located northeast of the Former PCP/Diesel Mixing Area. The boring was advanced to a depth of 12 feet. Groundwater was encountered at a depth of approximately 11.5 feet bgs.
- SB-56 was located north of the Former PCP/Diesel Mixing Area. The boring was advanced to a depth of 15 feet. Groundwater was encountered at a depth of approximately 8 feet bgs. Monitoring well 01MW-14 was completed in this location.
- SB-57 was located southeast of the Former PCP/Diesel Mixing Area. This sampling location was not a soil boring, because of restricted access and the presence of utilities. A near sub-surface sample was collected by removing the upper 18 inches of overburden with a clean shovel. A decontaminated stainless steel spoon was then used to collect a soil sample.

Former Barrel Shed Area:

- SB-59 was located on the west end of the Former Barrel Shed Area near 01MW-06. The boring was advanced to a depth of 20 feet. Groundwater was not encountered during drilling.

New Barrel Shed Area:

- SB-58 was located in the parking lot near the subsurface pipes as they enter the foundation of the New Barrel Shed Area. The boring was advanced to a depth of 30 feet. Groundwater was encountered at a depth of 22 feet bgs during drilling. Monitoring well 01MW-15 was completed at this location.

West Commodore Way Perimeter Area:

- SB-60 was located east of the LUST area, between 01MW-02 and 01MW-10. The boring was advanced to a depth of 22.5 feet. Groundwater was encountered at a depth of approximately 18 feet bgs. Monitoring well 01MW-16 was installed at this location.

3.1.2 Soil Boring Methods

Soil borings in the Former PCP/Diesel Mixing Area were drilled with an Acker Soil Mechanic operated by BoreTec. The Acker Soil Mechanic is a portable drilling machine that can be broken down into smaller pieces to allow for access into restricted areas. The machine uses 2-inch inner

diameter (ID) hollow-stem augers. Split-spoon samples were driven every 5 feet. The spoons were 12 inches long, 1 inch ID, and driven with a 140-pound hammer.

The remaining borings were drilled with a CME 75 High Torque drill rig operated by Cascade Drilling. The augers used on the drill rig were 4.25-ID hollow stem. Split-spoon samples were driven every 5 feet to describe lithologies and collect soil samples. In most borings, an extra split-spoon sample was driven at the 2-foot-depth interval. Split-spoon samples were 12 inches long (not including the shoe), 2-inch ID, and driven by a 300-pound down-hole jar hammer. Appendix A contains the soil boring logs for the Property.

3.1.3 Soil Sampling Methods

Soil samples were collected directly from the split spoon and placed in the appropriate laboratory-supplied sample container. The analyses requested for each sample depended on the location. In general, the samples were analyzed for:

- Gasoline using Ecology's Northwest total petroleum hydrocarbon-gasoline (NWTPH-Gx) method
- Benzene, toluene, ethylbenzene, and xylene (BTEX) using U.S. Environmental Protection Agency (EPA) 8021B
- Diesel and oil using Ecology's Northwest total petroleum hydrocarbon-diesel extended (NWTPH-Dx) method
- PCP using EPA Method 8270-sim (selected ion monitoring)
- Carcinogenic polyaromatic hydrocarbons (cPAHs) using EPA Method 8270-sim
- Total lead using EPA 6000/7000 series

The gasoline/BTEX samples were collected first out of each spoon. The sample containers were placed in sealed baggies and placed directly into a chilled cooler for transport to the laboratory. Soil samples were labeled according to their soil boring location and depth collected (i.e., SB-52-2 = soil boring 52, sample depth 2 feet). North Creek Analytical (Bothell, Washington) received the samples at the end of each day in the field.

The split spoons were decontaminated by thoroughly washing them in soapy water, rinsing with water, rinsing with methanol, and finally rinsing with deionized water supplied by the analytical laboratory.

3.1.4 Product Sampling

Product samples were collected from three wells: 01MW-05, 01MW-10, and 01MW-14. The samples were collected using capillary tubes and submitted to Friedman & Bruya, Inc. for characterization of product and PCP analysis.

3.2 MONITORING WELL INSTALLATION

Four new monitoring wells were installed and developed during the Phase III investigation activities. The locations of the new monitoring wells as well as the existing wells are shown on Figure 3-2. Table 3-1 presents the available well construction information for wells at 2737 West Commodore Way.

3.2.1 Monitoring Well Locations

Each of the wells installed was designed and located with a specific purpose in mind. The rationale behind each well location is as follows:

- 01MW-14 (SB-56) was located south of the Former PCP/Diesel Mixing Area. The well is screened within the shallow water-bearing zone. The purpose of this well is to evaluate the potential impacts of fuel and PCP from the Former PCP/Diesel Mixing Area.
- 01MW-15 (SB-58) was located downgradient and north of the New Barrel Shed Area to evaluate potential groundwater impacts. The well is screened within the shallow water-bearing zone with the bottom of the well above a dry, impermeable clay/silt layer.
- 01MW-16 (SB-60) was located just east of the office building near the Former LUST Area, between 01MW-02 and 01MW-10, to evaluate the extent of petroleum-impacted groundwater. The well is screened within the shallow water-bearing zone with the bottom of the well above a dry, impermeable clay/silt layer.
- 01MW-17 (SB-61) was located upgradient of the Upper Tank Yard Area to evaluate background groundwater conditions. The well is screened within the shallow water-bearing zone with the bottom of the well above a dry, impermeable clay/silt layer.

3.2.2 Well Installation Methods

The monitoring wells were drilled as described in Section 3.1.2.

3.2.3 Installation Materials

Most of wells were installed with flush-threaded, 2-inch ID polyvinyl chloride (PVC) casing with variable screen lengths of 0.010-inch slots. The sand pack consists of a 20-40 Colorado silica sand around the screen to 2 feet (typically) above the top of the screen. The sand pack is overlain by a bentonite seal of at least 1 foot (typically). Concrete and flush-mount monuments were used to complete the wells. Heavy-duty well monuments were used for wells in areas with high levels of vehicular traffic.

Monitoring well 01MW-14 was installed with the Acker Soil Mechanic. Because of the smaller boring diameter, this well features a 1-inch ID casing. The annular materials are identical to those of the 2-inch ID wells.

3.2.4 Well Development

The wells were developed following installation. For development, the wells were surged frequently with a double-stage purge pump. At least three well volumes of water were pumped from the wells using the double-stage purge pump. Before a different well was pumped, the tubing was changed on the pump, and the pump was decontaminated by washing it with soapy (Liquinox) water, pumping soapy water through it, and rinsing it with deionized water supplied by the analytical laboratory.

Visual observations and measurement of physical parameters provided monitoring of development progress. Measurements during development and well sampling were made for pH, temperature, conductivity, and turbidity using a Hydrolab Data Sonde. The meter was calibrated before each use using standards supplied by the instrument provider. Table 3-2 provides the final parameters measured during the sampling and development of the wells.

3.3 SURVEYING

The soil boring locations were surveyed by Inca Engineering, Inc. Horizontal control was specified to 0.1 foot, based on Washington State Plane Coordinate System, North America Datum (NAD) 83/91 City of Seattle. Vertical control was specified to 0.01 foot, based on

the National America Vertical Datum (NAVD) 88 City of Seattle. A summary of the survey results is presented in Table 3-1, and the complete data are provided in Appendix B.

3.4 WATER LEVEL MEASUREMENTS

Water level measurements were made from all available wells. Depth to groundwater measurements were subtracted from surveyed measuring point elevations to determine the water level elevations (potentiometric head), as shown in Table 3-3. The potentiometric surface maps for 2737 and 2750 West Commodore Way are shown in Figures 3-3 and 3-4, respectively.

3.5 GROUNDWATER SAMPLING AND ANALYSIS

Groundwater samples were collected from July 25 through July 27, 2001. Water samples were collected in laboratory-supplied glassware and delivered to the laboratory each evening after sampling.

Samples were collected using a peristaltic pump, disposable high-density polyethylene (HDPE) tubing, and silicone tubing. At each well the HDPE tubing was inserted into the water at approximately the center of the well screen. A piece of disposable silicon tubing was connected to the HDPE tubing and run through the pump. Both pieces of tubing were discarded after each use, and new tubing was used for the next well.

The analyses performed on each groundwater sample depended on the location. In general, the water samples were analyzed for the following potential contaminants:

- Gasoline, using Ecology's NWTPH-Gx Method
- BTEX, using EPA Method 8021B
- Diesel and oil, using Ecology's NWTPH-Dx Method
- cPAHs, using EPA Method 8270-sim
- PCP, using EPA Method 8270-sim
- Total lead, using EPA 6000/7000 series

3.6 INVESTIGATION DERIVED WASTE

Soil cuttings from the Property were transferred to the stock piles on the Property for disposal by TOC. Decontamination water was collected by the drilling company in 55-gallon type 1A drums, transferred to TOC.

4. ANALYTICAL RESULTS

Soil samples and groundwater were analyzed by North Creek Analytical Labs in Bothell, Washington. Product characterization samples were analyzed by Friedman & Bruya, Inc., in Seattle, Washington. Where applicable, results were compared to Ecology's new Method A soil levels for unrestricted land use. Ecology's new rule does not differentiate between industrial property and unrestricted land use. The new soil levels for diesel and oil are higher than the previous MTCA Method A levels, with the new soil levels for gasoline divided into two categories: gasoline without benzene and less than 20 percent aromatics between equivalent carbon (EC) 8 and EC16 (proposed soil cleanup level of 100 milligrams per kilogram [mg/kg]); and all other gasoline mixtures (proposed soil cleanup level of 30 mg/kg). The new BTEX levels for soil are lower than previous levels. For PCP, the soil results were compared to the MTCA Method B carcinogenic levels for residential soils. Groundwater concentrations were compared to the National Oceanic Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT) values. The SQuiRT values provide screening levels for acute and chronic exposures to both freshwater and saltwater. Because the groundwater beneath the site is not used for drinking water and the ultimate point of exposure is the Ship Canal (a fishwater body), it is appropriate to compare the groundwater concentrations to the NOAA SQuiRT values for fishwater. Groundwater concentrations were compared to the MTCA Method A levels for groundwater for analytes that did not have applicable NOAA SQuiRT values. The analytical results are presented in Tables 4-1 through 4-5. The footnotes at the bottom of each table identify the applicable action levels.

Appendix C contains the laboratory data packages for the samples collected at the Property. The data packages are presented in their entirety to allow the reader to evaluate the data relative to the quality control data associated with the environmental samples.

The following sections present the analytical results. The results for Phase III soil samples and the new monitoring wells are presented in Section 4.1. Quarterly groundwater results are presented in Section 4.2.

4.1 PHASE III ACTIVITIES

4.1.1 Upper Rail Line Spur Area

Soil

One soil boring (SB-61) was located near the Upper Rail Line Spur Area on the south side of the Upper Tank Yard Area. Four soil samples were collected from the boring and analyzed for gasoline, diesel, and oil. Diesel and oil were detected at low concentrations in the sample collected from a depth of 2 feet bgs. None of the soil samples showed concentrations of petroleum analytes above the reporting limit.

Groundwater

The groundwater sample collected from 01MW-17 contained concentrations of diesel (0.884 mg/L) above the MTCA Method A level (0.500 mg/L). None of the other petroleum analytes were detected above the reporting limits.

4.1.2 Former PCP/Diesel Mixing Area

Soil

Five soil borings (SB-52 through SB-56) were installed in the Former PCP/Diesel Mixing Area. Gasoline (1,410 mg/kg) and diesel (4,180 mg/kg) were detected above the MTCA Method A level for unrestricted soil in SB-52 at a depth of 2.5 feet bgs. None of the samples collected from the 6-foot or 10-foot depth showed concentrations above the MTCA Method A level for unrestricted soil.

None of the soil samples from SB-53 or SB-54 showed concentrations above the MTCA Method A levels for unrestricted soil. Gasoline, diesel, and oil were detected in SB-54 at a depth of 2 feet bgs.

Gasoline (185 mg/kg) was detected above the MTCA Method A level in SB-55 at a depth of 6 feet bgs. None of the petroleum analytes were detected above the reporting limit in SB-55. None of the petroleum analytes exceeded the MTCA Method A levels for unrestricted soil in the sample collected from the 10-foot depth in SB-55. PCP was not detected above the MTCA cleanup level.

Gasoline, benzene, ethylbenzene, xylene, and diesel were detected above the MTCA Method A level for unrestricted soil in SB-56 at depths of 2.5 feet bgs and 5 feet bgs. PCP was detected (8.88 mg/kg) above the MTCA Method B level (8.33 mg/kg) for soil. None of the analytes exceeded the MTCA Method A levels for unrestricted soil in the sample collected from the 10-foot depth. The concentration of cPAHs (2.6240 mg/kg) exceeded the MTCA Method A level of 1.0 mg/kg in SB-56 at a depth of 2.5 feet bgs.

A near subsurface sample was collected at SB-57 from a depth of 1.5 feet. Gasoline (2,590 mg/kg), ethylbenzene (18.2 mg/kg), and diesel (3,970 mg/kg) were detected above the MTCA Method A level for unrestricted soil. PCP was not detected above the laboratory reporting limit.

Groundwater

A monitoring well (01MW-14) was installed in SB-55. The well contained approximately 6.7 feet of product with no discernable groundwater present. A product sample was collected for fuel characterization and PCP analysis. The lab concluded that the majority of the material present in the sample is indicative of a middle distillate such as diesel fuel #2 or heating oil. The report also concluded that low-level degraded gasoline may have impacted the sample. PCP was detected in the sample at a concentration of 140 µg/g (ppm).

4.1.3 Former Barrel Shed Area

Soil

One soil boring (SB-59) was installed near the Former Barrel Shed Area. Gasoline (799 mg/kg) and diesel (4,950 mg/kg) were detected above the MTCA Method A levels for unrestricted soil at a depth of 5 feet. Samples from the 15-foot and 20-foot-depth interval in SB-27 did not contain concentrations of petroleum-impacted soil above the method reporting limit.

Lead, PCP, and cPAHs were not detected above the MTCA Method A levels in SB-59.

4.1.4 New Barrel Shed Area

Soil

One boring (SB-58) was installed just north of the loading dock directly north of the New Barrel Shed Area. None of the samples had concentrations of analytes above the MTCA Method A level for unrestricted soil.

Groundwater

A monitoring well (01MW-15) was installed in boring SB-58. None of the analytes exceeded the MTCA Method A levels or the NOAA SQuiRT values.

4.1.5 West Commodore Way Perimeter Area

Soil

One boring (SB-60) was located along West Commodore Way and north of the Lower Tank Yard Area. Gasoline (1,240 mg/kg), benzene (1.68 mg/kg), xylenes (10.2 mg/kg), and diesel (11,400 mg/kg) were detected above the MTCA Method A level for unrestricted soil at a depth of 15 feet. The sample from the 20-foot depth did not show concentrations of analytes above the reporting limits.

Lead was not detected above the MTCA Method A levels.

Groundwater

A monitoring well (01MW-16) was installed in boring SB-60. Gasoline (11,000 μg/L) and diesel (11.1 mg/L) were detected at concentrations above the MTCA levels.

4.2 QUARTERLY GROUNDWATER SAMPLING

Groundwater samples are collected on a quarterly basis (January, April, July, and October) at 2737 and 2750 West Commodore Way. The first quarterly sampling event occurred during the third quarter of the 2001 calendar year. The specific analyses depend on the sample location. The following sections present the results for each property.

4.2.1 Quarterly Groundwater Sampling at 2737 West Commodore Way

Diesel exceeded the MTCA Method A level in every groundwater sample except the sample from well 01MW-15. Gasoline exceeded the MTCA Method A level in 01MW-02, 01MW-03, 01MW-04, 01MW-09, 01MW-12, and 01MW-16. Benzene exceeded the NOAA SQuiRT value in 01MW-02, and 01MW-03. Total xylene exceeded the cleanup level in 01MW-02 and 01MW-04. PCP did not exceed the NOAA SQuiRT values in any of the samples.

4.2.2 Quarterly Groundwater Sampling at 2750 West Commodore Way

Diesel exceeded the MTCA Method A level in every well except 02MW-07. Gasoline (4,270 μg/L) exceeded the MTCA Method A level in 02MW-04. None of the other analytes were detected above the applicable regulatory levels.

5. CONCLUSIONS AND RECOMMENDATIONS

The following sections describe the nature and extent of contamination as well as recommendations for future actions.

5.1 NATURE AND EXTENT OF CONTAMINATION

The following subsections describe the nature and extent of contamination within each area. A summary table (Table 5-1) shows the soil samples exceeding the MTCA Method A levels for unrestricted soil. Tables 5-2 and 5-3 show the groundwater samples exceeding action levels at 2737 and 2750 West Commodore Way, respectively.

5.1.1 Upper Rail Line Spur Area

None of the samples collected from the new boring (SB 61) exceeded the MTCA levels for unrestricted soil. The groundwater sample from 01MW-17 showed concentrations of diesel (0.884 mg/L) above the MTCA cleanup level (0.500 mg/L). The potentiometric surface for the site also showed that 01MW-17 is downgradient from the site, possibly owing to a localized recharge area beneath the Tank Yards. Figure 5-1 shows the extent of diesel-impacted groundwater beneath the site.

5.1.2 Former PCP/Diesel Mixing Area

Diesel- and gasoline-impacted soil appears to be present near the Former PCP/Diesel Mixing Area in SB-52, SB-55, and SB-56 at depths ranging from 2.5 feet to 6 feet. The samples collected from the 10-foot depth in each boring did not show concentrations of petroleum contaminants above the MTCA level for unrestricted soil. PCP was detected (8.88 mg/kg) at a level just above the cleanup level (8.33 mg/kg) in SB-56 at a depth of 5 feet. A well (01MW-14) was installed in boring SB-56. The well was found to contain more than 6 feet of product, with no measurable groundwater present. When the product was sampled, PCP was detected at a concentration of 140 μg/g. Carcinogenic PAHs exceeded the cleanup level (1 mg/kg) in SB-56 at a depth of 2.5 feet. Based on the recent findings and previous investigations, it appears that petroleum-impacted soil is generally limited to the upper 5 feet.

5.1.3 Former Barrel Shed Area

Petroleum-impacted soil was evident in SB-59 at a depth of 5 feet. This result is consistent with the findings from previous investigations. PCP was not detected in soil above the MTCA levels. Analytes were not detected above applicable regulatory levels in groundwater. PCP was detected at low levels and may be a result of historic operations or related to wood preservatives used on former buildings or railroad ties.

5.1.4 New Barrel Shed Area

None of the soil samples from SB-58, located north of the New Barrel Shed Area, exceeded the MTCA Method A levels.

The groundwater samples from 01MW-15 did not show concentrations above the regulatory levels. PCP was detected at low levels and may be a result of historic operations or related to wood preservatives used on former buildings or railroad ties.

5.1.5 West Commodore Way Perimeter Area

Petroleum-impacted soil was found in SB-60 at a depth of 15 feet. The soil contamination was found near the water table and may be the result of groundwater influence rather than contaminated soil. A well (01MW-16) was installed in this location. The groundwater sample showed concentrations of gas and diesel above the MTCA levels. It is not clear whether groundwater contamination is due solely to activities at the Former PCP/Diesel Mixing Area to the south, the loading rack immediately to the south, the Former LUST Area to the west, or a combination of these areas. Figures 5-2 and 5-3 show the extent of gasoline- and benzene-impacted groundwater beneath the site, respectively.

5.2 QUARTERLY GROUNDWATER MONITORING

5.2.1 2737 West Commodore Way

Figures 5-1 through 5-3 show the extent of impacted groundwater beneath 2737 West Commodore Way. In general, groundwater concentrations are consistent with those measured in December 2000.

There appear to be two distinct sources of petroleum hydrocarbon-impacted groundwater beneath the site. One source of hydrocarbon-impacted groundwater may be near the Former

LUST Area where gasoline and benzene concentrations are the highest. Another distinct source of hydrocarbon-impacted groundwater appears to originate in the Tank Yards and extend to the north through the tank farm valve manifold to the truck loading rack area. Although the groundwater impact originating in the Tank Yards consists primarily of petroleum hydrocarbon compounds, a low concentration of PCP was detected in a free product sample collected immediately adjacent to the Former PCP/Diesel Mixing Area.

Although results of the Phase III assessment indicate that groundwater that is impacted with PCP is likely present near the Former PCP/Diesel Mixing Area, the source of low-level PCP impacts in other areas of the site is undetermined. It is possible that the low-level PCP groundwater impacts in areas distant from the Former PCP/Diesel Mixing Area could be related to historical PCP handling at the site. It is also possible that the low-level PCP impacts could be the result of wood treatment chemicals used on former site structures or railroad ties. Additional groundwater sampling and analysis for PCP is necessary to more accurately evaluate potential sources of the low-level PCP impacts to groundwater. None of the PCP concentrations detected in the groundwater samples exceeded the corresponding NOAA SquiRT value.

5.2.2 2750 West Commodore Way

Table 5-3 shows the detections of analytes above the MTCA levels for groundwater. Gasoline and diesel were the only analytes detected above the applicable regulatory levels. The petroleum-impacted groundwater appears to be centered around 02MW-04 near the former garage area. Elevated concentrations in up-gradient well 02MW-05 indicate that it is possible that the petroleum-impacted groundwater is entering the property from the LUST area at 2737 West Commodore Way. Table 5-5 shows the cumulative results of groundwater samples collected at the site.

5.3 RECOMMENDATIONS FOR FUTURE ACTIONS

Based on the conclusions above, Foster Wheeler Environmental recommends future actions for the Property, as described in the sections below. The suggestions below include source removal, installation of a dual-phase extraction (DPE) system, and groundwater monitoring.

In addition to typical fuel-related analytes in groundwater, other parameters may be analyzed to evaluate the natural attenuation process at the site. These parameters include iron, nitrate,

sulfate, and dissolved oxygen. Monitored natural attenuation (MNA) is a useful tool to demonstrate compliance with regulatory cleanup levels.

According to a directive from EPA's Office of Solid Waste and Emergency Response titled Use of Monitored Natural Attenuation at Superfund RCRA Correction and UST Sites (April 1999), MNA is most appropriate when used in conjunction with other remedial actions or as a follow-up remediation measure. At this particular site, source removal activities have been conducted and additional activities are recommended depending on the area. Bioremediation and MNA, in conjunction with the quarterly monitoring of groundwater movement and petroleum and BTEX concentrations, will provide useful information to evaluate groundwater movement and monitor the effectiveness of the source removal and bioremediation activities, coupled with the natural attenuation of contaminants as they undergo degradation. Risk Based Corrective Action (RBCA) evaluations are currently being conducted to ensure that soil and groundwater impacts proposed to be addressed by MNA do not present unacceptable threats to the environment or to the current or future inhabitants of the property.

5.3.1 Upper Rail Line Spur Area

The purpose of installing 01MW-17 was to establish an up-gradient (background) well for the site. Based on the potentiometric surface for July 24, 2001, it appears that the groundwater is mounded beneath the Tank Yards; consequently, groundwater flows in a southwesterly direction from the site toward 01MW-17. The groundwater flow direction to the south from the Tank Yards may provide an explanation for the elevated diesel concentration in the groundwater sample collected from 01MW-17. Continued groundwater monitoring will be useful in evaluating the extent of impacted groundwater.

In order to address the need for a background well, Foster Wheeler Environmental recommends that two additional wells be installed at the site. Possible locations and the rationale for the wells are as follows:

- 01MW-21 (new well) – to be located on the east side of the 2737 West Commodore Way property. The well would be screened in the shallow aquifer and is intended to determine the extent of groundwater mounding beneath the Tank Yards and to provide a potential background well.

- 01MW-22 (new well) – to be located south of the warehouse. The area south of the warehouse was identified as the Former Lower Rail Line Spur Area in the Phase I ESA. Sampling activities conducted during Phase II did not indicate any contaminated soil in this area. Consequently, this area may be a good location to install a background well and further define the potentiometric surface at the site.

5.3.2 Former PCP/Diesel Mixing Area

Petroleum- and PCP-impacted soil has been identified in the upper 2 feet to 5 feet in many of the soil borings in the Former PCP/Diesel Mixing Area. The samples showing the elevated concentrations are from locations surrounding the former PCP/diesel mixing tank. One sample from the 5 foot depth showed elevated concentrations of PCP and cPAHs. Product was detected in the monitoring well (01MW-14) installed north of the former PCP/diesel mixing tank. The thickness of the fuel was estimated to be more than 6 feet. Foster Wheeler Environmental recommends several additional activities in the Former PCP/Diesel Mixing Area, including well installation, groundwater monitoring, surface soil removal, and fuel recovery.

Additional wells, screened in the shallow aquifer, are recommended within the Lower Tank Yard Area near the Former PCP/Diesel Mixing Area, to delineate the lateral extent of the floating product phase. In order to install the new monitoring wells, some surface piping may need to be removed to allow a drill rig to maneuver. If surface piping cannot be removed, a limited access drill rig may be lifted via a crane and lowered into selected areas. Four-inch diameter wells are recommended so they can be used for fuel recovery, should that become necessary.

It is recommended that quarterly groundwater monitoring continue in order to evaluate groundwater concentrations. In addition, water levels will be measured quarterly to develop potentiometric surface maps. Quarterly samples will be analyzed for fuel-related compounds (gasoline, diesel, oil, BTEX) and PCP.

The removal of affected surface soil is also recommended. PCP pellets are visible on the surface due to historical practices of mixing PCP and diesel fuel. Removal of the surface soil, with possible excavation to a depth of 2 feet to 5 feet, may remove source material that could be contributing to the groundwater impacts.

The pipelines that were formerly used to transfer wood-treating solutions from the Former PCP/Diesel Mixing Area to the New Barrel Shed Area have been purged, cleaned, and either decommissioned or converted to stormwater conveyance lines. Because PCP was not detected in soil samples collected from a boring immediately adjacent to the former conveyance lines, and the conveyance lines are no longer used to transfer hydrocarbons or wood treating solutions, it is unlikely that these lines or the soils surrounding them could serve as an ongoing source of hydrocarbon or PCP impacts.

5.3.3 Former Barrel Shed Area

Soil boring SB-59 was installed in the Former Barrel Shed Area to determine whether the operation of the PCP/diesel pipeline had resulted in PCP-impacted soil. The soil samples collected from the boring did not indicate the presence of PCP-impacted soil; however, groundwater beneath the area did show elevated concentrations of PCP. Continued groundwater monitoring is recommended in the area to evaluate PCP-impacted groundwater trends.

5.3.4 New Barrel Shed Area

Soil boring SB-58 was installed in the New Barrel Shed Area to determine whether the operation of the PCP/diesel pipeline and New Barrel Shed Area resulted in PCP-impacted soil. The soil samples collected from the boring did not indicate the presence of PCP-impacted soil; however, groundwater beneath the area did show detectable concentrations of PCP below the regulatory level. Continued groundwater monitoring is recommended in the area to evaluate PCP-impacted groundwater trends.

5.3.5 West Commodore Way Perimeter Area

Petroleum-impacted soil was detected in soil boring SB-60 at a depth of 15 feet below ground surface. Monitoring well 01MW-16 was installed in this location. Groundwater at this location was found to be affected by diesel, gasoline, benzene, and PCP. Because groundwater was found at a depth of approximately 18 feet during drilling, it is possible that the elevated petroleum contamination in soil is a result of groundwater impacts and not due to historic operations affecting the soil directly. During the July quarterly sampling event, product was discovered in nearby well 01MW-10, which was dry during the last sampling episode (December 2000). With the elevated concentrations in 01MW-16, the proximity of

the Former LUST Area, and the newly detected product in 01MW-10, it is recommended that an additional well be installed, groundwater monitoring continue, and pilot-testing activities (Foster Wheeler Environmental 2001c) be conducted.

An additional well located to the south near the truck-loading rack would be useful for many reasons. It is important to determine the extent of product discovered in the Former PCP/Diesel Mixing Area and whether it is related to the product discovered in 01MW-01. In addition, the loading rack may be a potential source area.

Continued quarterly groundwater monitoring is recommended, as mentioned in the previous subsections. Groundwater samples should be analyzed for petroleum products and PCP.

The document *Proposed Product Pilot Testing Activities*, published in October 2001 (Foster Wheeler Environmental 2001c), outlined several steps necessary to design a fuel-recovery system for the Former LUST Area. Implementation of this plan and the ensuing fuel recovery system will aid in the removal of a portion of the contaminant source that appears to be affecting the groundwater beneath the site.

5.3.6 Quarterly Groundwater Sampling

Groundwater samples are collected on a quarterly basis at 2737 and 2750 West Commodore Way. In the past, analyses for PCP have been limited to a few wells. It is recommended that PCP be added to the analyses for wells at both properties. This information will be useful in evaluating the extent of PCP-impacted groundwater, as well as understanding whether the different service areas are mixing or extending across the street from 2737 West Commodore Way to 2750 West Commodore Way. In addition, silica gel cleanup of groundwater samples collected may remove naturally occurring compounds that could be yielding false positive detection of diesel.

6. REFERENCES

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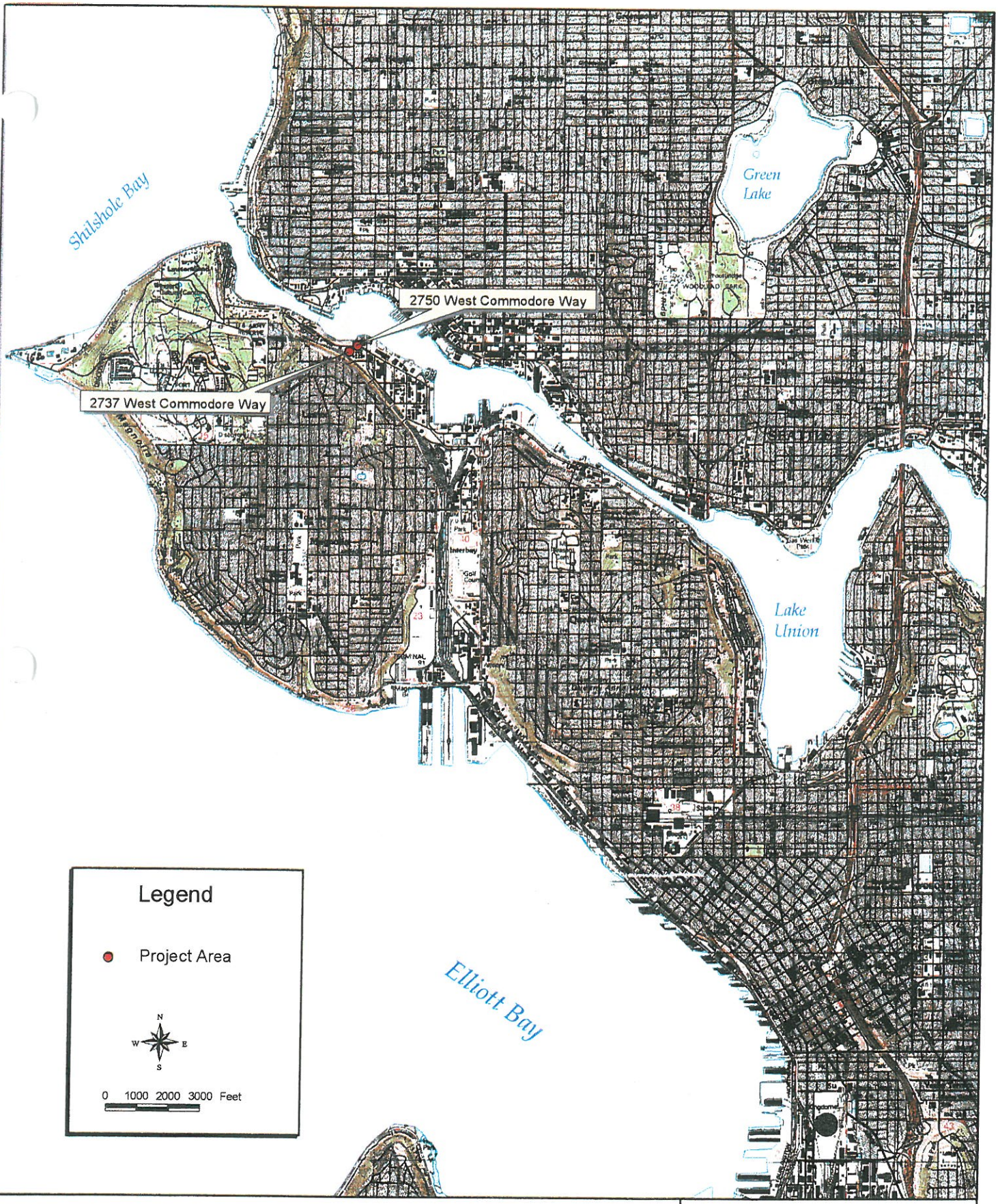
TOC. 2000. Transmittal of Site Assessment Report, Time Oil Company Property No. 01-600; Seattle Terminal Service USTs, 2737 West Commodore Way, Seattle, Washington. May 25, 2000.



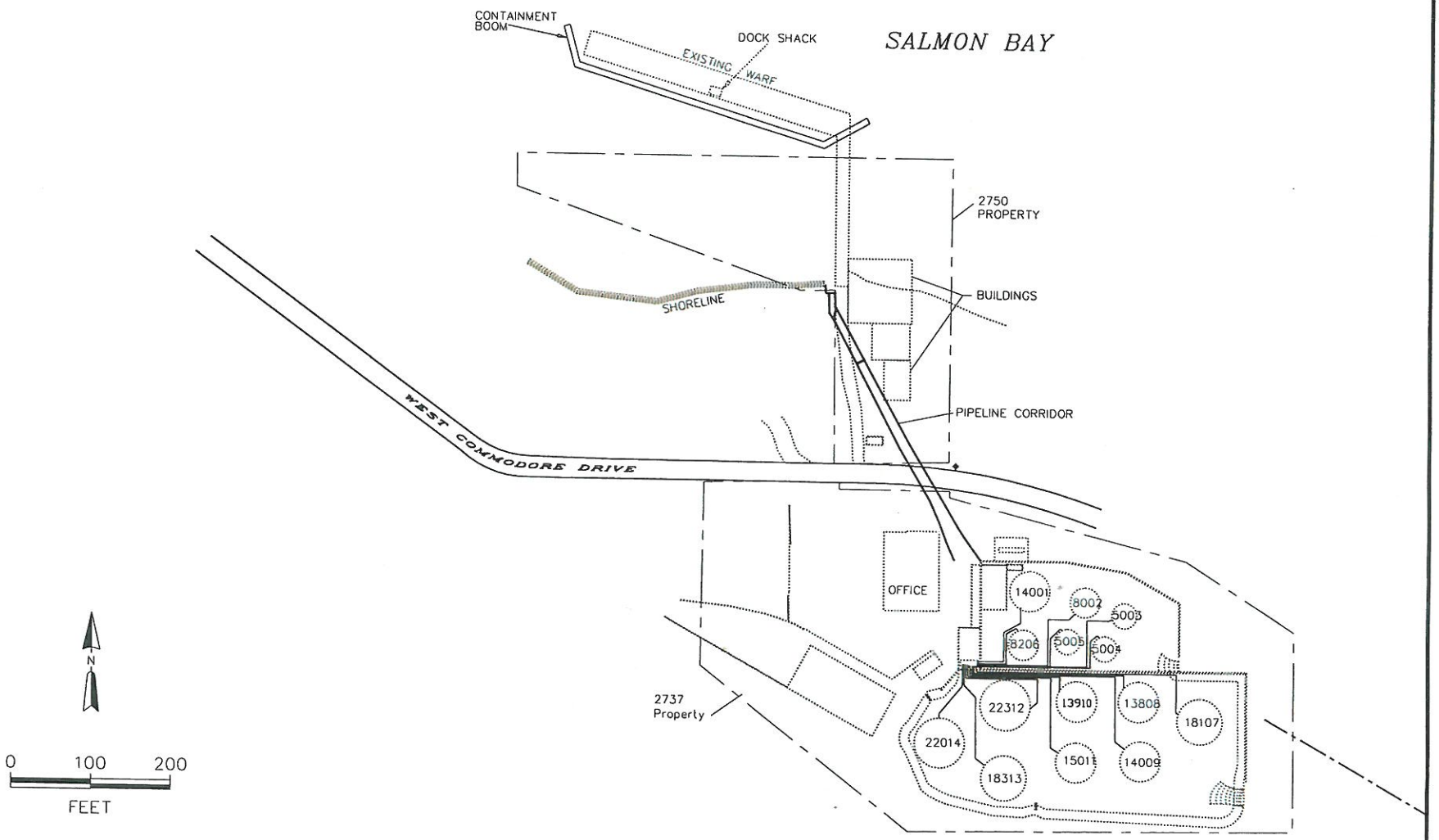
Time Oil Company
Phase III Environmental Site Assessment
and Quarterly Groundwater Sampling

Figure 1-1

Locations of 2737 and 2750
West Commodore Way

c:\projects\time_oil\vic_map_2001 apr December 2001

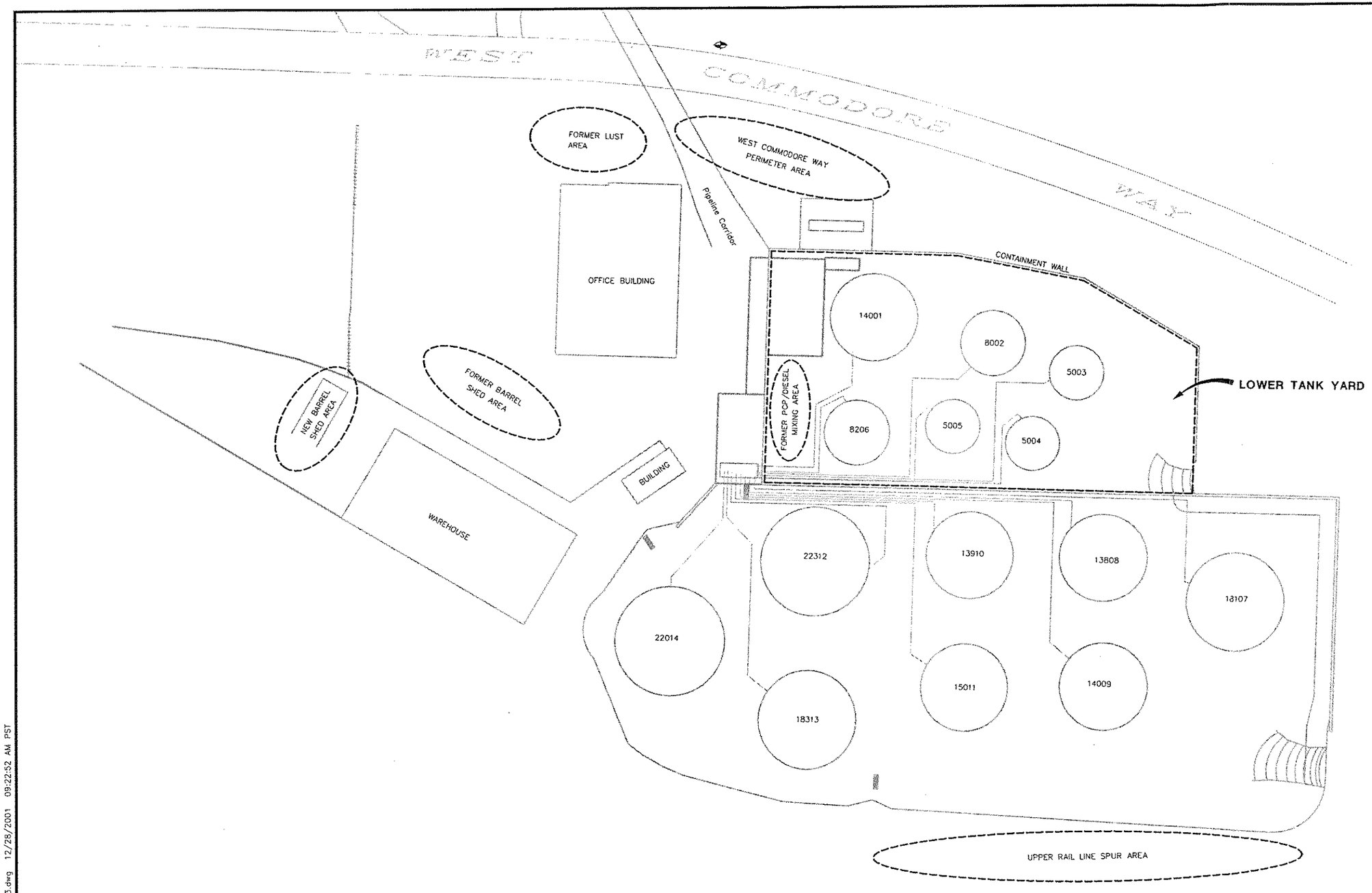
I:\Projects\23063312\dwg\ETIOFG07.dwg 11/05/01 09:58:26 AM PST



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 1-2

Location of 2737 and 2750 West Commodore Way



FOSTER FW WHEELER ENVIRONMENTAL CORPORATION

Figure 1-3

Layout of Property and Investigation Areas at 2737 West Commodore Way

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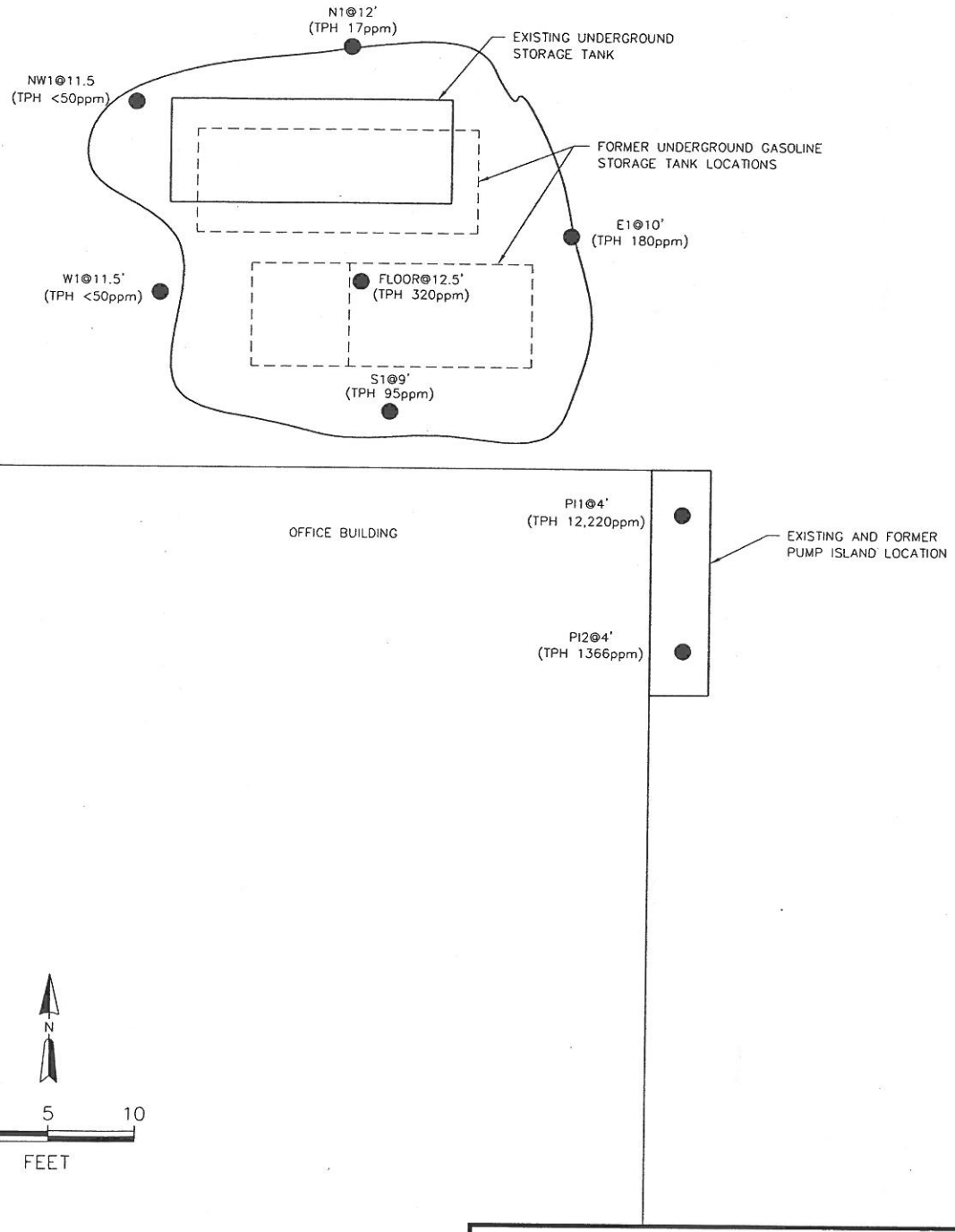

LEGEND

N1@12' (TPH 17 ppm) ● APPROXIMATE SAMPLING LOCATION WITH RESPECTIVE DEPTH AND TPH CONCENTRATION

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 2-1

1991 Sampling Locations
2737 West Commodore Way

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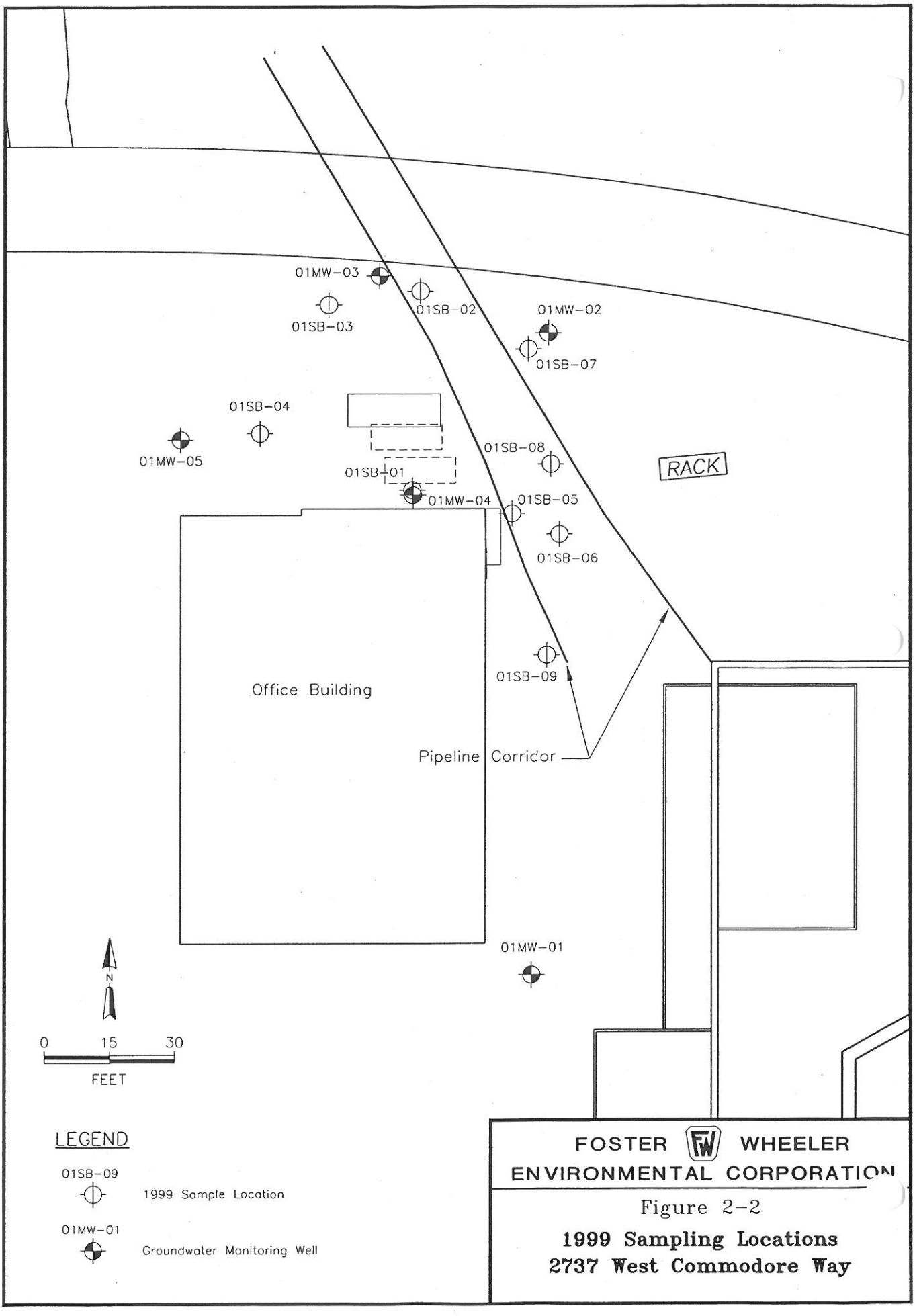
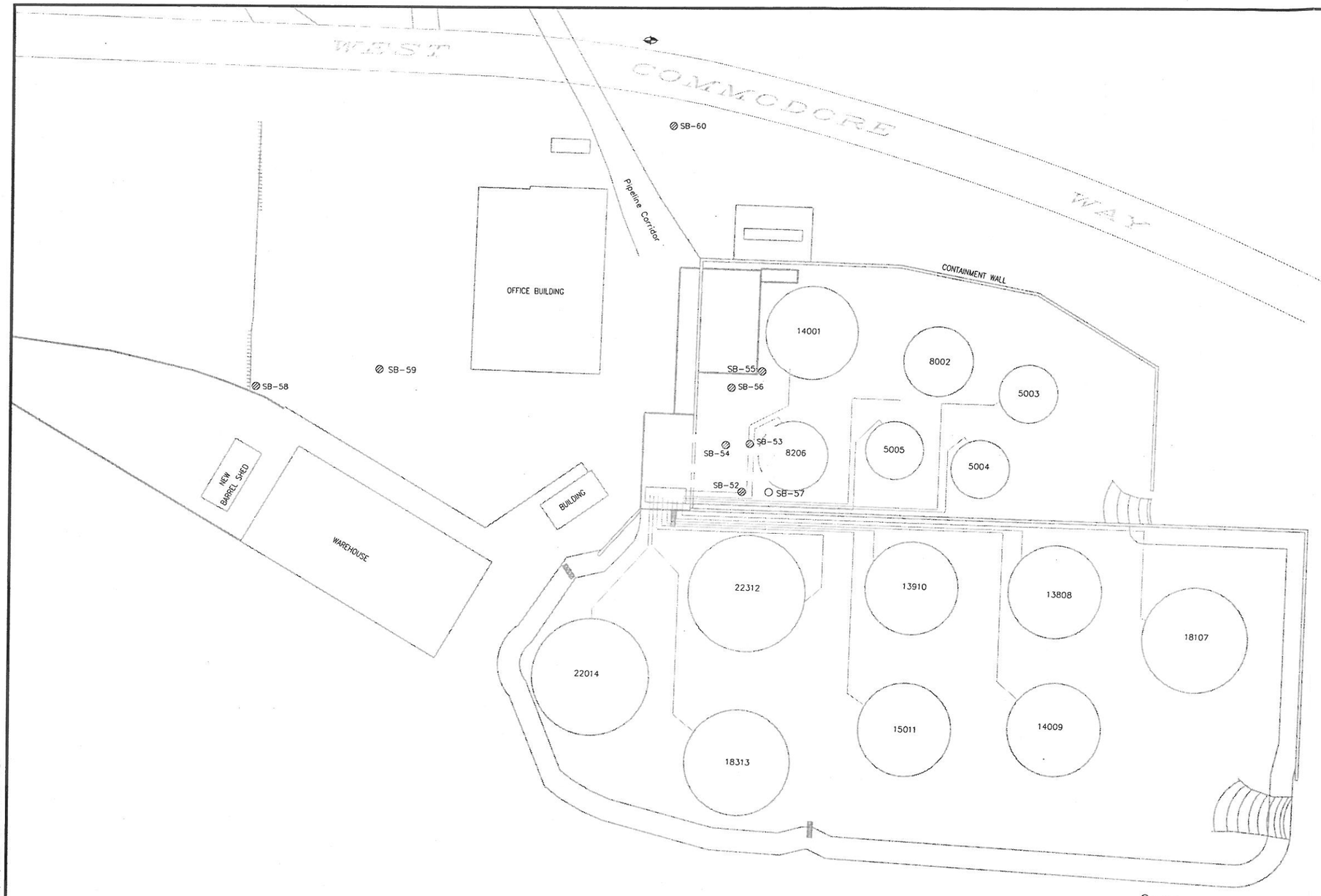

01MW-03
01SB-02
01SB-03
01MW-02
01SB-07
01SB-04
01MW-05
01SB-08
RACK
01SB-01
01MW-04
01SB-05
01SB-06
01SB-09
Office Building
Pipeline Corridor
01MW-01
N
0
15
30
FEET
LEGEND
01SB-09
1999 Sample Location
01MW-01
Groundwater Monitoring Well
I:\PROJECTS\23063312\DWG\ETIOFG10.DWG
PLOT/UPDATE: DEC 28 2001 09:17:37
FOSTER WHEELER
ENVIRONMENTAL CORPORATION
Figure 2-2
1999 Sampling Locations
2737 West Commodore Way



LEGEND

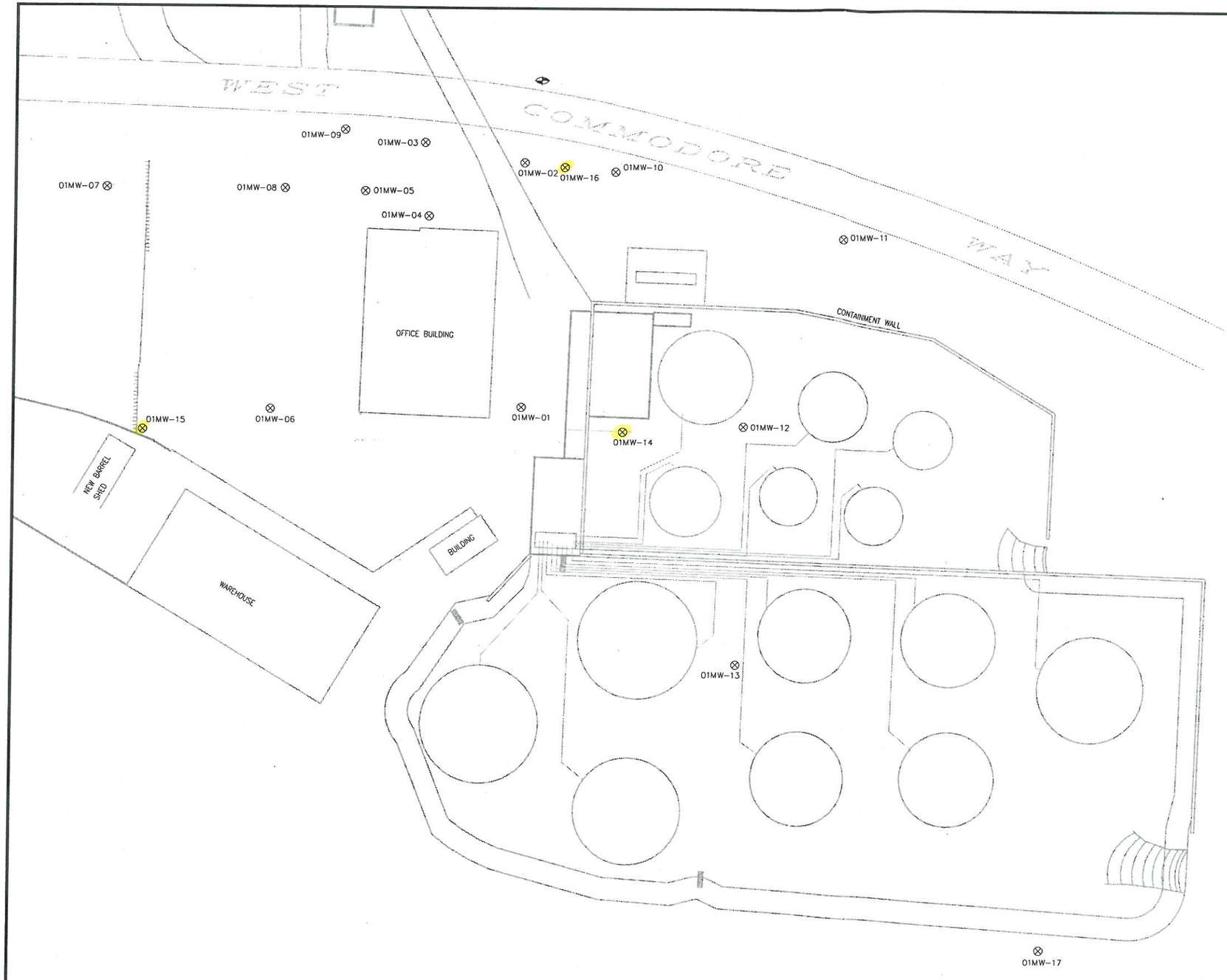
- SOIL BORING
- NEAR-SURFACE SAMPLE
- SURVEY MONUMENT

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 3-1

Locations of Phase III Soil Borings at 2737 West Commodore Way

I:\Projects\23063312\dwg\ETIOFG3-1_PH3.dwg 12/28/2001 09:15:23 AM PST



LEGEND

⊗ MONITORING WELL

SURVEY MONUMENT

N

GRAPHIC SCALE

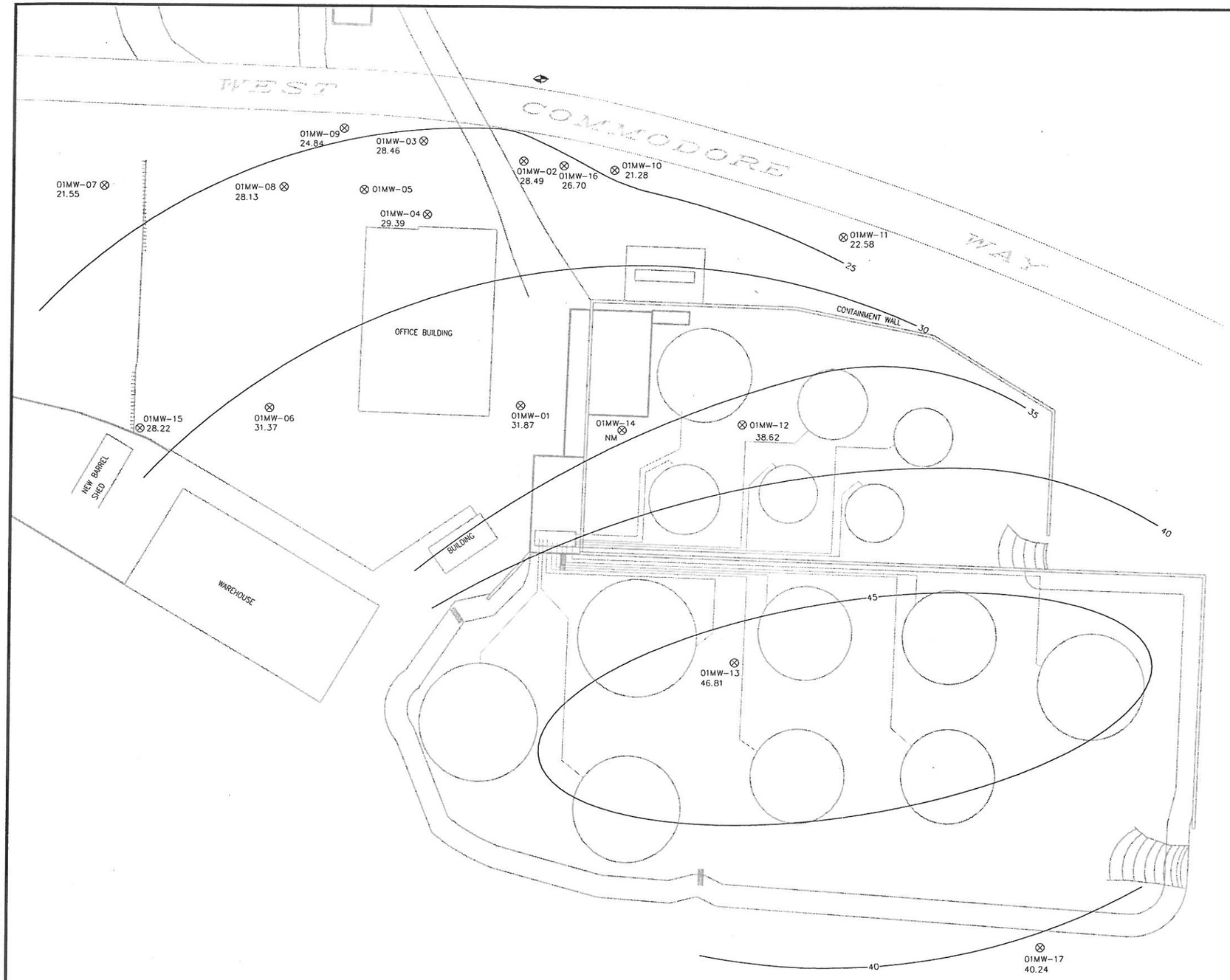
0 30 60

SCALE IN FEET

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 3-2
Location of Wells at 2737 West Commodore Way

I:\PROJECTS\23063312\DWG\ETIOFG2-2.DWG
PLOT/UPDATE: DEC 28 2001 09:12:45



LEGEND

- ⊗ MONITORING WELL WITH GROUNDWATER ELEVATION (Feet MSL)
- SURVEY MONUMENT
- 5.0 EQUIPOTENTIAL CONTOUR (Feet MSL) CONTOUR INTERVAL 5 FEET
- NM NOT MEASURED DUE TO FUEL THICKNESS

N

GRAPHIC SCALE

0 30 60

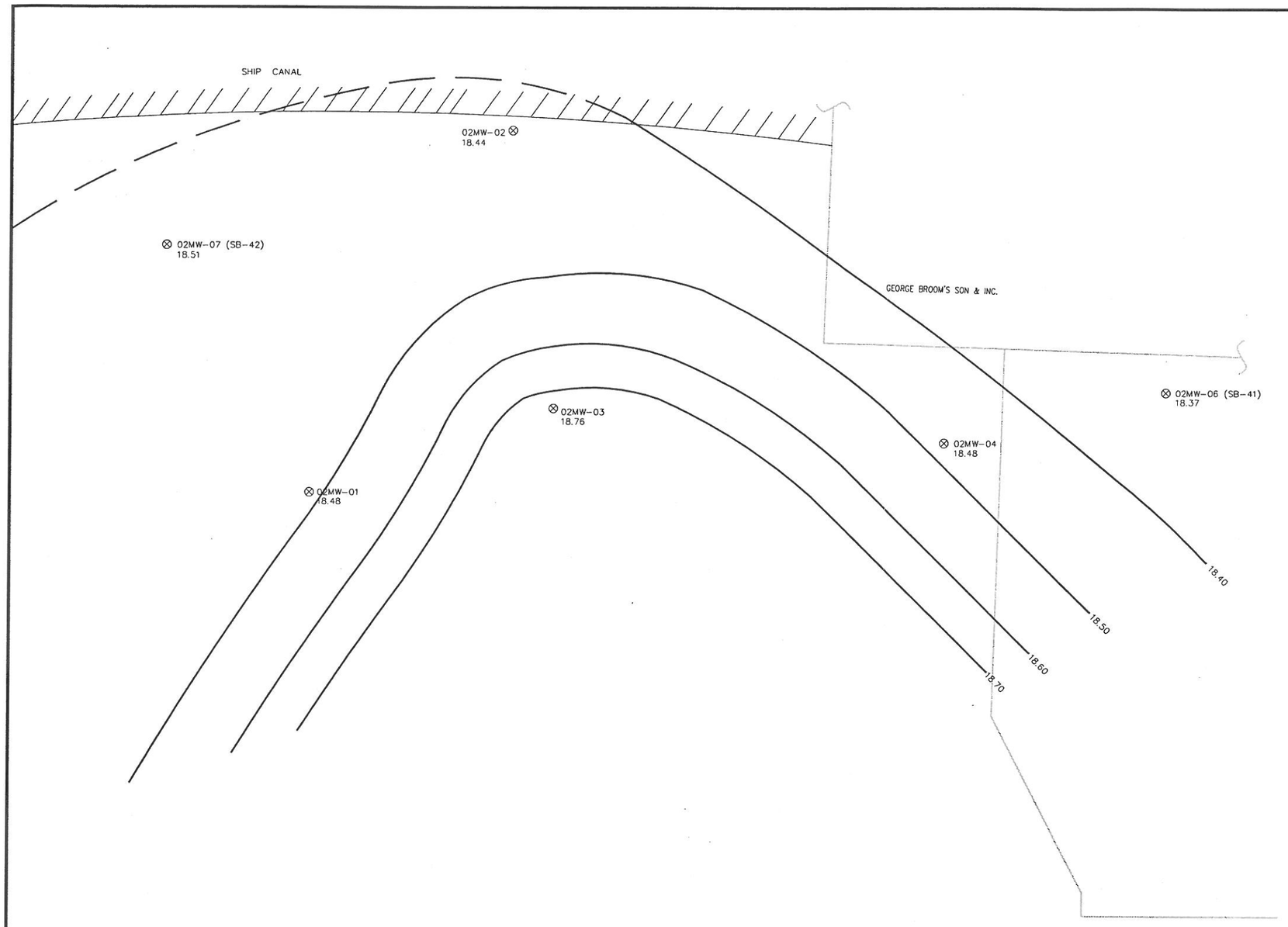
SCALE IN FEET

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 3-3

Potentiometric Surface, July 24, 2001
2737 West Commodore Way

I:\PROJECTS\23063312\DWG\ETIOFG3-3.DWG
PLOT/UPDATE: DEC 28 2001 09:11:27



LEGEND

02MW-05 ⊗ 18.64	MONITORING WELL WITH GROUNDWATER ELEVATION (FEET MSL)
18.70	EQUIPOTENTIAL CONTOUR (FEET MSL) (DASHED WHERE INFERRED) CONTOUR INTERVAL 0.10 FEET

N

GRAPHIC SCALE

0 10 20

SCALE IN FEET
HORIZONTAL SCALE

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 3-4
Location of Monitoring Wells and Potentiometric Surface, Measured July 24, 2001 2750 West Commodore Way

I:\PROJECTS\23063312\DWG\ETIOFG26.DWG
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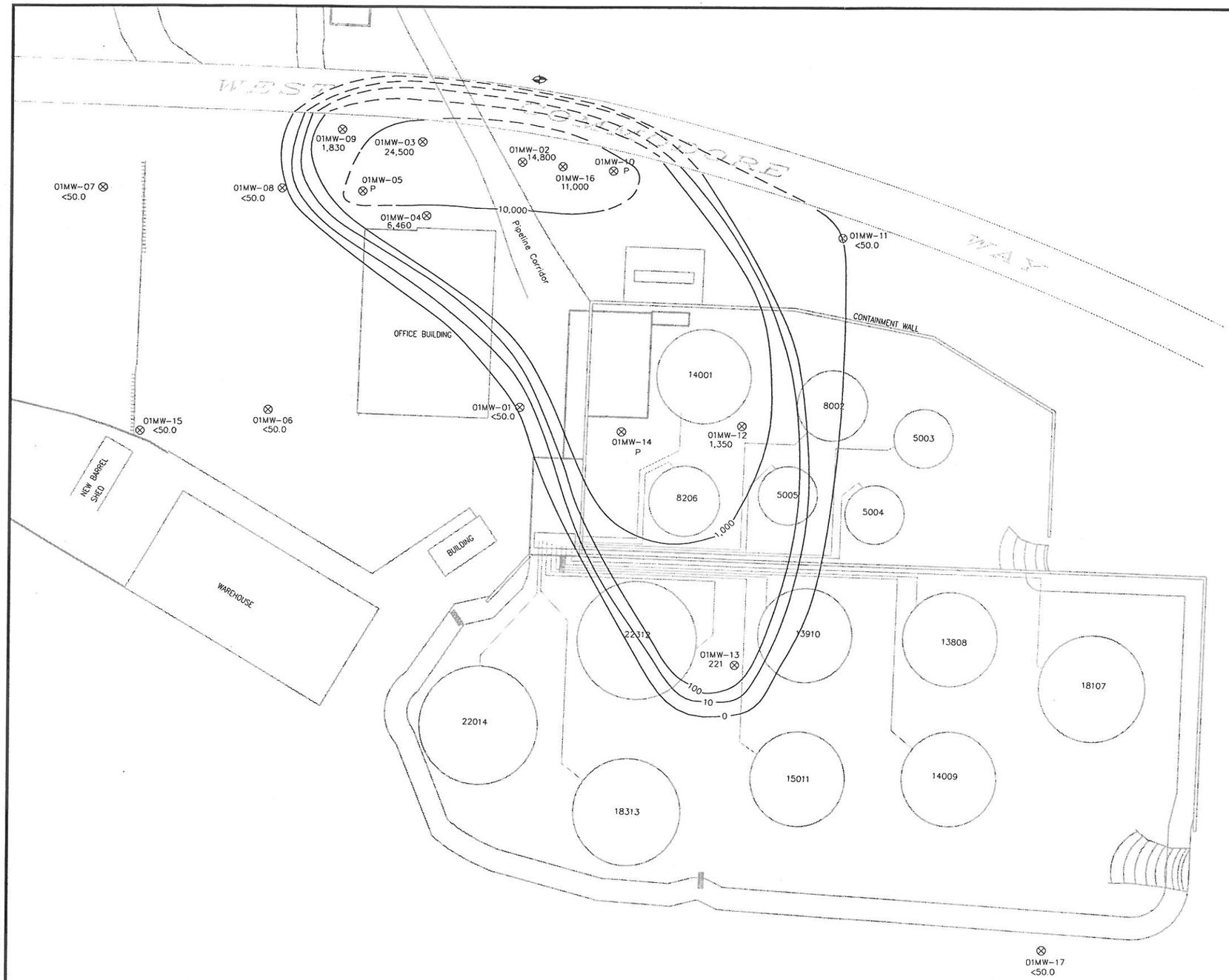


LEGEND

- ⊗ MONITORING WELL
- ⊕ SURVEY MONUMENT
- 5.0 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- P = PRODUCT IN WELL
- CONCENTRATIONS IN µg/L

N

GRAPHIC SCALE

0 30 60

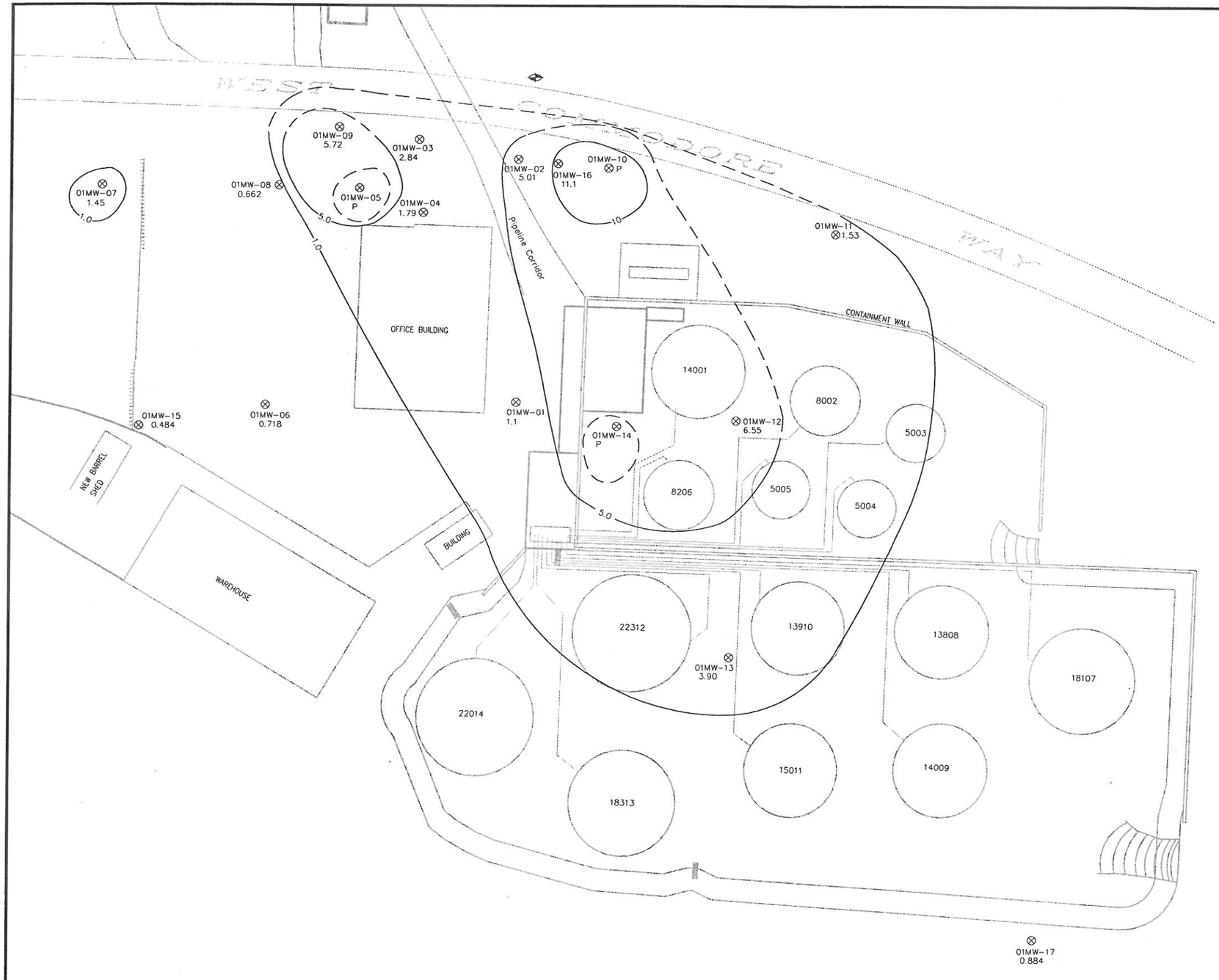
SCALE IN FEET

I:\PROJECTS\23063312\DWG\ETIOFG5-2.DWG
PLOT/UPDATE: DEC 28 2001 09:08:33

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 5-2

Gasoline-Impacted Groundwater, July 2001
2737 West Commodore Way



LEGEND

- ⊗ MONITORING WELL
- SURVEY MONUMENT
- 5.0 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- CONCENTRATIONS IN mg/L
- P = PRODUCT IN WELL
- ZERO CONTOUR STILL UNDER EVALUATION

N

GRAPHIC SCALE

0 30 60

SCALE IN FEET

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 5-1

Diesel-Impacted Groundwater, July 2001
2737 West Commodore Way

I:\PROJECTS\23063312\DWG\ETIOFG5-3.DWG
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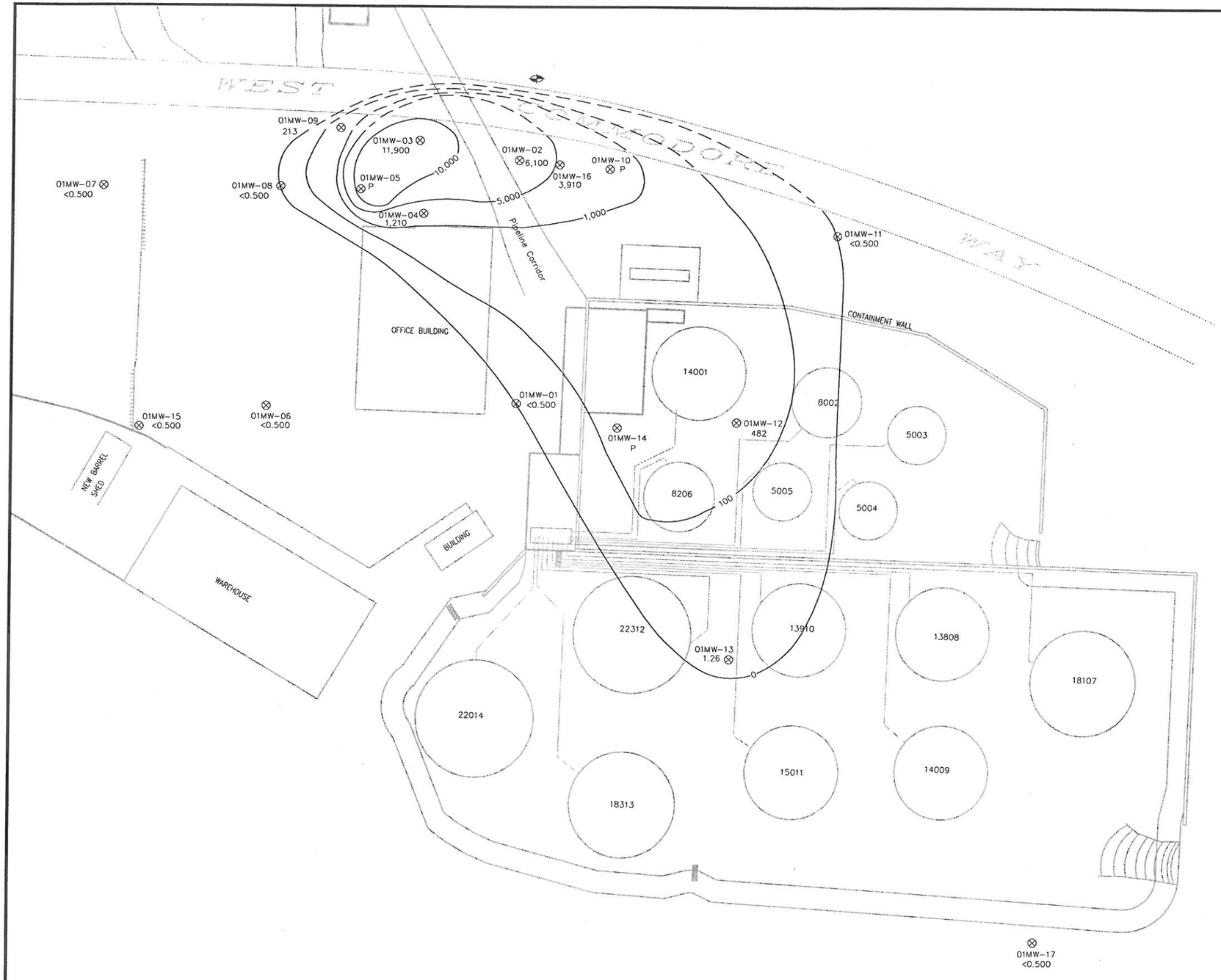


LEGEND

- ⊗ MONITORING WELL
- SURVEY MONUMENT
- 1.0 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- P = PRODUCT IN WELL
- CONCENTRATIONS IN ug/L

N

GRAPHIC SCALE

0 30 60

SCALE IN FEET

I:\PROJECTS\23063312\DWG\ETIOFG5-1.DWG
PLOT/UPDATE: DEC 28 2001 09:07:34

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 5-3
Benzene-Impacted Groundwater, July 2001
2737 West Commodore Way

Table 2-1. Analytical Results from 1999 Soil Samples above Cleanup Levels (mg/kg)

	Depth (Feet)	Gasoline	Diesel	Oil	Benzene	Toluene	Ethyl benzene	Total xylene
MTCA		**100**	**200**	**200**	**0.5**	**40**	**20**	**20**
01SB-05	10	***2,360***	***2,450***	<126	<2.5	33.5	***31***	***190***
01SB-08	12.5	***3,650***	***33,900***	<1,030	***9.96***	<5.0	***20.9***	***73.4***
01SB-09	2.5	***381***	***1,780***	***514***	***2.12***	<0.2	<1.4	**<1.2**
01SB-09	7.0	***2,360***	***24,800***	<525	***3.45***	8.11	11.9	***32.1***
01SB-09	12.5	***755,000***	***15,000***	<525	***5,590***	***26,200***	***9,500***	***55,800***
01SB-09	18	***3,970***	***5,870***	<525	***5.26***	10.5	13.7	***61.5***

Notes: Detections above historic MTCA Method A levels are shown in ***bold italic*** type.
Source: IT Corporation 2000

Table 2-2. Analytical Results from 1999 Groundwater and Boring Water Samples

	Date	Total lead (µg/L)	Gasoline (mg/L)	Diesel (mg/L)	Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total xylene (µg/L)
MTCA		**5.0**	**1.0**	**1.0**	**1.0**	**5.0**	**40.0**	**30.0**	**20.0**
01MW-01	9/28/99	4.15	<0.0500	<0.0500	<1.0	<0.500	<0.500	<0.500	<1.00
01MW-02	9/28/99	***84.9***	***12.2***	0.714	<0.5	***3,880***	***525***	***230***	***1,100***
01MW-03	9/28/99	***87***	***27.2***	0.944	<0.5	***11,300***	***405***	***398***	***1,590***
01MW-04	9/28/99	***130***	***18.9***	***1.32***	<0.5	***4,370***	***1,150***	***606***	***2,780***
01SB-01	6/6/99	--	***9***	***7.56***	<0.5	***2,280***	***579***	***106***	***483***
01SB-02	6/6/99	--	***1.12***	0.965	<0.5	***25.1***	13.5	19.8	***43.6***
01SB-03	6/6/99	--	0.881	<0.25	<0.5	***147***	5.58	24.6	***68***
01SB-04	6/6/99	--	***11***	***7.12***	<0.5	***547***	***847***	***358***	***1,630***
01SB-05	6/6/99	--	***42.9***	***8.71***	***1.01***	***9,580***	***6,600***	***657***	***3,050***
01SB-07	6/6/99	--	***5.36***	***4.18***	0.577	***1,360***	***270***	***139***	***586***
01SB-08	6/6/99	--	***3.41***	***9.55***	<2.5	***1,160***	***93.3***	***60.5***	***218***
01SB-09	6/6/99	--	***54.8***	***12.8***	***1.06***	***11,000***	***7,510***	***840***	***4,570***

Notes: Detections above historic MTCA Method A levels are shown in ***bold italic*** type.
-- = No data.
µg/L = micrograms per liter
mg/L = milligrams per liter
Source: IT Corporation 2000

Table 3-1. Well Construction Details

Well	Coordinates (WA State Plane)		Top of Casing Elevation (Feet msl)	Ground Elevation (Feet msl)	Total Depth of Boring (Feet bgs)	Total Depth of Well (Feet bgs)	Depth of Screen Interval (Feet bgs)	Elevation of Screen Interval (Feet msl)
	Northing (Feet)	Easting (Feet)						
2737 West Commodore Way								
01MW-01	245454.603	1256198.248	46.48	46.76	25.00	25.25	10 - 25	36.76 - 21.76
01MW-02	245585.027	1256198.518	44.78	45.15	25.00	24.91	10 - 25	35.15 - 20.15
01MW-03	245597.585	1256160.493	44.35	44.75	25.20	25.15	10 - 25	34.75 - 19.75
01MW-04	245563.117	1256163.148	45.08	45.56	25.00	24.90	10 - 25	35.56 - 20.56
01MW-05	245569.311	1256114.025	45.40	45.77	25.00	24.88	10 - 25	35.77 - 20.77
01MW-06	245452.677	1256064.638	47.74	48.23	25	25.10	10 - 25	38.23 -23.23
01MW-07	245570.711	1255975.885	45.17	45.53	30	28.17	15 - 30	30.53 - 15.53
01MW-08	245570.471	1256070.985	45.21	45.63	25	24.93	10 - 25	35.63 - 20.63
01MW-09	245602.062	1256103.039	43.91	44.37	25	24.70	10 - 25	34.37 - 19.37
01MW-10	245580.377	1256246.968	45.02	45.35	25	24.90	10 - 25	35.35 - 20.35
01MW-11	245545.081	1256368.92	46.10	46.45	30	29.90	15 - 30	31.45 - 16.45
01MW-12	245444.877	1256316.069	45.84	46.29	20	20.00	5 - 20	40.84 - 25.84
01MW-13	245317.347	1256313.287	46.36	46.81	20	19.88	15 - 20	31.81 - 26.81
01MW-14	245441.662	1256252.373	46.15	46.15	15	15.00	5 - 15	41.15 - 31.15
01MW-15	245441.314	1255996.388	50.89	50.89	30.12	30.00	10 - 30	40.89 - 20.89
01MW-16	245582.687	1256220.015	44.95	44.95	22.5	20.00	10 - 20	34.95 - 24.95
01MW-17	245166.941	1256477.520	59.42	59.42	30	30.00	15 - 30	44.42 - 29.42
2750 West Commodore Way								
02MW-01	245789.704	1255985.066	24.19	24.72	20	19.60	20 - 10	15.22 - 5.22
02MW-02	245848.029	1256019.016	20.06	20.57	10	9.90	10 - 5	16.07 - 11.07
02MW-03	245801.020	1256026.193	27.86	28.41	20	19.75	20 - 10	18.91 - 8.91
02MW-04	245795.225	1256092.088	27.17	27.59	20	20.05	20 - 10	18.09 - 8.09
02MW-05	245706.854	1256069.207	36.59	37.05	35	33.85	35 - 20	17.55 - 2.55
02MW-06	245803.277	1256129.549	26.54	27.00	20	19.97	20 - 10	17.50 - 7.50
02MW-07	245828.584	1255960.724	20.85	21.39	12	12.20	12 - 2	19.89 - 9.89

Notes: bgs = below ground surface
msl = mean sea level

Table 3-2. Well Development and Sampling Parameters, July 2001

Well	Date	Gallons Purged	pH	Temperature (Celsius)	Dissolved O_2 (mg/L)	Conductivity (mS/cm)	Turbidity (NTU)	Notes
2737 West Commodore Way								
01MW-01	7/24/01	48	7.14	13.98	0.31	0.733	25.8	None
01MW-02	7/26/01	30	6.9	15.1	2.1	1.159	96	Purges dry, recharges in ~5 minutes
01MW-03	7/26/01	28	6.76	14.6	2.6	0.682	62.1	Fuel odor, purges dry after 10 gallons
01MW-04	7/26/01	38	6.89	15.02	2.59	0.754	35.2	None
01MW-06	7/24/01	24	7.25	14.01	0.42	0.961	58.4	None
01MW-07	7/24/01	24	6.86	17.61	0.49	1.052	20.3	None
01MW-08	7/24/01	24	6.97	14.70	0.26	1.152	57.6	None
01MW-09	7/24/01	36	6.96	15.87	0.14	0.849	12.3	None
01MW-10	*Not developed due to product in well*							
01MW-11	7/24/01	25	7.14	14.38	0.28	0.844	2.9	None
01MW-12	7/26/01	24	6.76	12.29	2.46	1.199	104.2	None
01MW-13	7/26/01	45	6.75	12.02	0.38	1.030	52.7	None
01MW-14	*Not developed due to product in well*							
01MW-15	7/26/01	47	7.31	12.65	1.32	1.046	67.9	Slight H_2S odor
01MW-16	*Insufficient water to sample*							
01MW-17	7/26/01	30	7.26	12.56	0.39	0.801	44.2	None
2750 West Commodore Way								
02MW-01	7/23/01	*Instrument failure*						
02MW-02	7/26/01	70	6.67	14.06	2.64	0.775	10.9	None
02MW-03	7/26/01	85	6.58	12.36	0.19	1.219	560	None
02MW-04	7/26/01	25	6.81	12.83	1.24	0.971	120.5	None
02MW-05	7/24/01	20	6.70	13.50	2.61	1.040	>1,000	None
02MW-06	7/26/01	20	6.81	11.60	0.36	0.846	30.2	None

Notes: mg/L = milligrams per liter
mS/cm = millisiemens per centimeter
NTU = nephelometric turbidity unit
H_2S = hydrogen sulfide

Table 4-1. Analytical Results for TPH, Lead, and PCP in Soil at 2737 West Commodore Way, July 2001

Sample	PCP (mg/kg)	Diesel (mg/kg)	Oil (mg/kg)	Gas (mg/kg)		Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Lead (mg/kg)
MTCA[1/]	**8.33[2/]**	**2,000**	**2,000**	**30[3/]**	**100[4/]**	**0.03**	**7**	**6**	**9**	**250**
New Barrel Shed Area										
SB-58-2	<0.500	116	180	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	4.49
SB-58-5	<0.0500	21.4	29.6	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	5.12
SB-58-10	<0.0500	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	2.49
SB-58-15	0.159	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	3.98
SB-58-25	<0.0500	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	2.27
Former Barrel Shed Area										
SB-59-2	<0.0500	528	470	65.6		<0.0500	<0.0500	0.0733	0.126	5.24
SB-59-5	<0.500	***4,950***	1,170	***799***		<1.00	<1.00	1.94	<2.00	8.14
SB-59-10	<0.0500	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	5.10
SB-59-15	<0.0500	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	2.67
SB-59-20	0.148	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	2.00
West Commodore Way Perimeter Area										
SB-60-2	Na	58.7	79.8	22.8		<0.0500	<0.0500	<0.0500	< 0.100	4.53
SB-60-5	Na	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	8.64
SB-60-10	Na	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	8.20
SB-60-15	Na	***11,400***	<2,520	***1,240***		***1.68***	<1.00	4.04	***10.2***	2.29
SB-60-20	Na	<10.0	<25.0	<5.00		0.0500	<0.0500	<0.500	< 0.100	2.09

Notes: 1/ Results above MTCA Method A level for unrestricted land uses are in ***bold italic*** type.
2/ Results above MTCA Method B carcinogenic level are in ***bold italic*** type.
3/ All other gasoline mixtures.
4/ Without benzene and <20% aromatic hydrocarbons between EC8 and EC16.
< symbol indicates that result is less than reporting limit.
na = No analysis requested.
TPH = total petroleum hydrocarbon
PCP = pentachlorophenol
mg/kg = milligrams per kilogram
MTCA = Model Toxics Control Act

Table 4-2. Analytical Results for PAHs in Soil at 2737 West Commodore Way, July 2001

Sampl	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total cPAHs
Former PCP/Diesel Mixing Area (Lower Tank Yard Area)								
SB-52-2.5	0.0252	0.0187	0.0138	<0.0100	0.0301	<0.0100	0.0309	0.1187
SB-52-6	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-52-10	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-53-2	<0.0100	0.0109	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0109
SB-53-5	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-53-10	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-54-2	0.159	0.111	<0.0200	<0.0200	0.204	<0.0200	0.0896	0.5636
SB-54-5	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-54-10	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.000
SB-55-2.5	<0.0100	0.0133	<0.0100	<0.0100	<0.0100	<0.0100	0.0289	0.0422
SB-55-6	<0.0100	0.0143	<0.0100	<0.0100	0.0143	<0.0100	0.0286	0.0572
SB-55-10	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-56-2.5	0.717	0.757	<0.500	<0.500	1.15	<0.500	<0.500	***2.6240***
SB-56-5	<0.500	0.736	<0.500	<0.500	<0.500	<0.500	<0.500	0.7360
SB-56-10	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0112	0.0279	0.0391
SB-57-1.5	<0.100	<0.100	<0.100	<0.100	0.189	<0.100	<0.100	0.189
Former Barrel Shed Area								
SB-59-2	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-59-5	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	0.000
SB-59-10	<0.0100	0.111	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.1110
SB-59-15	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-59-20	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000

Table 4-2. Analytical Results for PAHs in Soil at 2737 West Commodore Way, July 2001

Sample	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total cPAHs
New Barrel Shed Area								
SB-58-2	0.221	<0.100	<0.100	<0.100	0.122	<0.100	<0.100	0.343
SB-58-5	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-58-10	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-58-15	<0.0100	0.102	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.1020
SB-58-20	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-58-25	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
West Commodore Way Perimeter Area								
SB-60-2	<0.0100	<0.0100	<0.0100	<0.0100	0.0209	<0.0100	<0.0100	0.0209
SB-60-5	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-60-10	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-60-15	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-60-20	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
Upper Rail Line Spur Area								
SB-61-2	<0.0100	0.0327	0.0295	<0.0100	<0.0100	<0.0100	0.0463	0.1085
SB-61-5	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-61-10	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000
SB-61-15	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0000

Notes: Total cPAHs include sum of detections. Half of reporting limit used for non-detects.
All values in milligrams per kilogram (mg/kg).
Total cPAHs that exceed MTCA Method A level of 1 mg/kg are in ***bold italic*** type.
cPAHs = carcinogenic polyaromatic hydrocarbons

Table 4-3. Analytical Results for Groundwater Samples from 2737 West Commodore Way, July 2001

Sample	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Lead (µg/L)
MTCA[1/]	**15[2/]**	**0.5**	**0.5**	**800[3/]**	**1,000[4/]**	**5,300[5/]**	**17,500[5/]**	**32,000[5/]**	**1,000**	**15**
Former LUST Area										
01MW-01	3.94	***1.11***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	< 1.00
01MW-02	na	***5.01***	<1.50	***14,800***		***6,900***	162	262	***1,110***	< 1.00
01MW-03	na	***2.84***	<1.50	***24,500***		***11,900***	238	414	515	< 1.00
01MW-04	na	***1.79***	<1.50	***6,460***		1,210	204	134	***1,470***	< 1.00
01MW-07	na	***1.45***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	< 1.00
01MW-08	na	***0.662***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	< 1.00
01MW-09	na	***5.72***	< 0.500	***1,830***		213	114	48.1	230	< 1.00
West Commodore Way Perimeter Area										
01MW-10	na	na	na	na		na	na	na	na	na
01MW-11	na	***1.53***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	< 1.00
01MW-16A	2.54	***11.1***	< 2.50	***11,000***		3,910	123	261	891	< 1.00
01MW-16B	2.09	***9.62***	< 2.50	***9,390***		3,700	122	209	745	< 1.00
Relative Percent Difference	*19%*	*14%*	*nc*	*16%*		*6%*	*1%*	*22%*	*18%*	*nc*
Lower Tank Yard Area										
01MW-12	na	***6.55***	< 1.50	***1,350***		482	8.84	14.0	26.4	< 1.00
Upper Tank Yard Area										
01MW-13	na	***3.90***	< 1.50	221		1.26	< 0.500	< 0.500	2.31	< 1.00
Former PCP/Diesel Mixing Area (Lower Tank Yard Area)										
01MW-14	na	na	na	na		na	na	na	na	na
Former Barrel Shed Area										
01MW-06	2.17	***0.718***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	< 1.00
New Barrel Shed Area										
01MW-15	1.66	0.484	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	< 1.00
Upper Rail Line Spur Area										
01MW-17	< 0.500	***0.884***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	< 1.00

Notes: 1/ Results above MTCA Method A level are in ***bold italic*** type.
2/ NOAA SQuiRT value for freshwater continuous concentration.
3/ Gasoline range with benzene present.
4/ Gasoline range without benzene present.
5/ NOAA SQuiRT value for freshwater maximum concentration.
na = No analysis requested.
nc = Not able to calculate.
µg/L = micrograms per liter
mg/L = milligrams per liter
< symbol indicates that result is less than reporting limit.

Table 3-3. Water Levels Measured at 2737 and 2750 West Commodore Way, July 24, 2001

Well	Top of Casing Elevation (Feet msl)	Ground Elevation (Feet msl)	Total Depth of Well (Feet bgs)	Depth of Fuel (Feet bgs)	Depth of Water (Feet bgs)	Fuel Thickness (Feet)	Water Elevation (Feet msl)
2737 West Commodore Way							
01MW-01	46.48	46.76	25.25	0.00	14.61	0.00	31.87
01MW-02	44.78	45.15	24.91	0.00	16.29	0.00	28.49
01MW-03	44.35	44.75	25.15	0.00	15.89	0.00	28.46
01MW-04	45.08	45.56	24.90	0.00	15.69	0.00	29.39
01MW-05	45.40	45.77	24.88	15.82	21.77	5.95	28.39
01MW-06	47.74	48.23	25.10	0.00	16.37	0.00	31.37
01MW-07	45.17	45.53	28.17	0.00	23.62	0.00	21.55
01MW-08	45.21	45.63	24.93	0.00	17.08	0.00	28.13
01MW-09	43.91	44.37	24.70	0.00	19.07	0.00	24.84
01MW-10	45.02	45.35	24.90	23.74	24.47	0.73	21.28
01MW-11	46.10	46.45	29.90	0.00	23.52	0.00	22.58
01MW-12	45.84	46.29	20.00	0.00	7.22	0.00	38.62
01MW-13	46.36	46.81	19.88	0.00	6.47	0.00	46.81
01MW-14	46.15	46.15	15.00	8.30	na	6.70	na
01MW-15	50.89	50.89	30.00	0.00	22.67	0.00	28.22
01MW-16	44.95	44.95	20.00	0.00	18.25	0.00	26.70
01MW-17	59.42	59.42	30.00	0.00	19.18	0.00	40.24
2750 West Commodore Way							
02MW-01	24.19	24.72	19.60	0.00	5.71	0.00	18.48
02MW-02	20.06	20.57	9.90	0.00	1.62	0.00	18.44
02MW-03	27.86	28.41	19.75	0.00	9.10	0.00	18.76
02MW-04	27.17	27.59	20.05	0.00	8.69	0.00	18.48
02MW-05	36.59	37.05	33.85	0.00	17.85	0.00	18.74
02MW-06	26.54	27.00	19.97	0.00	8.17	0.00	18.37
02MW-07	20.85	21.39	12.20	0.00	2.34	0.00	18.51

Notes: na = Water level was not determined because product was present.
msl = mean sea level
bgs = below ground surface

Table 4-1. Analytical Results for TPH, Lead, and PCP in Soil at 2737 West Commodore Way, July 2001

Sample	PCP (mg/kg)	Diesel (mg/kg)	Oil (mg/kg)	Gas (mg/kg)		Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Lead (mg/kg)
MTCA[1/]	**8.33[2/]**	**2,000**	**2,000**	**30[3/]**	**100[4/]**	**0.03**	**7**	**6**	**9**	**250**
Upper Rail Line Spur Area										
SB-61-2	na	20.1	88.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	5.14
SB-61-5	na	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	7.43
SB-61-10	na	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	2.86
SB-61-15	na	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	4.17
Former PCP/Diesel Mixing Area (Lower Tank Yard Area)										
SB-52-2.5	<0.0500	***4,180***	<1,020	***1,410***		<1.00	<1.00	1.42	2.18	5.02
SB-52-6	<0.0500	34.4	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	7.45
SB-52-10	0.129	10.3	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	2.39
SB-53-2	0.0916	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	2.67
SB-53-5	<0.0500	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	5.83
SB-53-10	<0.0500	15.7	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	2.54
SB-54-2	0.181	1,500	1,230	86.2		<0.100	<0.100	<0.100	< 0.200	3.24
SB-54-5	<0.0500	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	4.08
SB-54-10	0.0780	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	2.37
SB-55-2.5	<0.0500	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	4.98
SB-55-6	0.174	370	<75.0	***185***		<0.200	<0.200	0.811	3.06	7.56
SB-55-10	0.0770	13.4	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	2.58
SB-56-2.5	<0.500	***28,300***	<5,020	***5,100***		***10.2***	6.24	***29.3***	***75.6***	10.9
SB-56-5	***8.88***	***2,040***	<525	***4,060***		***9.36***	<1.00	***22.3***	***60.5***	6.85
SB-56-10	0.0765	<10.0	<25.0	<5.00		<0.0500	<0.0500	<0.0500	< 0.100	2.59
SB-57-1.5	<0.0500	***3,970***	881	***2,590***		***0.387***	1.94	***18.2***	8.85	13.2

Table 4-4. Analytical Results for PAHs in Groundwater at 2737 West Commodore Way, July 2001

Sample	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total cPAHs
Former Barrel Shed Area								
01MW-06	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
New Barrel Shed Area								
01MW-15	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
West Commodore Way Perimeter Area								
01MW-16A	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
01MW-16B	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Relative Percent Difference	nc	nc	nc	nc	nc	nc	nc	nc
Upper Rail Line Spur Area								
01MW-17	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100

Notes: Total cPAHs include sum of detections. Half of reporting limit used for non-detects.
All values in micrograms per liter (µg/L).
nc = Not able to calculate.
cPAHs = carcinogenic polyaromatic hydrocarbons

Table 4-5. Analytical Results for Groundwater at 2750 West Commodore Way, July 2001

Sample	Gas (µg/L)		Diesel (mg/L)	Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Lead (µg/L)
MTCA	**800[1/]**	**1,000[2/]**	**0.5**	**0.5**	**5,300[3/]**	**1,000**	**32,000[3/]**	**1,000**	**15**
02MW-01	119		***0.500***	< 0.500	44.4	0.662	< 0.500	1.15	< 1.00
02MW-02	< 50.0		***0.679***	< 0.500	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00
02MW-03	90.4		***0.619***	< 0.500	38.6	0.664	< 0.500	< 1.00	< 1.00
02MW-04	***4,270***		***1.41***	< 0.500	23.9	231	165	484	4.68
02MW-05	51.8		***0.997***	< 0.500	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00
02MW06A	< 50.0		***0.923***	< 0.500	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00
02MW06B	< 50.0		***0.897***	< 0.500	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00
Relative Percent Difference	*nc*		*3%*	*nc*	*nc*	*nc*	*nc*	*nc*	*nc*
02MW-07	244		0.417	< 0.500	< 0.500	< 0.500	< 0.500	2.79	< 1.00

Notes: Detections above MTCA Method A are in ***bold italic*** type.

1/ Gasoline range with benzene present.

2/ Gasoline range without benzene present.

3/ NOAA SQuiRT values for freshwater continuous concentration.

na = Not applicable.

nc = Not able to calculate.

µg/L = micrograms per liter

mg/L = milligrams per liter

Table 5-1. Phase III Soil Sample Results Exceeding MTCA Method A Levels for Unrestricted Soil at 2737 West Commodore Way

Sample	PCP (mg/kg)	Diesel (mg/kg)	Gas (mg/kg)		Benzene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	cPAHs (mg/kg)
MTCA[1/]	**8.33[2/]**	**2,000**	**30[3/]**	**100[4/]**	**0.03**	**6**	**9**	**1.0**
Former PCP/Diesel Mixing Area (Lower Tank Yard Area)								
SB-52-2.5	<0.0500	***4,180***	***1,410***		<1.00	1.42	2.18	0.1187
SB-55-6	0.174	370	***185***		<0.200	0.811	3.06	0.0572
SB-56-2.5	<0.500	***28,300***	***5,100***		***10.2***	***29.3***	***75.6***	***2.624***
SB-56-5	***8.88***	***2,040***	***4,060***		***9.36***	***22.3***	***60.5***	0.736
SB-57-1.5	<0.0500	***3,970***	***2,590***		***0.387***	***18.2***	8.85	0.189
Former Barrel Shed Area								
SB-59-5	<0.500	***4,950***	***799***		<1.00	1.94	<2.00	na
West Commodore Way Perimeter Area								
SB-60-15	na	***11,400***	***1,240***		***1.68***	4.04	***10.2***	0.0000

Notes: 1/ Results above MTCA Method A level for unrestricted land uses are in ***bold italic*** type.
2/ Results above MTCA Method B carcinogenic level are in ***bold italic*** type.
3/ All other gasoline mixtures
4/ Without benzene and <20% aromatic hydrocarbons between EC8 and EC16
< symbol indicates that result is less than reporting limit.
na = No analysis requested.
MTCA = Model Toxics Control Act
PCP = pentachlorophenol
cPAHs = carcinogenic polyaromatic hydrocarbons
mg/kg = milligrams per kilogram

Table 5-2. Groundwater Samples Exceeding Cleanup Levels at 2737 West Commodore Way, July 2001

Sample	PCP (µg/L)	Diesel (mg/L)	Gas (µg/L)		Benzene (µg/L)	Xylenes (µg/L)
MTCA[1/]	**15[2/]**	**0.5**	**800[3/]**	**1,000[4/]**	**5,300[5/]**	**1,000**
Former LUST Area						
01MW-01	3.94	***1.11***	< 50.0		< 0.500	< 1.00
01MW-02	na	***5.01***	***14,800***		***6,900***	***1,110***
01MW-03	na	***2.84***	***24,500***		***11,900***	515
01MW-04	na	***1.79***	***6,460***		1,210	***1,470***
01MW-07	na	***1.45***	< 50.0		< 0.500	< 1.00
01MW-08	na	***0.662***	< 50.0		< 0.500	< 1.00
01MW-09	na	***5.72***	***1,830***		213	230
West Commodore Way Perimeter Area						
01MW-11	na	***1.53***	< 50.0		< 0.500	< 1.00
01MW-16A	2.54	***11.1***	***11,000***		*3,910*	891
01MW-16B	2.09	***9.62***	***9,390***		3,700	745
Lower Tank Yard Area						
01MW-12	na	***6.55***	***1,350***		482	26.4
Upper Tank Yard Area						
01MW-13	na	***3.90***	221		1.26	2.31
Former Barrel Shed Area						
01MW-06	2.17	***0.718***	< 50.0		< 0.500	< 1.00
New Barrel Shed Area						
01MW-15	1.66	0.484	<50.0		<0.500	<1.00
Upper Rail Line Spur Area						
01MW-17	<0.500	***0.884***	<50.0		<0.500	<1.00

Notes: 1/ Results above MTCA Method A level are in ***bold italic*** type.
2/ NOAA SQuiRT value for freshwater continuous concentrations.
3/ Gasoline range with benzene present.
4/ Gasoline range without benzene present.
5/ NOAA SQuiRT value for freshwater maximum concentration.
na = No analysis requested.
µg/L = micrograms per liter
mg/L = milligrams per liter
< symbol indicates that result is less than reporting limit.

Table 5-3. Groundwater Samples Exceeding Cleanup Levels at 2750 West Commodore Way, July 2001

Sample	Diesel (mg/L)	Gas (µg/L)	
MTCA	**0.5**	**800[1/]**	**1,000[2/]**
02MW-01	***0.500***	119	
02MW-02	***0.679***	< 50.0	
02MW-03	***0.619***	90.4	
02MW-04	***1.41***	***4,270***	
02MW-05	***0.997***	51.8	
02MW-06A	***0.923***	< 50.0	
02MW-06B	***0.897***	< 50.0	
02MW-07	0.417	244	

Notes: Detections above MTCA Method A are in ***bold italic*** type.
1/ Gasoline range with benzene present.
2/ Gasoline range without benzene present.
mg/L = milligrams per liter
µg/L = micrograms per liter

Table 5-4. Cumulative Groundwater Samples, 2737 West Commodore Way

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
MTCA[1/]		15[2/]	0.5	0.5	800[3/]	1,000[4/]	5,300[5/]	17,500[5/]	32,000[5/]	1,000
Former LUST Area										
01MW-01	Sep-99	na	< 50.0	< 1.0	< 50.0		< 0.500	< 0.500	< 0.500	1.93
01MW-01	Dec-00	na	***1.65***	< 0.500	75.2		0.924	1.46	< 0.500	1.93
01MW-01	Jul-01	3.94	***1.11***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-02	Sep-99	na	***0.714***	< 0.500	***12,200***		3,880	525	230	***1,100***
01MW-02	Dec-00	na	***5.00***	< 0.500	***12,700***		3,300	1010	331	***1,510***
01MW-02	Jul-01	na	***5.01***	<1.50	***14,800***		***6,900***	162	262	***1,110***
01MW-03	Sep-99	na	***0.944***	< 0.500	***27,200***		***11,300***	405	398	***1,590***
01MW-03	Dec-00	na	***1.65***	< 0.500	***3,620***		1,020	26.9	63.6	210
01MW-03	Jul-01	na	***2.84***	<1.50	***24,500***		***11,900***	238	414	515
01MW-04	Sep-99	na	***1.32***	< 0.500	***18,900***		4,370	1,150	606	***2,780***
01MW-04	Dec-00	na	***1.86***	< 0.500	***7,930***		71.2	402	570	***2,840***
01MW-04	Jul-01	na	***1.79***	<1.50	***6,460***		1,210	204	134	***1,470***
01MW-07	Dec-00	na	< 0.250	< 0.500	< 50.0		< 1.08	< 0.500	< 0.500	< 1.00
01MW-07	Jul-01	na	***1.45***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-08	Dec-00	na	0.404	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-08	Jul-01	na	***0.662***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-09	Dec-00	na	***1.07***	< 0.500	***2,210***		302	143	65.2	333
01MW-09	Jul-01	na	***5.72***	< 0.500	***1,830***		213	114	48.1	230
West Commodore Way Perimeter Area										
01MW-10	Jul-01	na	na	na	na		na	na	na	na
01MW-11	Dec-00	na	***0.504***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-11	Jul-01	na	***1.53***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-16A	Jul-01	2.54	***11.1***	<2.50	***11,000***		3,910	123	261	891
01MW-16B	Jul-01	2.09	***9.62***	<2.50	***9,390***		3,700	122	209	745
Upper Tank Yard Area										
01MW-13	Dec-00	na	***3.94***	0.513	254		< 0.500	0.694	< 0.817	< 1.23
01MW-13	Jul-01	na	***3.90***	<1.50	221		1.26	< 0.500	< 0.500	2.31
Lower Tank Yard Area										
01MW-12	Dec-00	na	***1.07***	< 0.500	***802***		98.4	11.0	17.4	24.6
01MW-12	Jul-01	na	***6.55***	<1.50	***1,350***		482	8.84	14.0	26.4
Former PCP/Diesel Mixing Area										
01MW-14	Jul-01	na	na	na	na		na	na	na	na
Former Barrel Shed Area										
01MW-06	Dec-00	1.80	< 0.250	< 0.500	87.4		< 0.500	< 0.500	< 0.500	< 1.00
01MW-06	Jul-01	2.17	***0.718***	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
New Barrel Shed Area										
01MW-15	Jul-01	1.66	0.484	<0.500	< 50.0		<0.500	<0.500	<0.500	<1.00
Upper Rail Line Spur Area										
01MW-17	Jul-01	<0.500	***0.884***	<0.500	< 50.0		<0.500	<0.500	<0.500	<1.00

Notes: 1/ Results above MTCA Method A cleanup level are in ***bold italic*** type.
2/ NOAA SQuiRT value for freshwater continuous concentrations.
3/ Gasoline range with benzene present.
4/ Gasoline range without benzene present.
5/ NOAA SQuiRT value for freshwater maximum concentration.
PCP = pentachlorophenol
na = No analysis requested.
µg/L = micrograms per liter
mg/L = milligrams per liter
< symbol indicates that result is less than method reporting limit.

Table 5-5. Cumulative Groundwater Results, 2750 West Commodore Way

Sample	Date	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Lead (µg/L)
MTCA		**0.500**	**0.500**	**800[1/] 1,000[2/]**	**5,300[3/]**	**17,500[3/]**	**32,000[3/]**	**1,000**	**15**
02MW-01	9/28/99	< 250	< 500	172	72.9	0.811	< 0.5	< 1.0	**36**
02MW-01	11/16/00	0.488	< 0.500	79.0	19.6	1.04	< 0.500	2.35	< 1.00
02MW-01	7/25/01	**0.500**	< 0.500	119.0	44.4	0.662	< 0.500	1.15	< 1.00
02MW-02	9/28/99	< 250	< 500	< 50	< 0.5	< 0.5	< 0.5	< 1.0	**133**
02MW-02	11/16/00	***0.666***	< 0.500	55.0	< 0.580	1.63	0.598	3.28	< 1.00
02MW-02	7/25/01	***0.679***	< 0.500	< 50	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00
02MW-03	9/28/99	< 250	< 500	160	56.7	1.13	< 0.5	1.14	< 1.00
02MW-03	11/16/00	***0.534***	< 0.500	241	118	2.05	< 1.25	< 2.50	< 1.00
02MW-03	7/25/01	***0.619***	< 0.500	90.4	38.6	0.664	< 0.500	< 1.00	< 1.00
02MW-04	9/28/99	< 250	< 500	***3700***	< 30.0	185	226	473	< 1.00
02MW-04	11/16/00	***1.07***	< 0.500	***9020***	< 12.5	972	617	1,840	4.66
02MW-04A	11/16/00	***1.23***	< 0.500	***9650***	< 25.0	996	627	1,850	5.12
02MW-04	7/25/01	***1.41***	< 0.500	***4270***	23.9	231	165	484	4.68
02MW-05	9/28/99	< 250	< 500	< 50	2.84	< 0.5	< 0.5	< 1.0	**86.3**
02MW-05	11/16/00	***0.536***	< 0.500	64.0	< 0.500	< 0.500	< 0.500	1.17	< 0.00100
02MW-05	7/25/01	***0.997***	< 0.500	51.8	< 0.500	< 0.500	< 0.500	< 1.00	< 0.00100
02MW-06	11/30/00	***1.00***	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 0.00100
02MW-06A	7/25/01	***0.923***	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 0.00100
02MW-06B	7/25/01	***0.897***	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 0.00100
02MW-07	12/1/00	0.299	< 0.500	356	< 0.500	< 0.820	< 3.55	< 9.83	< 0.00100
02MW-07	7/25/01	***0.417***	< 0.500	244	< 0.500	< 0.500	< 0.500	2.79	< 0.00100
Trip Blank (11/30)	12/1/00	na	na	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na

Notes: Detections are in ***bold italic*** type.
1/ Gasoline range with benzene present.
2/ Gasoline range without benzene present.
3/ NOAA SQuiRT value for freshwater maximum concentration.
µg/L = micrograms per liter
mg/L = milligrams per liter
na = No analysis requested.

APPENDIX A

SOIL BORING LOGS

FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase III Site Assessment

BORING NUMBER: SB-52

LOCATION: 2737 West Commodore Way

AREA: Former PCP/Diesel Mixing Area

CLIENT: Time Oil Company

SITE MANAGER: Scott Sloan

DRILLING METHOD: 2-inch Acker Soil Mechanic

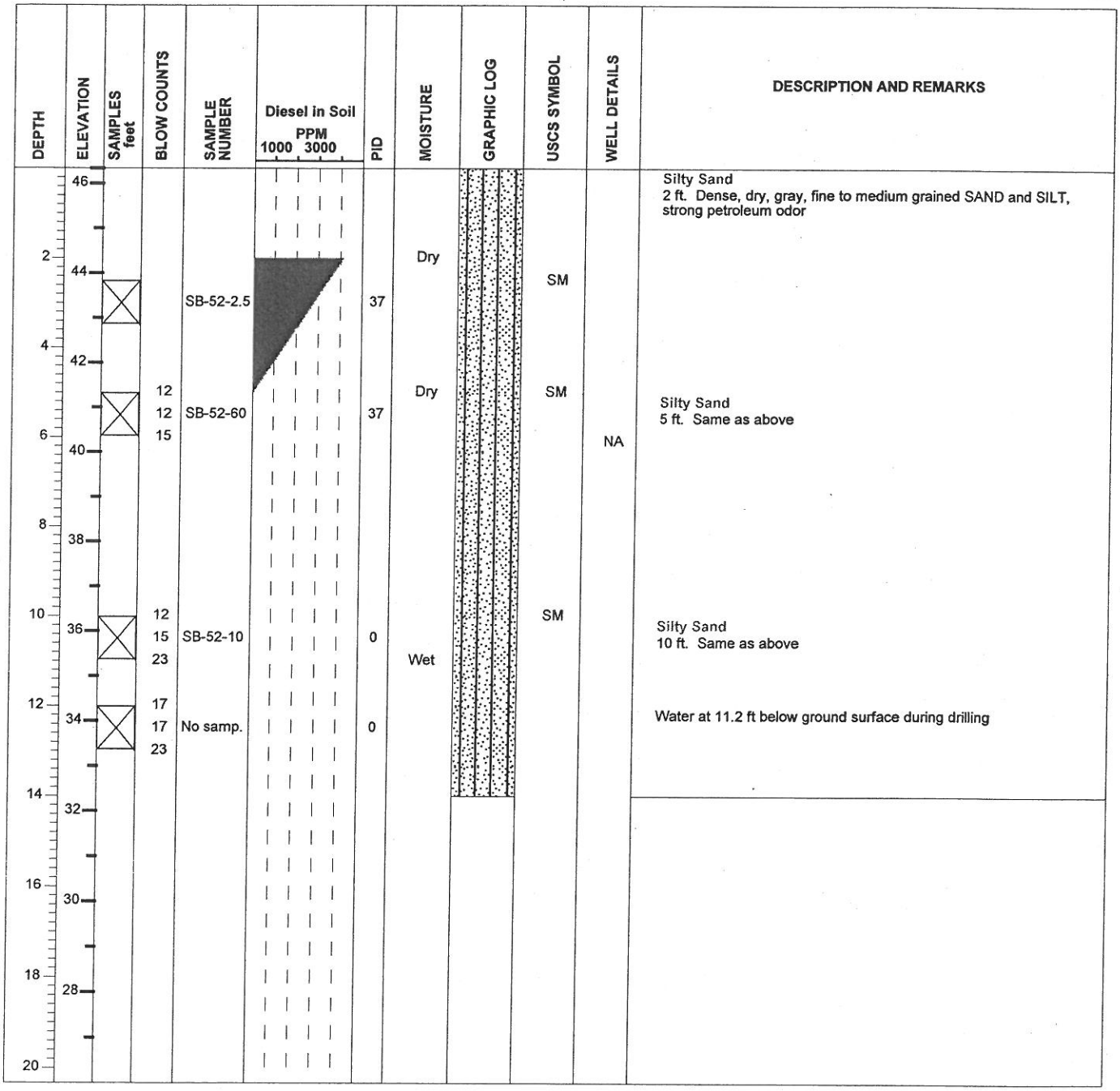
DRILLING CONTRACTOR: BoreTec

DATE/TIME STARTED: 7/16/01 0830

DATE/TIME COMPLETED: 7/16/01 0930

TOTAL DEPTH: 14 feet

WATER DEPTH: 11 feet



FOSTER WHEELER ENVIRONMENTAL CORPORATION 12100 NE 195TH Street, Suite 200 Bothell, WA 98011 (425) 482-7600 (425) 482-7652

FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase III Site Assessment
BORING NUMBER: SB-53
LOCATION: 2737 West Commodore Way
AREA: Former PCP/Diesel Mixing Area
CLIENT: Time Oil Company
SITE MANAGER: Scott Sloan

DRILLING METHOD: 2-inch Acker Soil Mechanic
DRILLING CONTRACTOR: BoreTec
DATE/TIME STARTED: 7/16/01 1030
DATE/TIME COMPLETED: 7/16/01 1130
TOTAL DEPTH: 12 feet
WATER DEPTH: 11 feet

DEPTH	ELEVATION	SAMPLES feet	BLOW COUNTS	SAMPLE NUMBER	Diesel in Soil PPM 20 30 40	PID	MOISTURE	GRAPHIC LOG	USCS SYMBOL	WELL DETAILS	DESCRIPTION AND REMARKS
0	46								SM		Silty Sand 0 to 2 ft. Medium dense, dry, gray, fine to medium grained SILTY SAND, petroleum odor, some oxidized layers in upper 2 feet
2	44	X	12 16	SB-53-2		7.3	Dry		GP		Gravel 2 ft. Dense, dry, gray to brown, GRAVEL
4	42	X	17 13 14	SB-53-5		5.1	Dry		SM		Silty Sand 3 ft. medium dense, dry, gray, fine to medium grained SILTY SAND, petroleum odor
6	40								ML	NA	Silt 6 ft. Silt lenses
8	38								SM		Silty Sand 7 ft. Silty Sand as above
10	36	X	12 13 15	SB-53-10		0	Wet		SW		Sand 10 ft. Medium dense, wet, gray, fine to medium grained SAND, no odor
12	34										
14	32										
16	30										
18	28										
20											

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FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase III Site Assessment
BORING NUMBER: SB-54
LOCATION: 2737 West Commodore Way
AREA: Former PCP/Diesel Mixing Area
CLIENT: Time Oil Company
SITE MANAGER: Scott Sloan

DRILLING METHOD: 2-inch Acker Soil Mechanic
DRILLING CONTRACTOR: Foster Wheeler
DATE/TIME STARTED: 7/16/01 1245
DATE/TIME COMPLETED: 7/16/01 1320
TOTAL DEPTH: 12 feet
WATER DEPTH: 10.5 ft

DEPTH	ELEVATION	SAMPLES feet	BLOW COUNTS	SAMPLE NUMBER	Diesel in Soil PPM 1000 2000	PID	MOISTURE	GRAPHIC LOG	USCS SYMBOL	WELL DETAILS	DESCRIPTION AND REMARKS
0	46										Silty Sand 2 ft. Medium dense, dry, grey to light brown, fine to medium grained SILTY SAND, petroleum odor
2	44	X	13 24	SB-54-2		na	Dry		SM		
4	42										
6	40	X	10 13 14	SB-54-5		na	Dry		SM	NA	Silty Sand 5 ft. Same as above
8	38										
10	36	X	16 17 19	SB-54-10		na	Wet		SW		Sand 10 ft. Medium dense, wet, gray, fine to medium grained SAND, water at 10.45 ft below ground surface during drilling
12	34										
14	32										
16	30										
18	28										
20											

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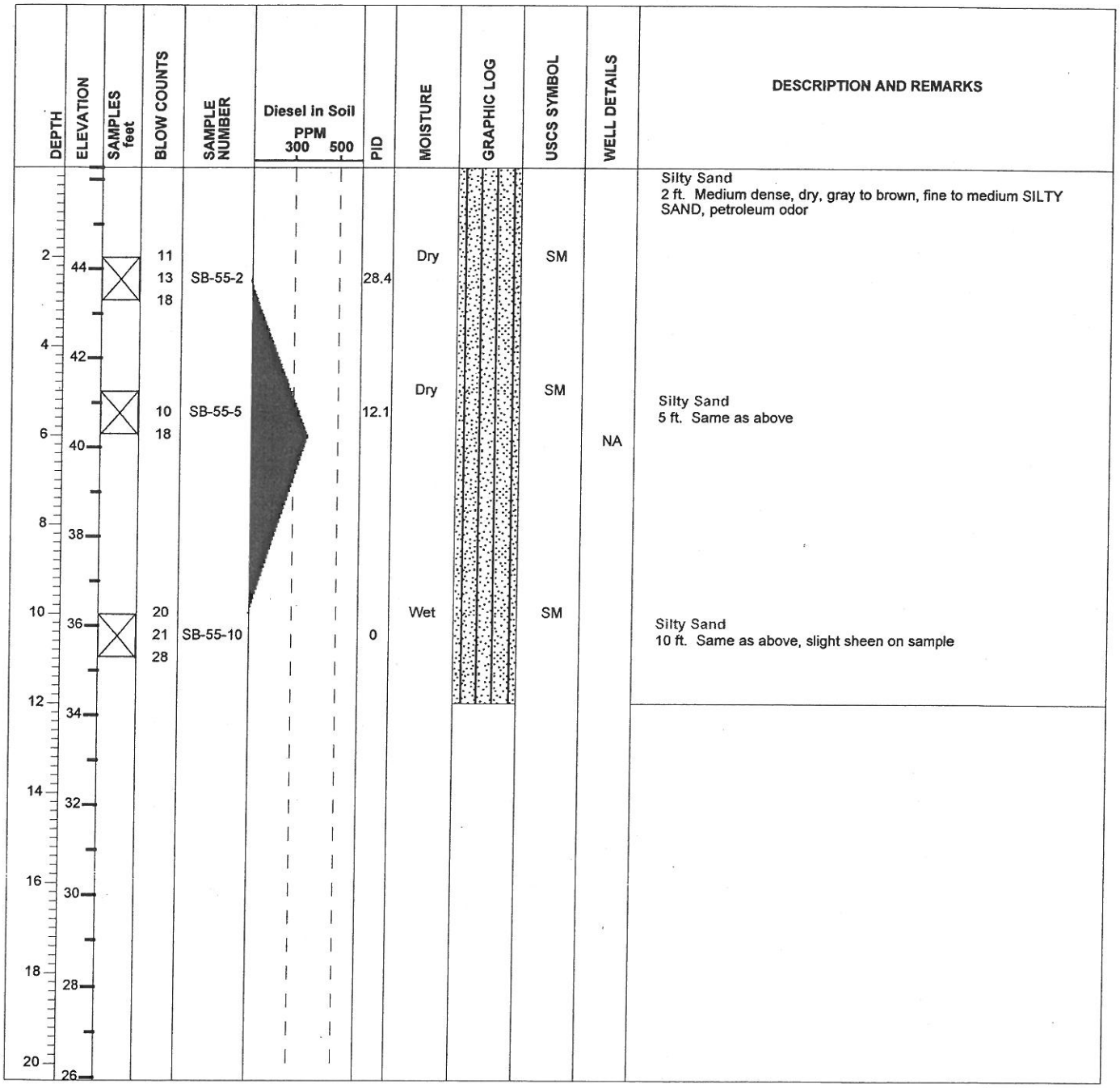
FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase III Site Assessment
BORING NUMBER: SB-55
LOCATION: 2737 West Commodore Way
AREA: Former PCP/Diesel Mixing Area
CLIENT: Time Oil Company
SITE MANAGER: Scott Sloan

DRILLING METHOD: 2-inch Acker Soil Mechanic
DRILLING CONTRACTOR: Cascade
DATE/TIME STARTED: 7/16/01 1410
DATE/TIME COMPLETED: 7/16/01 1500
TOTAL DEPTH: 12 feet
WATER DEPTH: 10.5 ft



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FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase III Site Assessment

BORING NUMBER: SB-56 (01MW-14)

LOCATION: 2737 West Commodore Way

AREA: Former PCP/Diesel Mixing Area

CLIENT: Time Oil Company

SITE MANAGER: Scott Sloan

DRILLING METHOD: 2-inch Acker Soil Mechanic

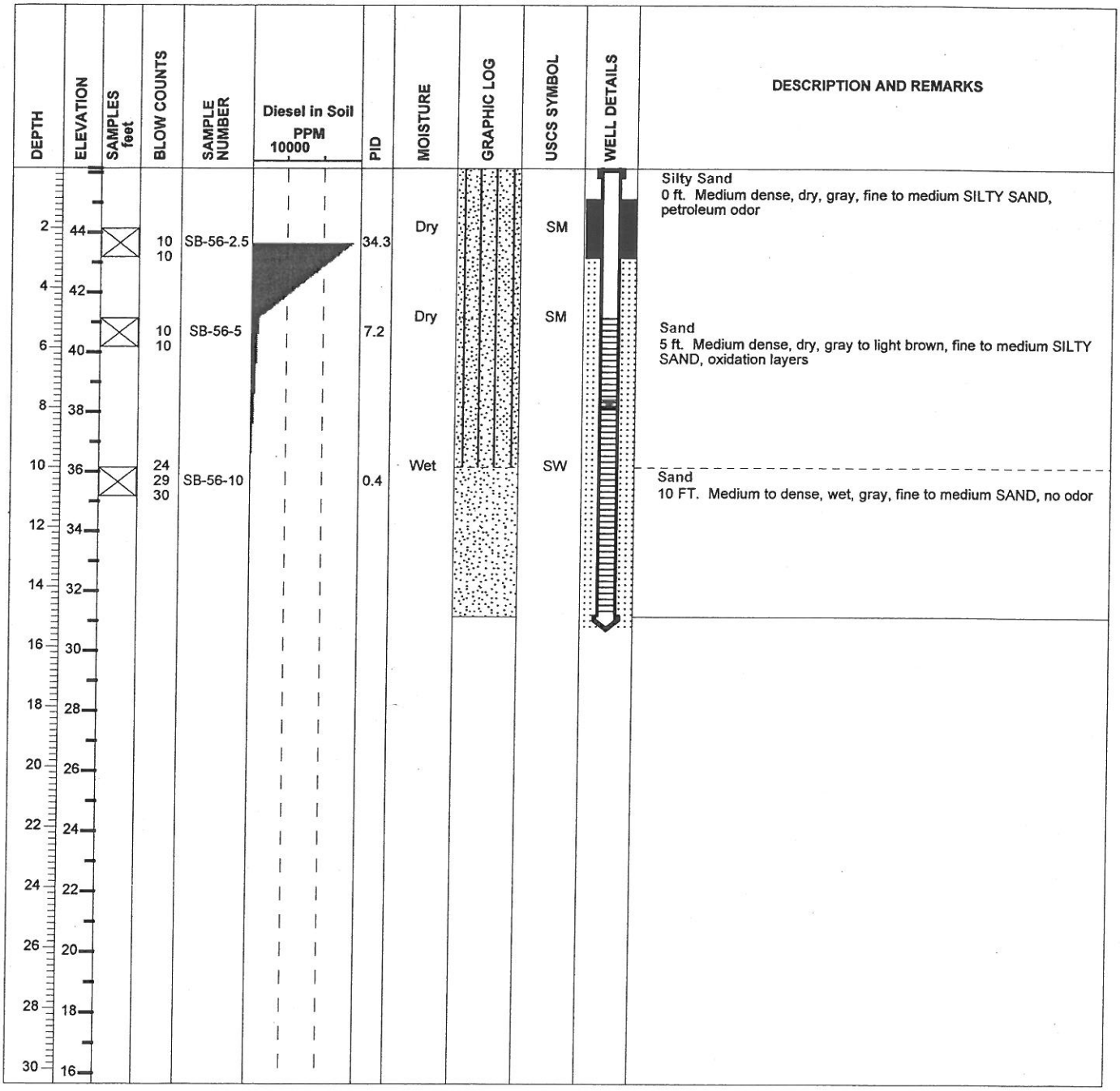
DRILLING CONTRACTOR: BoreTec

DATE/TIME STARTED: 7/17/01 0715

DATE/TIME COMPLETED: 7/17/01 1047

TOTAL DEPTH: 15 ft

WATER DEPTH: 8 ft



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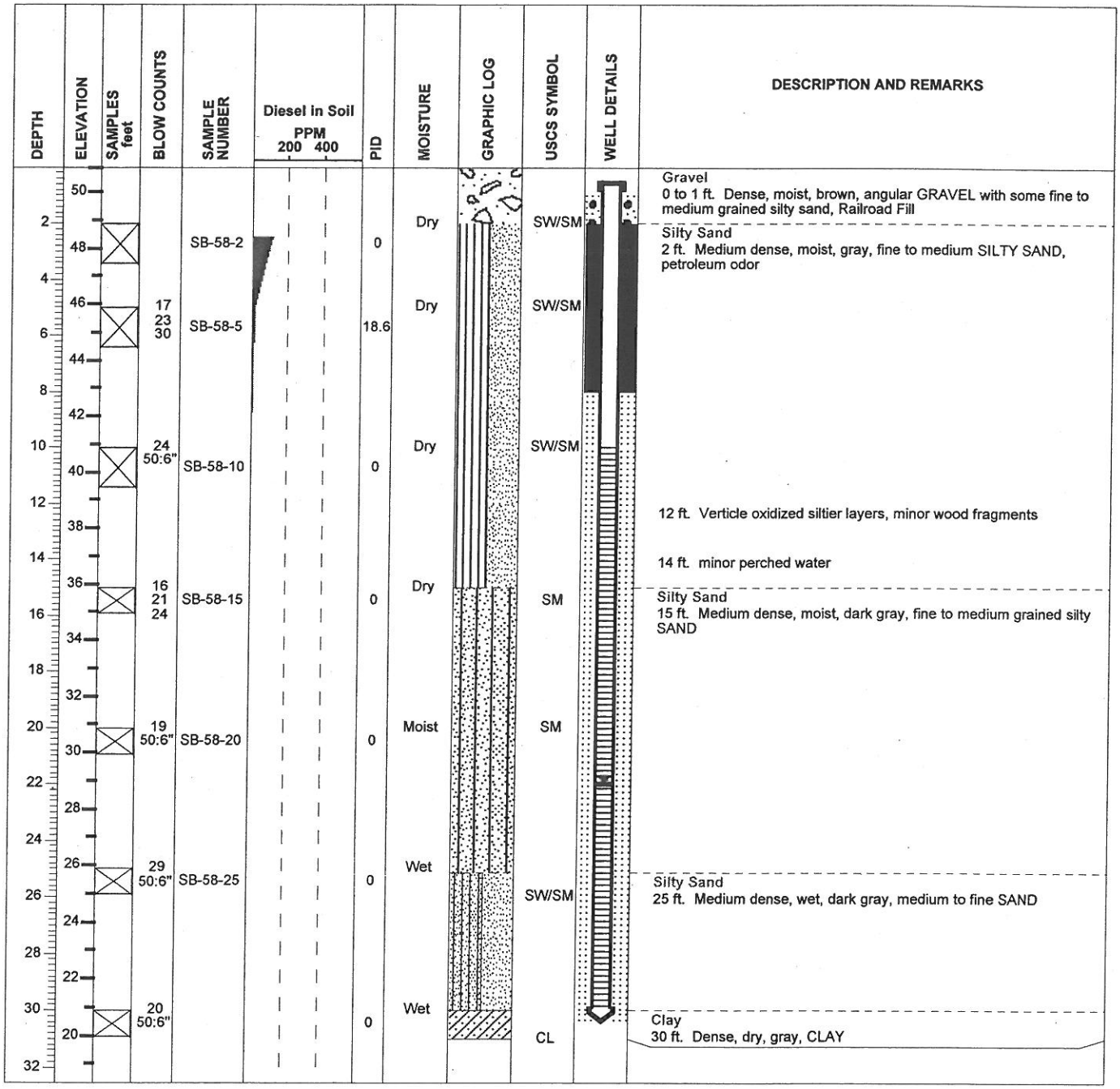
FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase III Site Assessment
BORING NUMBER: SB-58 (01MW-15)
LOCATION: 2737 West Commodore Way
AREA: New Barrel Shed
CLIENT: Time Oil Company
SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA
DRILLING CONTRACTOR: Cascade
DATE/TIME STARTED: 7/19/01 0750
DATE/TIME COMPLETED: 7/19/01 1015
TOTAL DEPTH: 30 ft
WATER DEPTH: 22 ft



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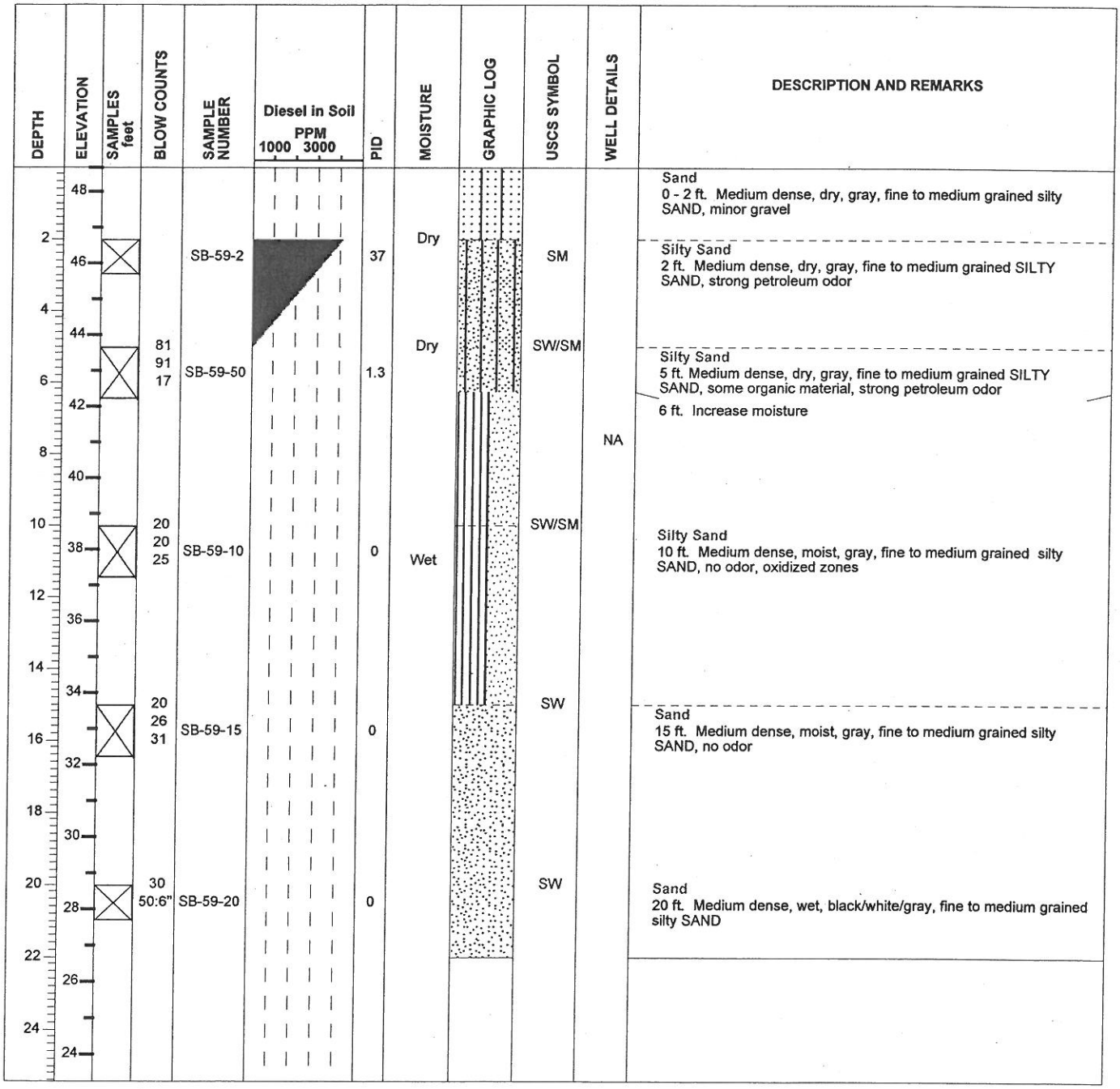
FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase III Site Assessment
BORING NUMBER: SB-59
LOCATION: 2737 West Commodore Way
AREA: Old Barrel Shed
CLIENT: Time Oil Company
SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA
DRILLING CONTRACTOR: Cascade
DATE/TIME STARTED: 7/19/01 1030
DATE/TIME COMPLETED: 7/19/01 1125
TOTAL DEPTH: 20 feet
WATER DEPTH: na



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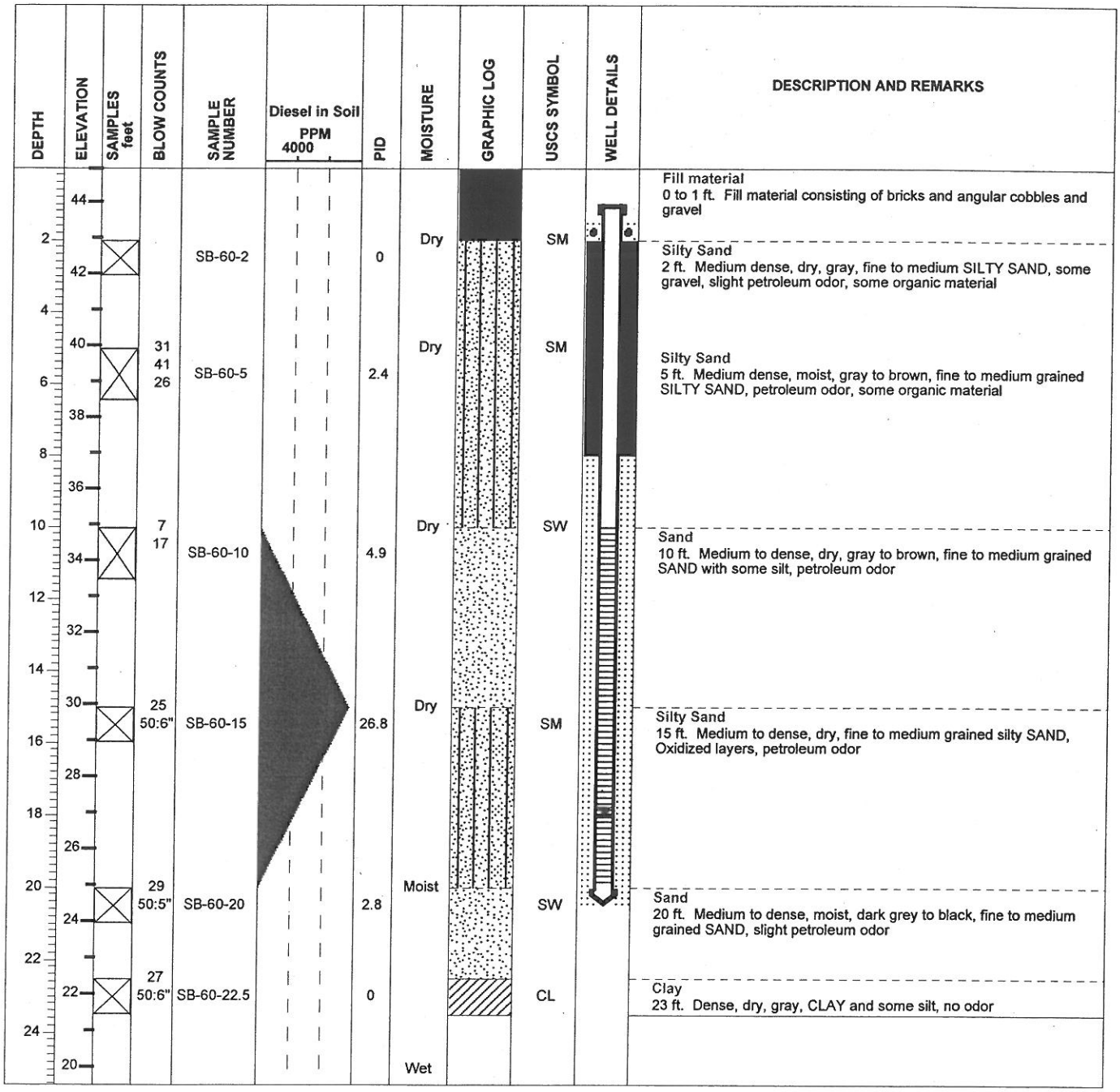
FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase III Site Assessment
BORING NUMBER: SB-60 (01MW-16)
LOCATION: 2737 West Commodore Way
AREA: West Commodore Way Perimeter
CLIENT: Time Oil Company
SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA
DRILLING CONTRACTOR: Cascade
DATE/TIME STARTED: 7/19/01 1255
DATE/TIME COMPLETED: 7/19/01 1415
TOTAL DEPTH: 22.5 ft
WATER DEPTH: 18 ft



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FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase III Site Assessment

BORING NUMBER: SB-61 (01MW-17)

LOCATION: 2737 West Commodore Way

AREA: Upper Railroad Spur

CLIENT: Time Oil Company

SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA

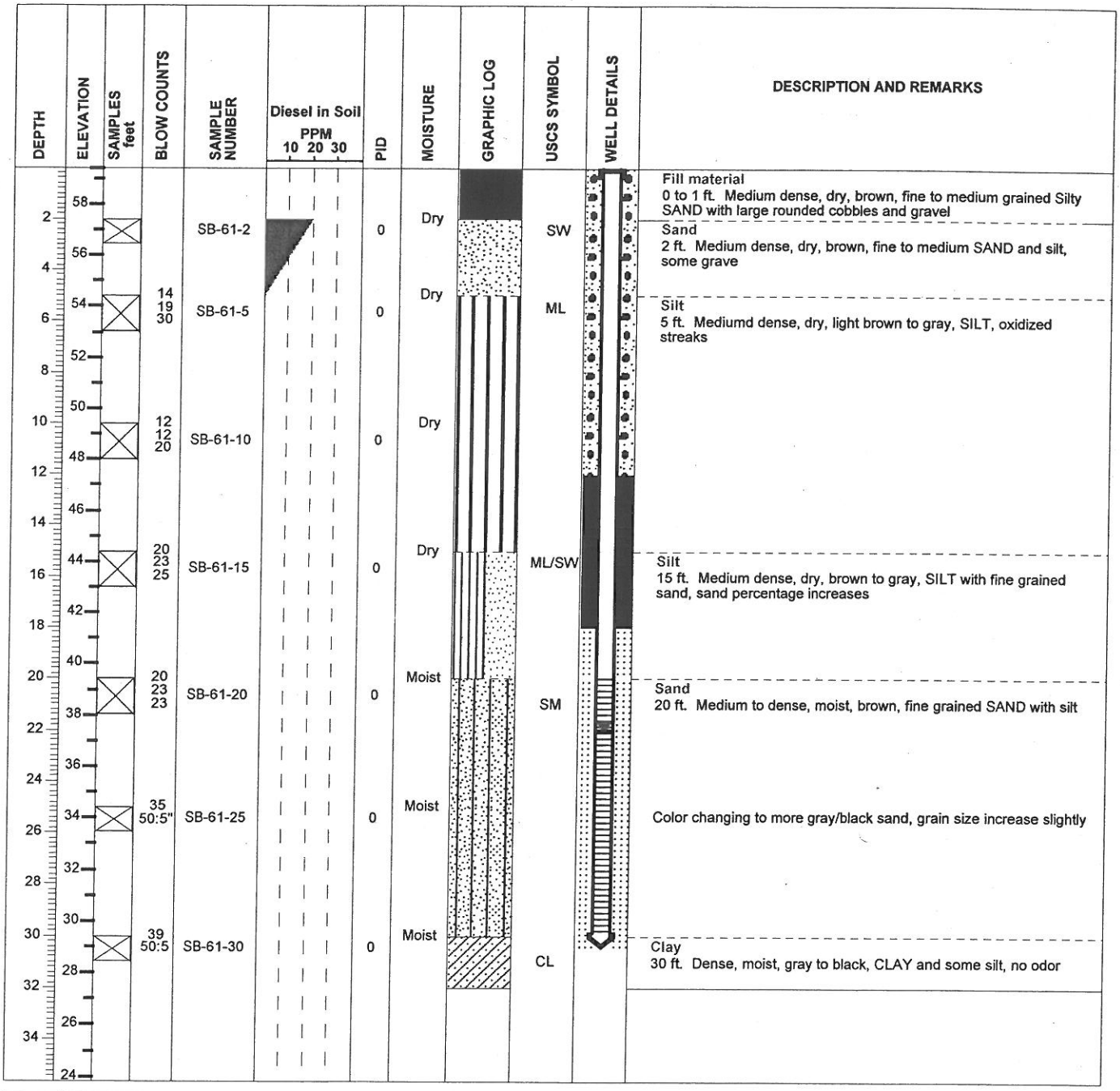
DRILLING CONTRACTOR: Cascade

DATE/TIME STARTED: 7/19/01 1438

DATE/TIME COMPLETED: 7/19/01 1745

TOTAL DEPTH: 32 ft

WATER DEPTH: 22 ft



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FINAL
ENVIRONMENTAL SITE ASSESSMENTS
AND
RBCA EVALUATION

for

2805 West Commodore Way
Seattle, Washington

Prepared for

Time Oil Company

October 2002

Prepared by

FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION

12100 NE 195th, Suite 200

Bothell, WA 98011

Bryan Graham, Project Manager

Monica Caravati, Risk Assessor

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Table 1. Analytical Results for Chemicals Exceeding MTCA Method A (mg/kg) Using NWTPH-GX/BTEX Analytical Method

ACRONYMS AND ABBREVIATIONS

ASKO	ASKO Hydraulic, Inc.
ASTM	American Society for Testing Materials
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
Foster Wheeler Environmental	Foster Wheeler Environmental Corporation
mg/kg	milligrams per kilogram
MTCA	Model Toxics Control Act
NWTPH-Dx	Northwest total petroleum hydrocarbon-diesel
NWTPH-Gx	Northwest total petroleum hydrocarbon-gasoline
Property	2805 West Commodore Way
TCE	trichloroethene
TOC	Time Oil Company
UST	underground storage tank
VOC	volatile organic compound

EXECUTIVE SUMMARY

On behalf of the Time Oil Company (TOC), Foster Wheeler Environmental Corporation conducted a series of investigations at 2805 West Commodore Way, Seattle, Washington. The property has been used for light industrial activities (automobile maintenance, marine engine, and hydraulic equipment repair) since the late 1960s. In August 2000, a Phase I Environmental Site Assessment (ESA) was conducted on the property. The findings of this investigation were documented in the *Environmental Site Assessment: Phase I at 2805 West Commodore Way, Seattle, Washington*, published on August 25, 2000 (Appendix A). The Phase I ESA did not identify any registered underground storage tanks (USTs) associated with the property but did recommend additional subsurface activities in order to determine the condition of soil beneath the steam-cleaning area, drum storage shed, and the former heating oil UST.

In November 2000, soil borings were drilled in the three areas identified in the Phase I ESA. The findings of this investigation were documented in the *Final Environmental Site Assessment: Phase II at 2805 West Commodore Way, Seattle Washington,* published on April 6, 2001 (Appendix B). The Phase II report concluded that contaminant concentrations beneath the former heating oil UST and steam-cleaning area were below regulatory action levels. Subsurface contamination was detected at a depth of 2 to 5 feet below ground surface near the oil storage rack. Because the contamination is at least 20 feet from groundwater, with clean soil in between, and capped by 4 inches of concrete, no future activities were recommended.

To support the conclusions and recommendations of the Phase II ESA, a risk-based evaluation of the affected soil was conducted to refine the evaluation and to give spatial consideration of the data. The evaluation concluded that, when spatially averaged, the Model Toxics Control Act (MTCA) Method A Cleanup Levels or MTCA Method B Ingestion Cleanup Levels have been met and are therefore considered unlikely to pose a potential health risk at the property.

1. INTRODUCTION

1.1 BACKGROUND

Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) has been retained by the Time Oil Company (TOC) to conduct Method Toxics Control Act (MTCA) evaluation at 2805 West Commodore Way in Seattle, Washington (Figure 1). The property is owned by TOC and is located within a 1/4-mile radius.

This report, prepared for the sole use of TOC, presents the results of the MTCA evaluation of the property located at 2805 West Commodore Way (the Property), shown in Figure 1. The format of this report is generally consistent with the recommended format in "Standard Practice for Environmental Site Assessment: Phase I," issued by the American Society for Testing Materials (ASTM) Standard E 1527-97.

1.2 PURPOSE

In August 2000, Foster Wheeler Environmental completed Phase I Environmental Site Assessments (ESAs) at seven properties along West Commodore Way owned by TOC. The Phase I ESA for 2805 West Commodore Way (Appendix A) recommended additional investigation to assess subsurface conditions in three specific areas of the site. In November and December 2000, Foster Wheeler Environmental installed six soil borings. The results of the analytical data showed petroleum products and volatile organic compounds (VOCs) in two borings at concentrations above a point-by-point comparison of the MTCA Method A Unrestricted Land Use Cleanup Levels. This risk-based MTCA Method A Evaluation was conducted to refine the evaluation and give spatial consideration of the data.

1.3 SITE BACKGROUND

The site at 2805 West Commodore Way is zoned as an industrial area (Figure 1). There are two buildings on the site. The main building is used for fabricating metal parts; a smaller building is used to store oil drums (Figure 2). The majority of the ground surface at the site is paved. The southern boundary of the site slopes toward the Burlington Northern rail line. Each day there are approximately 25 workers on site involved in metals machining and fabricating activities.

TOC acquired the site in 1946. Historical photographs indicate that the site was undeveloped in 1936. Originally, the site was divided into smaller lots. In 1946, the site had been cleared and was used by TOC for the staging of empty 55-gallon drums. The current facility on site was constructed in the late 1960s to service TOC's vehicles. Between 1974 and 1979, the site was used for marine and truck engine rebuilding and contained a warehouse and machine shop. In 1979, ASKO Hydraulic, Inc. (ASKO) began fabricating metal parts in the main building.

According to a representative for ASKO, several changes have occurred at the site since the time the facility was originally built. An oil storage shed was added around 1996. Before 1996, petroleum products were stored in 55-gallon drums on a rack in the area. The change was made in response to state regulations and local fire marshal directives. In addition, a small (<500 gallons) heating oil underground storage tank (UST) was removed outside the northwest corner of the building. No reports were available regarding the removal of this UST. However, the King County Department of Design, Construction, and Land Use has a permit application from 1964 on file for the installation of two 550-gallon USTs. The presence of a second UST could not be confirmed. No previous investigations have been conducted at the facility.

2. PHASE II INVESTIGATION AND RESULTS

2.1 INVESTIGATION

Six soil borings were advanced in three areas of the Property (Figure 3).

Area 1: Steam-cleaning Area—An outdoor bermed steam-cleaning area, used for cleaning tools, is located near the southeast corner of the main building. Oily water is collected in an open drain and transferred to an oil/water separator located inside the main building. One soil boring (SB-40) was completed in this area to a depth of 15 feet to evaluate the subsurface conditions. Groundwater was not encountered during boring activities.

Area 2: Former Heating Oil UST—During the employee interview process, it was discovered that a 500-gallon or smaller heating oil UST had been removed outside of the northeast corner of the building. There were no records or reports available to confirm this action or what the subsurface conditions were at the time of removal. Subsequently, three soil borings (SB-46, SB-47, and SB-48) were completed in this

area to a depth of 25 feet to evaluate the subsurface conditions. Groundwater was not encountered at SB-47 or SB-48. Groundwater was encountered in SB-46 at a depth of 25 feet below ground surface (bgs) based on the saturated sample, though no free-standing water was detected in the boring. The depth of water in SB-46 was consistent with the regional trends, and the boring was not advanced further.

Area 3: Oil and Solvent Storage Area—An oil and solvent storage area is located just northeast of the steam-cleaning area. Two soil borings (SB-49, SB-50) were completed in this area to a depth of 15 feet to evaluate the subsurface conditions. Groundwater was not encountered.

None of the soil borings drilled at the site penetrated the shallow aquifer. Based on information from adjoining properties, the shallow aquifer beneath the site was found at approximately 25 feet bgs. The aquifer consists of fine- to well-sorted sand with some silt. The aquifer is approximately 20 feet thick and is underlain by dense, gray silt and clay. Groundwater beneath the site is believed to flow to the north toward the Ship Canal. There are no wells on the site, nor were groundwater samples collected during this investigation.

The samples were analyzed for the following contaminants:

- Gasoline; benzene, toluene, ethylbenzene, and xylene (BTEX), using NWTPH-Gx and U.S. Environmental Protection Agency (EPA) Method 8021B;
- Diesel and oil, using NWTPH-Dx;
- Total metals, using EPA 6010A/7000A series; and
- VOCs, using EPA Method 8260B.

2.2 CLEANUP CRITERIA

The analytical results were compared to the MTCA Cleanup Criteria, effective August 15, 2001. For this site, only soil cleanup levels are being evaluated. Groundwater samples were not collected at the site because contaminated soil was not found within 15 feet of the water table.

There are two types of soil cleanup levels: unrestricted land use levels and industrial land use levels. According to the MTCA Cleanup Regulation 173-340-2000, "unrestricted site use" means that restrictions on the use of the site or natural resources affected by releases

of hazardous substances from the site are not required to ensure continued protection of human health and the environment.

The same regulation identifies "industrial properties" as properties that are or have been characterized by, or are to be committed to, traditional industrial uses such as processing or manufacturing of materials, marine terminal and transportation areas and facilities, fabrication, assembly, treatment, or distribution of manufactured products, or storage of bulk materials, that are either

- Zoned for industrial use by a city or county conducting land use planning under Chapter 36.70A RCW; or
- Zoned for industrial use and adjacent to properties currently used or designated for industrial purposes, in counties not planning under Chapter 36.70A RCW and the cities within them.

However, many of the MTCA Method A Soil Cleanup Levels for unrestricted and industrial uses are identical because many of the cleanup levels are based on concentrations that are protective of groundwater and independent of land use (unrestricted versus industrial).

2.3 METHOD COMPARISON RESULTS

The following sections describe the analytical results relative to applicable risk-based action levels.

2.3.1 Steam-cleaning Area

One boring was completed at the steam-cleaning area:

- SB-40

Trichloroethene (TCE) was detected at a depth of 10 feet bgs at a concentration of 0.170 milligrams per kilogram (mg/kg), which is above the MTCA Method A Unrestricted Land Use Cleanup Levels representing soil levels that are protective of groundwater. Since groundwater beneath the site is not used for drinking water, the more applicable cleanup level would be the MTCA Method B Ingestion Cleanup Level for exposure based on soil ingestion. The MTCA Method B Ingestion Cleanup Level is based on the potential for site workers to come in

contact with, and ingest impacted soil. When compared to the MTCA Method B Cleanup Level (91 mg/kg), the site concentration is well below the cleanup level.

TPH as gasoline was detected at a depth of 10 feet bgs at a concentration (8.05 mg/kg) which is below the MTCA Method A Unrestricted Land Use Cleanup Level (30 mg/kg). Metals were not detected above the MTCA Method A Unrestricted Land Use Cleanup Level. Diesel, motor oil, or other VOC analytes were not detected above the method reporting limit.

The method detection limits (0.100 mg/kg) for three chemicals (benzene, methylene chloride, and trichloroethene) exceeded the MTCA Method A Unrestricted Land Use Cleanup Level. The MTCA Method A Cleanup Levels are 0.03 mg/kg, 0.02 mg/kg, and 0.03 mg/kg, respectively, and are based on protection of groundwater. However, the detection limits do not exceed the MTCA Method B Ingestion Cleanup Levels.

2.3.2 Former Heating Oil UST Area

Three borings were completed in this area:

- SB-46, SB-47, and SB-48

  Diesel was detected at a depth of 2 feet bgs and at 10 feet bgs in boring SB-46, at concentrations of 90.8 mg/kg and 10.7 mg/kg, respectively. Oil was also detected at a depth of 2 feet bgs in SB-46 at a concentration of 147 mg/kg. None of the detected concentrations of diesel and oil exceeded the MTCA Method A Unrestricted Land Use Cleanup Level. Gasoline was not detected above the MTCA Method A Cleanup Level. VOCs were not detected above the method reporting limit. Petroleum-impacted soil was not detected in contact with the groundwater.

2.3.3 Oil and Solvent Storage Area

Two borings were completed in this area:

- SB-49

  Gasoline, diesel, oil, and xylenes were detected (using EPA Method 8021B) in SB-49 at a depth of 2 feet bgs, at concentrations exceeding the MTCA Method A Cleanup Level. Gasoline, diesel, oil, and xylene were also detected (using

EPA Method 8021B) at a depth of 5 feet bgs; however, only gasoline and xylenes exceeded the MTCA Method A Cleanup Levels. At a depth of 10 feet bgs, gasoline and xylene were not detected above the reporting limit (5.00 mg/kg for gasoline and 0.100 mg/kg for xylene). Diesel-range organics (DRO) and oil exceeded the MTCA Method A Cleanup Levels at the shallow interval but were below the MTCA Method A Cleanup Level at depths of 5 feet bgs and deeper. The spatial average concentrations of all samples collected from SB-49 and SB-50 are 95 mg/kg for gasoline; 396 mg/kg for diesel; 623 mg/kg for oil; and 5.3 mg/kg for xylene. The averages are calculated using the measured values and the reporting limit if not detected. The spatial averages are for each of the analytes below the MTCA Method A Cleanup Levels.

Ethylbenzene; toluene; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; m,p-xylene; and o-xylene were detected in SB-49 at a depth of 2 feet bgs using EPA Method 8260B. In addition to these analytes, p-isopropyltoluene was detected at a depth of 5 feet bgs using EPA Method 8260B. Ethylbenzene, m,p-xylene, and o-xylene were detected in SB-49 at depths of 2 feet bgs and 5 feet bgs, at concentrations above the MTCA Method A Cleanup Levels. However, when compared to MTCA Method B Ingestion Cleanup Levels, the concentrations do not exceed cleanup levels. There are no MTCA Method A Cleanup Levels for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and p-isopropyltoluene. At 10-foot and 15-foot-depth interval sampling, none of the analytes were detected above the method-reporting limit in SB-49. The difference in the analytical results between the two analytical methods could be attributable to the non-homogeneity of the soil samples or to the differences between the two analytical methods. The soil samples for VOC analysis were collected first, followed by the sample containers for gasoline and BTEX. If the contaminated interval in the recovered sample is small, then sample jars for different analysis may contain soil from unequally impacted intervals of the recovered sample. This can lead to disparity in the analytical results when similar analytes are run using different methods.

- SB-50

  None of the analytes were detected above the method reporting limits in SB-50.

3. CONCLUSIONS

3.1 CONCLUSIONS

Based on the samples collected, there is limited subsurface petroleum- and solvent-impacted soil above the MTCA Method A Cleanup Levels for unrestricted land use at 2805 Commodore Way in two of the six soil borings. Solvent-impacted soil was identified near the steam-cleaning area in SB-40 (TCE at 0.170 mg/kg, at a depth of 10 feet bgs). The TCE concentration detected in SB-40 does not exceed the MTCA Method B Ingestion Cleanup Level, which represents a more appropriate cleanup standard for the site. Petroleum-impacted soil was identified near the drum storage area in SB-49 at depths of 2 feet (gasoline, diesel, oil, and xylenes) and 5 feet bgs (gasoline and xylenes). When the concentrations measured in SB-49 and SB-50 for each depth interval are spatially averaged, the MTCA Method A Cleanup Levels and MTCA Method B Ingestion Cleanup Levels are not exceeded.

Based on the analytical results from the Phase II ESA (Appendix B) conducted in December 2000, the MTCA evaluation shows that residual petroleum- and solvent-impacted soil beneath 2805 West Commodore Way, when spatially averaged, does not exceed the MTCA Method A or MTCA Method B Cleanup Levels, and is, therefore, considered unlikely to pose a potential risk at the site.

3.2 ASSUMPTIONS AND LIMITATIONS

This report is based on the following assumptions and limitations:

- The MTCA evaluation is limited to the analytical data generated during the Phase II investigation.
- The MTCA evaluation is limited to the potential chemicals associated with current activities; any future changes may require additional evaluation.
- Groundwater samples were not collected at the site because contaminated soil was not detected within 15 vertical feet of the water table.
- It is assumed that the groundwater elevation will not rise and come into contact with the petroleum-impacted soil remaining at the site.

4. REFERENCES

Foster Wheeler Environmental (Foster Wheeler Environmental Corporation). 2000. *Environmental Site Assessment: Phase I at 2805 West Commodore Way, Seattle, Washington.* Prepared for Time Oil Company. August 2000.

Foster Wheeler Environmental. 2001. *Final Environmental Site Assessment: Phase II at 2805 West Commodore Way, Seattle, Washington.* Prepared for Time Oil Company. April 2001.

TABLES

Table 1. Analytical Results for Chemicals Exceeding MTCA Method A (mg/kg) Using NWTPH-GX/BTEX Analytical Method

Sample	Gasoline	Xylene	Diesel	Oil	TCE
MTCA[1]	***100***	***9***	***2,000***	***2,000***	***0.03***
MTCA B – Ingestion	na	***160,000***	na	na	***91***
Analytical Method	8021B	8021B	8021B	8021B	8060B
Steam-cleaning Area					
SB-40-2	< 5.00	< 0.100	< 10.0	< 25.0	< 0.100
SB-40-5	< 5.00	< 0.100	< 10.0	< 25.0	< 0.100
SB-40-10	8.05	< 0.100	< 10.0	< 25.0	***0.170***
SB-40-15	< 5.00	< 0.100	< 10.0	< 25.0	< 0.100
Oil Storage Area					
SB-49-2	***264***	***18.6***	***2,770***	***4,350***	< 0.100
SB-49-5	***467***	***23.7***	339	485	< 0.100
SB-49-10	< 5.00	< 0.100	< 10.0	< 25.0	< 0.100
SB-49-15	< 5.00	< 0.100	< 10.0	< 25.0	< 0.100
SB-50-2	< 5.00	< 0.100	< 10.0	< 25.0	< 0.100
SB-50-5	< 5.00	< 0.100	< 10.0	< 25.0	< 0.100
SB-50-10	< 5.00	< 0.100	< 10.0	< 25.0	< 0.100
SB-50-15	< 5.00	< 0.100	< 10.0	< 25.0	< 0.100

Notes:

Detections above MTCA Method A cleanup levels are shown in ***bold italics.***

[1] MTCA Method A cleanup levels for soil (unrestricted land use)

TCA – Trichloroethene

NA – Not Available

FIGURES

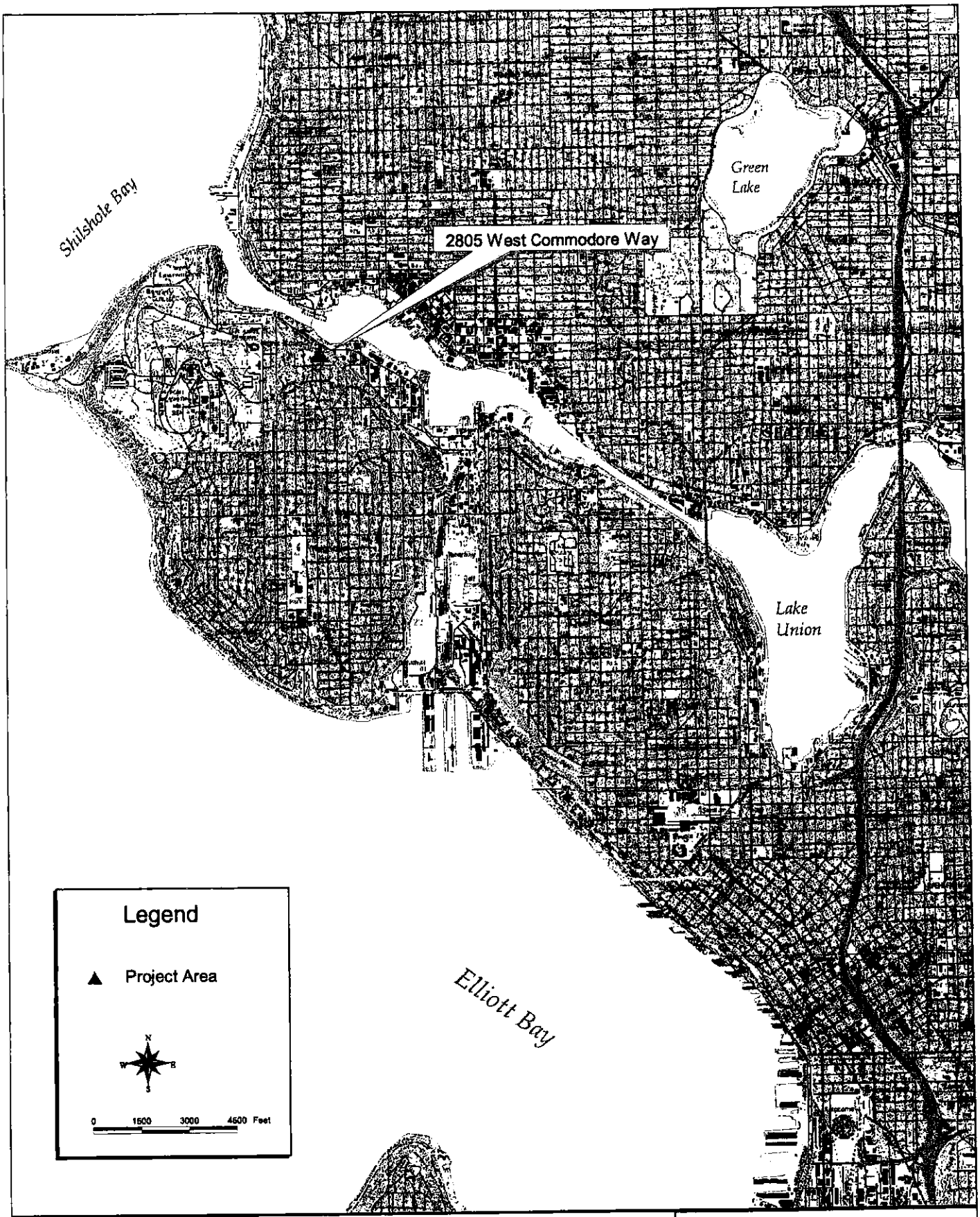


Figure 1

Time Oil Company
MTCA Evaluation

Location of Property at
2805 West Commodore Way

abe 's c:\projects\time_oil\vic_map.apr June 2002

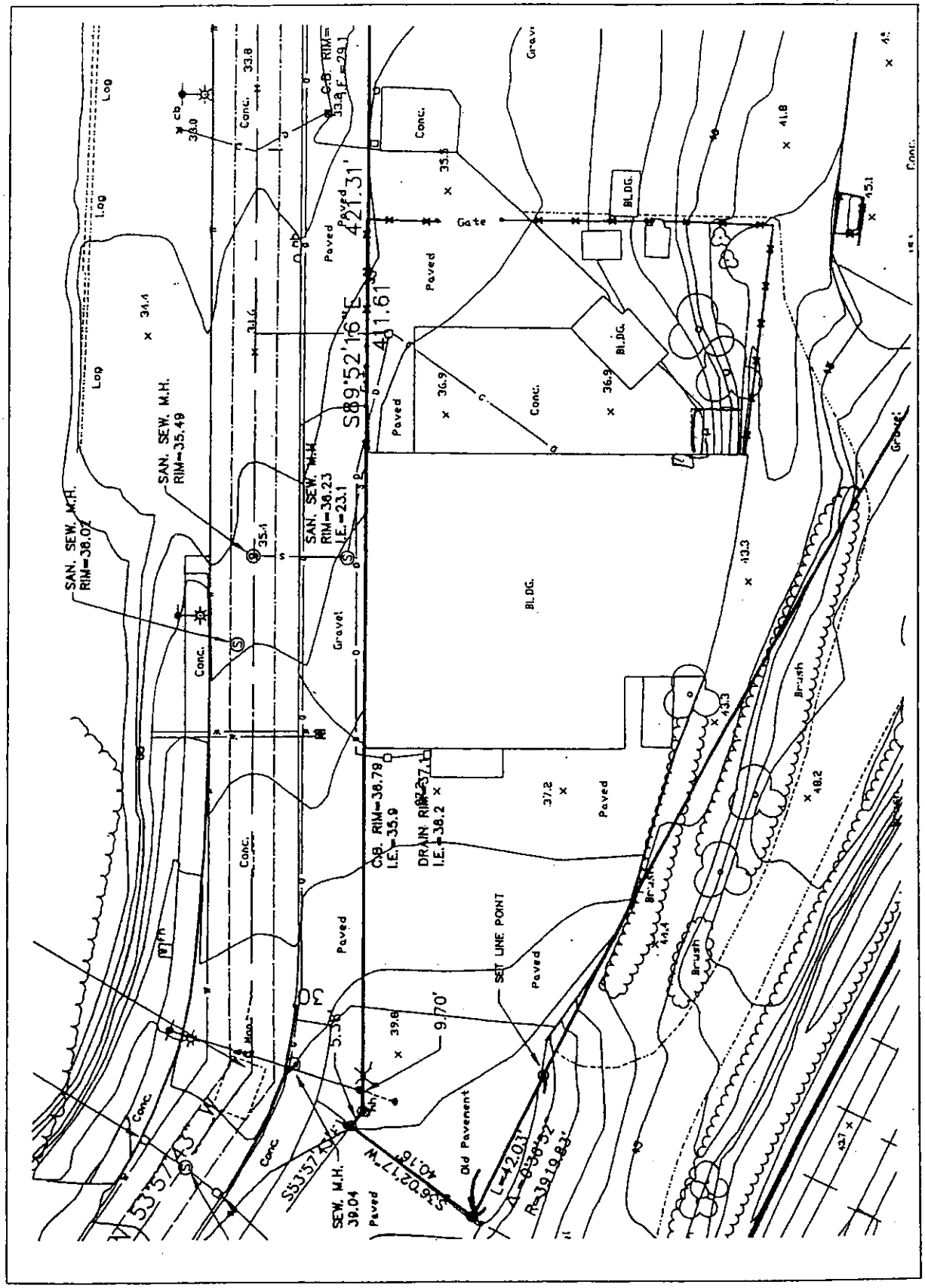
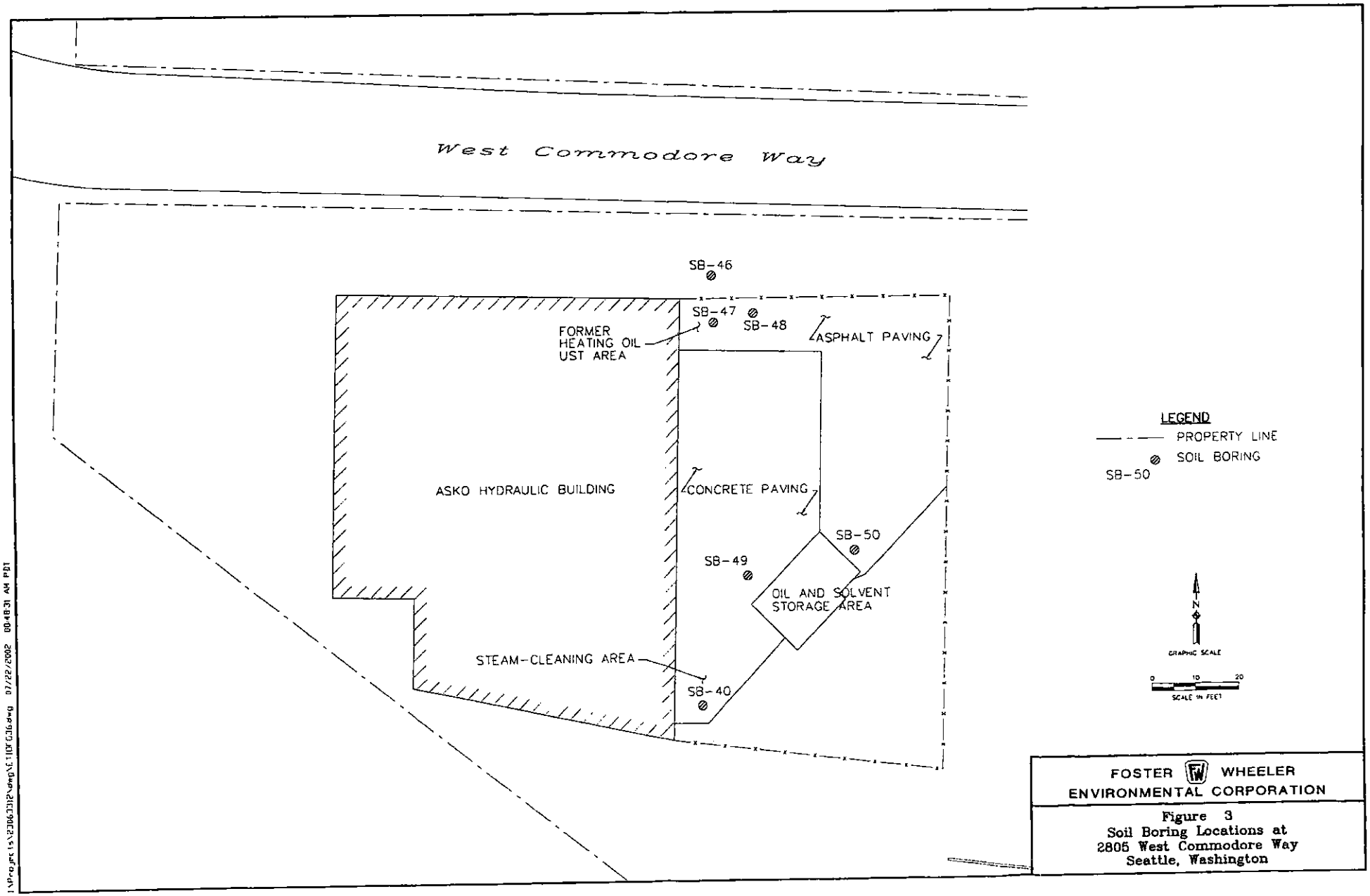


Figure 1-2. Layout of Property at 2805 West Commodore Way



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 3
Soil Boring Locations at
2805 West Commodore Way
Seattle, Washington

FINAL
ENVIRONMENTAL SITE ASSESSMENT: PHASE II

at

2805 West Commodore Way
Seattle, Washington

Prepared for

Time Oil Company

April 6, 2001

Prepared by

FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION

12100 NE 195th, Suite 200

Bothell, WA 98011

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Figure 1-1. Location of Property at 2805 West Commodore Way

Figure 1-2. Layout of Property at 2805 West Commodore Way

Figure 3-1. Locations of Soil Borings at 2805 West Commodore Way

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Table 3-1. Soil Boring Information for 2805 West Commodore Way

Table 4-1. Analytical Results for Gasoline, BTEX, Diesel, and Oil in Soil (mg/kg) Using NWTPH-GX/BTEX Analytical Method

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1. INTRODUCTION

In November 2000, Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) completed Phase I Environmental Site Assessments (ESAs) at seven properties owned by the Time Oil Company (TOC) located along West Commodore Way, in Seattle, Washington. The results of the Phase I ESA activity were documented in Phase I ESA reports prepared for each of the seven properties (Foster Wheeler Environmental 2000).

The Phase I ESA report prepared for the property located at 2805 West Commodore Way (Property) (Figure 1-1) indicated that additional investigation was required to better understand subsurface conditions in three areas of the Property. Consequently, Phase II ESA activities were initiated at the Property in November 2000. This report presents the results of the Phase II ESA activities of the property located at 2805 West Commodore Way, Seattle, Washington.

1.1 PURPOSE AND REPORT ORGANIZATION

The purpose of the Phase II field activities is to evaluate the subsurface conditions in specific areas identified during the Phase I ESA. This report is organized into six sections and two appendices as follows:

- Section 1 – Introduction
- Section 2 – Property History and Previous Investigations
- Section 3 – Field Activities
- Section 4 – Analytical Results
- Section 5 – Conclusions and Recommendations
- Section 6 – References
- Appendix A – Soil Boring Logs
- Appendix B – Laboratory Data Packages

1.2 PROJECT OBJECTIVES

The results of the Phase I ESA conducted at the Property suggested that further action be conducted at three areas at the Property to better quantify conditions in the subsurface. Figure 1-2 shows the layout of the Property and the areas investigated. These three areas and the justification for additional investigation are as follows:

1) Steam Cleaning Area—A steam cleaning area is located near the southeast corner of the ASKO Hydraulic, Inc. (ASKO) building. Oily water is collected in a floor drain and transferred to an oil/water separator located in the building immediately to the west. One soil boring was recommended in this area to evaluate the subsurface conditions.
2) Heating Oil Underground Storage Tank (UST)—During the employee interview process, it was discovered that a 500-gallon or smaller heating oil UST had been removed from the northeast corner of the ASKO building. There were no records or reports available to confirm this action or what the subsurface conditions were at the time of removal. Subsequently, soil borings were recommended to evaluate the subsurface conditions in the area of the suspected former UST.
3) Oil and Solvent Storage Area—An oil and solvent storage area is located just northeast of the steam cleaning area. Two soil borings were recommended in this area to evaluate the subsurface conditions.

1.3 PROPERTY DESCRIPTION

Site Address:	ASKO Hydraulic, Inc. 2805 West Commodore Way Seattle, Washington 98199
Property Owner:	Time Oil Company 2737 West Commodore Way Seattle, Washington 98199
Legal Description:	Section 11, township 25 north, range 3 east, Lawton Park, portions of Blocks 3, 4, and 5.

2. PROPERTY HISTORY AND PREVIOUS INVESTIGATIONS

Information about the history of the Property was derived from a review of available documents, historical photographs, and regulatory records. Former and current employees of TOC were also interviewed.

The Property, which was originally divided into smaller lots, was acquired by TOC from 1946 to approximately 1950. According the historical photographs, the Property was undeveloped in 1936. By 1946 the Property had been cleared and was used by TOC for the staging of empty 55-gallon drums. A photograph from 1960 showed the Property being

used as a parking lot. The current facility on the Property appears for the first time in the 1974 photograph, after being constructed in the late 1960s. The facility was originally built to service TOC's vehicles. From 1974 to 1976 the facility was used by Precision Engineering Specialists for marine and truck engine rebuilding. From 1976 to 1979 the facility was used as a warehouse and machine shop by Select Industries. Select Industries became ASKO Hydraulic in 1979.

Mr. Bill Thompson (ASKO) was interviewed during the Phase I ESA. According to Mr. Thompson, several changes have occurred at the Property since it was originally built. The oil storage shed was added around 1996. Until then petroleum products were stored on a rack in the area. The change was made in response to current regulations and the local fire marshal directives. According to Mr. Thompson, a small (<500 gallons) heating oil UST was removed outside the northeast corner of the building. No reports were available regarding the removal of this UST. However, the King County Department of Design, Construction, and Land Use has a permit application from 1964 on file for the installation of two 55-gallon USTs on the Property. The presence of a second UST could not be confirmed.

No previous investigations have been conducted at the facility.

3. FIELD ACTIVITIES

Field activities at 2805 West Commodore Way included soil borings, soil sampling, and surveying. The following sections describe the methodology used to complete the field activities.

3.1 SOIL BORINGS

3.1.1 Soil Boring Locations

Six soil borings were drilled at the following locations as part of the Phase II ESA at the Property (Figure 3-1):

Steam Cleaning Area:

- Boring SB-40 was located in the steam cleaning area and advanced to a depth of 15 feet (groundwater was not contacted).

Former Heating Oil UST:

- Boring SB-46 was located to the north of the former heating oil tank and advanced to a depth of 25 feet where groundwater was contacted.
- Boring SB-47 was located in the center of the former heating oil tank and advanced to a depth of 25 feet (groundwater was not contacted).
- Boring SB-48 was located to the east of the former heating oil tank and advanced to a depth of 25 feet (groundwater was not contacted).

Oil and Solvent Storage Area:

- Boring SB-49 was located west of the oil rack and advanced to a depth of 15 feet (groundwater was not contacted).
- Boring SB-50 was located east of the oil rack and advanced to a depth of 15 feet (groundwater was not contacted).

3.1.2 Soil Boring Methods

Five of the six soil borings drilled at the Property were drilled with a CME 75 high torque drill rig operated by Cascade Drilling. The soil boring located in the steam cleaning area was drilled with a limited access rig. The augers used on both rigs were 4.25-inch inner diameter (ID) hollow stem. Split-spoon samples were driven every 5 feet to describe lithologies and collect soil samples. An extra split-spoon sample was driven at the 2-foot-depth interval. Split-spoon samples were 12 inches long (not including the shoe), 2-inch ID, and driven by a 300-pound down-hole jar hammer. Appendix A contains the soil boring logs for the Property.

3.1.3 Soil Sampling Methods

Soil samples were collected directly from the split-spoon and placed in the appropriate laboratory-supplied sample container. The samples were analyzed for gasoline; benzene, toluene, ethylbenzene, and xylene (BTEX) using NWTPH-Gx/BTEX Method; diesel and oil using NWTPH-Dx; total metals using U.S. Environmental Protection Agency (EPA) 6010A/7000A series; and volatile organic compounds (VOCs) using EPA Method 8260. The gasoline/BTEX and VOCs samples were collected first out of each spoon. The sample containers were placed in sealed plastic bags and placed directly into a chilled cooler for transport to the laboratory. North Creek Analytical (Bothell, Washington) received the samples at the end of each day in the field.

The split-spoons were decontaminated by thoroughly washing them in soapy water, rinsing with water, rinsing with methanol, and finally rinsing with deionized water supplied by the analytical laboratory.

3.1.4 Field Screening Methods

Soil samples were screened in the field using a photoionization detector (PID) HNu Model P101 equipped with a 10.2 electron volt lamp. A few of the samples were screened using a Hanby Field Test Kit designed for detecting petroleum in soil. The Hanby Kit is a semi-quantitative kit where 5 grams of soil are mixed with a proprietary extract, then the extract is decanted and mixed with a catalyst and agitated for 4 minutes. The extract reacts with the catalyst. The color change in the extract indicates the type of fuel present and approximate concentration.

3.2 SURVEYING

The surveying of the soil boring locations was conducted by Inca Engineering, Inc. Horizontal control was specified to 0.1 foot, based on Washington State Plane Coordinate System, North America Datum (NAD) 83/91 City of Seattle. Vertical control was specified to 0.01 foot, based on the National Geodetic Vertical Datum, North America Vertical Datum (NAVD) 88 City of Seattle. Table 3-1 lists the soil borings, survey data, and total depths of each boring.

3.3 INVESTIGATION-DERIVED WASTE

Soil cuttings from the Property were collected in the bucket of a loader and taken to the stockpile on the west end of the parking lot at 2737 West Commodore Way for disposal by TOC. Decontamination water was collected by the drilling company in 55-gallon type 1A drums, transferred to TOC, and stored behind the warehouse at 2737 West Commodore Way.

4. ANALYTICAL RESULTS

Soil samples were analyzed by North Creek Analytical Labs in Bothell, Washington. Where applicable, results were compared to Washington State Department of Ecology's (Ecology) proposed Method A soil cleanup levels for unrestricted land use. Ecology's proposed rule does not differentiate between industrial property and unrestricted land use, and is expected to be adopted within 6 months. Proposed soil cleanup levels for diesel and oil are higher

than the current MTCA Method A cleanup levels, and proposed soil cleanup levels for gasoline have been divided into two categories: gasoline without benzene and less than 20 percent aromatics between EC8 and EC16 (proposed soil cleanup level of 100 mg/kg); and all other gasoline mixtures (proposed soil cleanup level of 30 mg/kg). Proposed BTEX cleanup levels for soil have been lowered. Groundwater concentrations were compared to the MTCA Method A cleanup levels for groundwater. Appendix B contains the laboratory data packages for the samples collected at the Property. In addition to the data from 2805 West Commodore Way, data packages B0K0576 and B0K0638 contain results for samples collected at other properties not related to this Property. The data packages are presented in their entirety to allow the reader to evaluate the environmental data with the associated quality assurance/quality control data.

4.1 FORMER HEATING OIL UST

Three soil borings were located near the former heating oil UST. Seventeen soil samples were collected from three soil borings and analyzed for gasoline, diesel, and oil. Summaries for the analytical results are presented in Tables 4-1 through 4-3. Gasoline was not detected above the method reporting limit (5.00 mg/kg) in any of the samples collected. Diesel was detected at 2 feet (90.8 mg/kg) and at 10 feet (10.7 mg/kg) in boring SB-46. Oil was also detected at 2 feet (147 mg/kg) in SB-46. Diesel and oil were detected at 2 feet in SB-47 at concentrations of 87.9 mg/kg and 160 mg/kg, respectively. The concentrations detected were below the Model Toxics Control Act (MTCA) Method A cleanup levels for residential soil. None of the other samples from SB-46 and SB-47 contained concentrations of gasoline, diesel, or oil above the method reporting limit.

VOCs were not detected above the method reporting limit in any of the soil samples collected near the former heating oil UST.

None of the metals detected exceeded the MTCA Method A cleanup levels for residential soil.

4.2 STEAM CLEANING AREA

One soil boring (SB-40) was installed in the center of the steam cleaning area. Gasoline was detected at a depth of 10 feet (8.05 mg/kg). Diesel and oil were not detected in the soil samples from this boring. The concentration of gasoline detected was below the MTCA Method A cleanup level for residential soils.

Trichloroethene (TCE) was detected (0.170 mg/kg) at a depth of 10 feet. Samples from the other depth intervals did not contain concentrations of VOCs above the method reporting limit.

None of the metals detected exceeded the MTCA Method A cleanup levels for residential soil.

4.3 OIL STORAGE AREA

Two soil borings (SB-49 and SB-50) were installed near the oil storage area. Gasoline, diesel, and oil were detected at a depth of 2 feet in SB-49 at concentrations above the MTCA cleanup level. Gasoline was also detected at a depth of 10 feet at concentrations above the cleanup level. Samples from the 10-foot and 15-foot-depth interval did not contain concentrations of petroleum above the method reporting limit. The drilling of soil boring SB-49 was terminated at a depth of 15 feet to reduce the potential of carrying contamination down the hole and into the groundwater. Petroleum contaminants were not detected above the method reporting limit in SB-50.

Ethylbenzene, toluene, and xylene were detected in the soil samples collected from the 2-foot and 5-foot depth interval in SB-49. The concentrations of ethylbenzene and xylene exceeded the proposed MTCA Method A cleanup levels for soil (unrestricted land use). 1,2,3-trimethylbenzene and 1,3,5-trimethylbenzene were also detected in the 2-foot and 5-foot samples in SB-49. Samples from the 10-foot and 15-foot interval in boring SB-49 contained concentrations below the method reporting limit. TCE was detected in SB-49 at a depth of 10 feet and at a level slightly above the reporting limit and above the proposed cleanup level. None of the other samples reported TCE above the method reporting limit. VOCs were not detected above the method reporting limit in SB-50.

None of the metals detected exceeded the MTCA Method A cleanup levels for residential soil in either of the soil borings.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 SITE GEOLOGY

The stratigraphy beneath the site appears fairly consistent based on the six soil borings installed on the east side of the ASKO facility. In general, the upper 10 to 15 feet of the site consists of silty fine-grained sand. The sand is dense, tan to gray, and odorless. From 15 to

25 feet the site consists of well-sorted fine-grained sand. The color changes from brown to gray, with a slight increase in grain size at the water table.

5.2 NATURE AND EXTENT OF CONTAMINATION

Concentrations of diesel and oil were detected in SB-46 and SB-47 at a depth of 2 feet, and diesel was detected in SB-46 at a depth of 10 feet. None of the concentrations detected exceeded the MTCA Method A cleanup levels for residential soil. Petroleum-impacted soil was not detected in contact with the groundwater near the former heating oil UST.

Gasoline was detected at 10 feet in the steam cleaning area at concentrations below the MTCA Method A cleanup level. None of the other petroleum or VOC analytes were detected above the method reporting limit. The concentrations of metals detected were below the MTCA Method A cleanup levels for residential soil.

Concentrations of gasoline, diesel, and oil were detected above the proposed MTCA Method A cleanup levels for unrestricted land use in the samples collected from SB-49 (gasoline, diesel, and oil) at a depth of 2 feet and in SB-49 (gas) at a depth of 5 feet. Ethylbenzene, toluene, and xylene were also detected above the proposed MTCA Method A cleanup levels for unrestricted land use in the samples collected from 2 feet and 5 feet in SB-49; however, concentrations of these constituents in the 10-foot and 15-foot samples were below the method reporting limit. In addition, the Hanby Field Test Kit, from the 15-foot-depth interval, detected no petroleum-impacted soil. When samples SB-49-2 and SB-49-5 were analyzed for BTEX using NWTPH-Gx1BTEX Method, they did not contain concentrations of BTEX above the method reporting limit; VOC analysis (EPA Method 8260B) did show detections. The difference in the analytical results between the two methods could be due to nonhomogeneity of the soil samples or the differences between the two analytical methods. None of the analytes were detected above the method reporting limits in SB-50.

5.3 RECOMMENDATIONS FOR FUTURE ACTIONS

Based on the findings of the recent field activities, contaminant concentrations beneath the former heating oil UST location and steam cleaning area appear to be below the proposed MTCA Method A cleanup levels for unrestricted soil. Subsequently, no future investigation or remedial activities are recommended for these areas. Best management practices should continue to be followed in the steam cleaning area to ensure all systems are in proper working order.

Subsurface contamination above the proposed MTCA Method A cleanup levels for residential soil was detected near the oil storage rack in SB-49. The contamination was limited to the 2-foot to 5-foot-depth interval. Because the contamination is at least 20 feet from groundwater, with clean soil in between, and capped by 4 inches of concrete, no future activities are recommended for this area.

6. REFERENCES

Foster Wheeler Environmental Corporation. 2000. Phase I Environmental Site Assessments for the 7 West Commodore Way Properties, Seattle, Washington. Prepared for Time Oil Company. Bothell, Washington. August 2000.

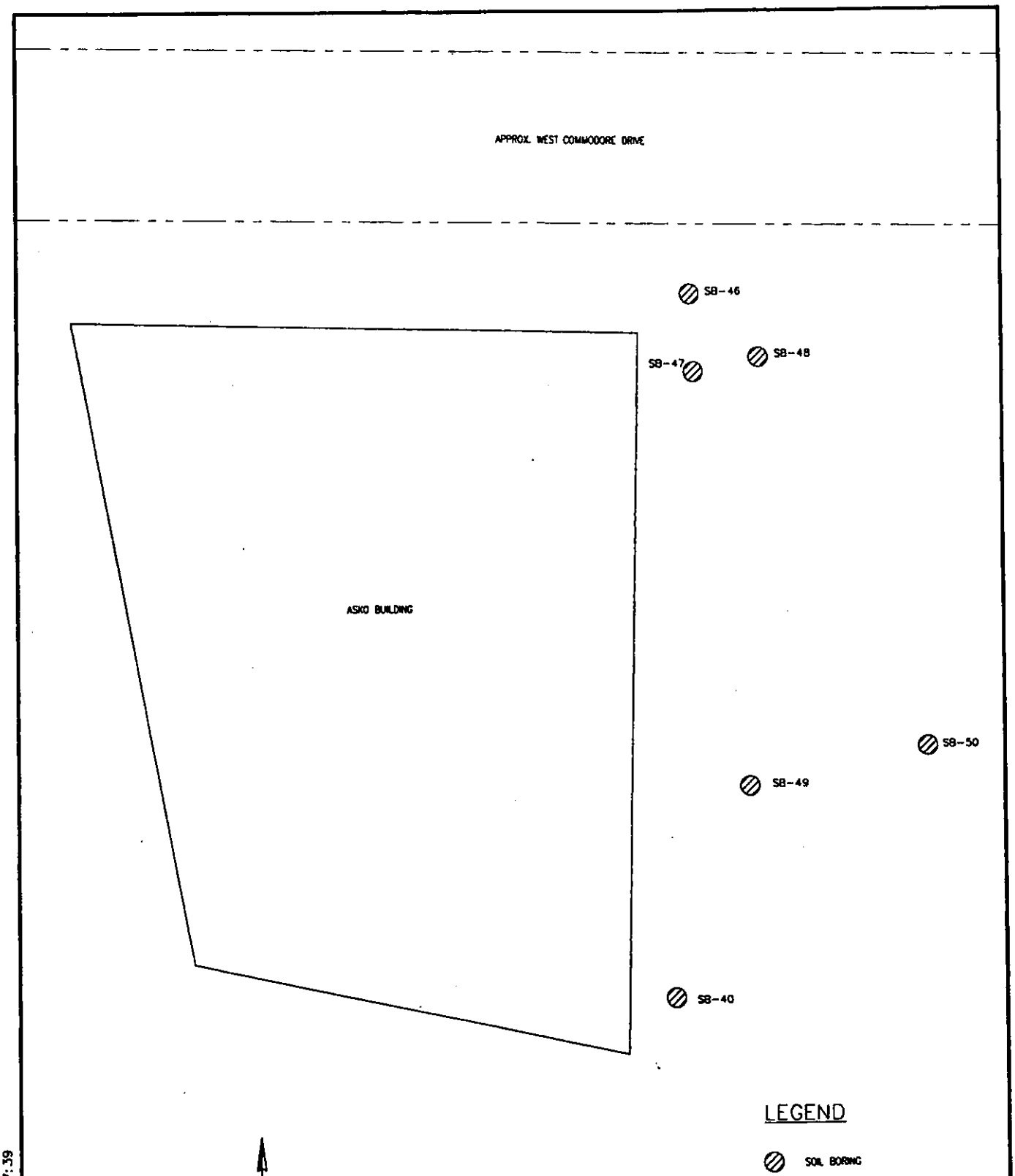

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Figure 3-1
Locations of Soil Borings at
2805 West Commodore Way
Seattle, Washington

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PROJECT NAME: Phase II Site Assessment
BORING NUMBER: SB-40
LOCATION: 2806 West Commodore Way
AREA: ASKO Steam Cleaning Area
CLIENT: Time Oil Company
SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-Inch HSA
DRILLING CONTRACTOR: Cascade
DATE/TIME STARTED: 11/21/00 1315
DATE/TIME COMPLETED: 11/21/00 1350
TOTAL DEPTH: 15 feet
WATER DEPTH: 15 feet

DEPTH	ELEVATION	SAMPLES feet	BLOW COUNTS	SAMPLE NUMBER	Diesel in Soil PPM 20 30 40	PID	MOISTURE	GRAPHIC LOG	USCS SYMBOL	WELL DETAILS	DESCRIPTION AND REMARKS
0	46								SM		Concrete 0 to 3 inches Silty Sand 2 ft. Dense, moist, brown/grey, silty SAND, organics, no odor
2	44		25 22	SB-40-2		0	Moist				
4	42		16 13	SB-40-5		0	Moist		SM	NA	Silty Sand 5 ft. Dense, moist, grey, medium to fine silty SAND, organics, no odor
6	40										
8	38										
10	36		50:6"	SB-40-10		0	Moist		SM		Silty Sand 10 ft. Dense, moist, grey, silty fine grained SAND, no odor
12	34										
14	32		50:6"	SB-40-15		0	Moist		CL		Clay 15 ft. Dense, moist, grey, silty CLAY with fine sand, no odor
16	30										
18	28										
20											

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FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase II Site Assessment

BORING NUMBER: SB-46

LOCATION: 2805 West Commodore Way

AREA: North of former UST

CLIENT: Time Oil Company

SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA

DRILLING CONTRACTOR: Cascade

DATE/TIME STARTED: 11/28/00 1230

DATE/TIME COMPLETED: 11/28/00 1310

TOTAL DEPTH: 25 feet

WATER DEPTH: 25 feet

DEPTH	ELEVATION	SAMPLES feet	BLOW COUNTS	SAMPLE NUMBER	Diesel in Soil PPM 50	PID	MOISTURE	GRAPHIC LOG	USCS SYMBOL	WELL DETAILS	DESCRIPTION AND REMARKS
0	44										Gravel 0 - 2 inches. Dense, dry, brown, GRAVEL
2	42		18 50:6"	SB-46-2		na	Dry		SW		Sand 2 ft. Medium to dense, dry, brown, medium to fine SAND, trace of silt and gravel, no odor
4											
6	40		24 27	SB-46-5		na	Dry		SM		Silty Sand 5 ft. Medium dense, dry, oxidized brownish red, fine silty SAND, no odor
8	38										
10	36		12 20	SB-46-10		na	Dry		SM	NA	Silty Sand 10 ft. Medium dense, dry, brown, fine silty SAND, less silt than above, no odor
12	34										
14	32										
16	30		65:6"	SB-46-15		na	Dry		SW		Sand 15 ft. Dense, dry, brownish grey, medium to fine SAND, no odor
18	28										
20	26		50:6"	SB-46-20		na	Dry		SW		Sand 20 ft. Same as above, color darkens, grain size increases, no odor
22	24										
24	22		55:6"	SB-46-25		na	Wet		SW		Sand 25 ft. Dense, wet, black/white/grey, fine to medium SAND, no odor
26	20										
28	18										
30	16										

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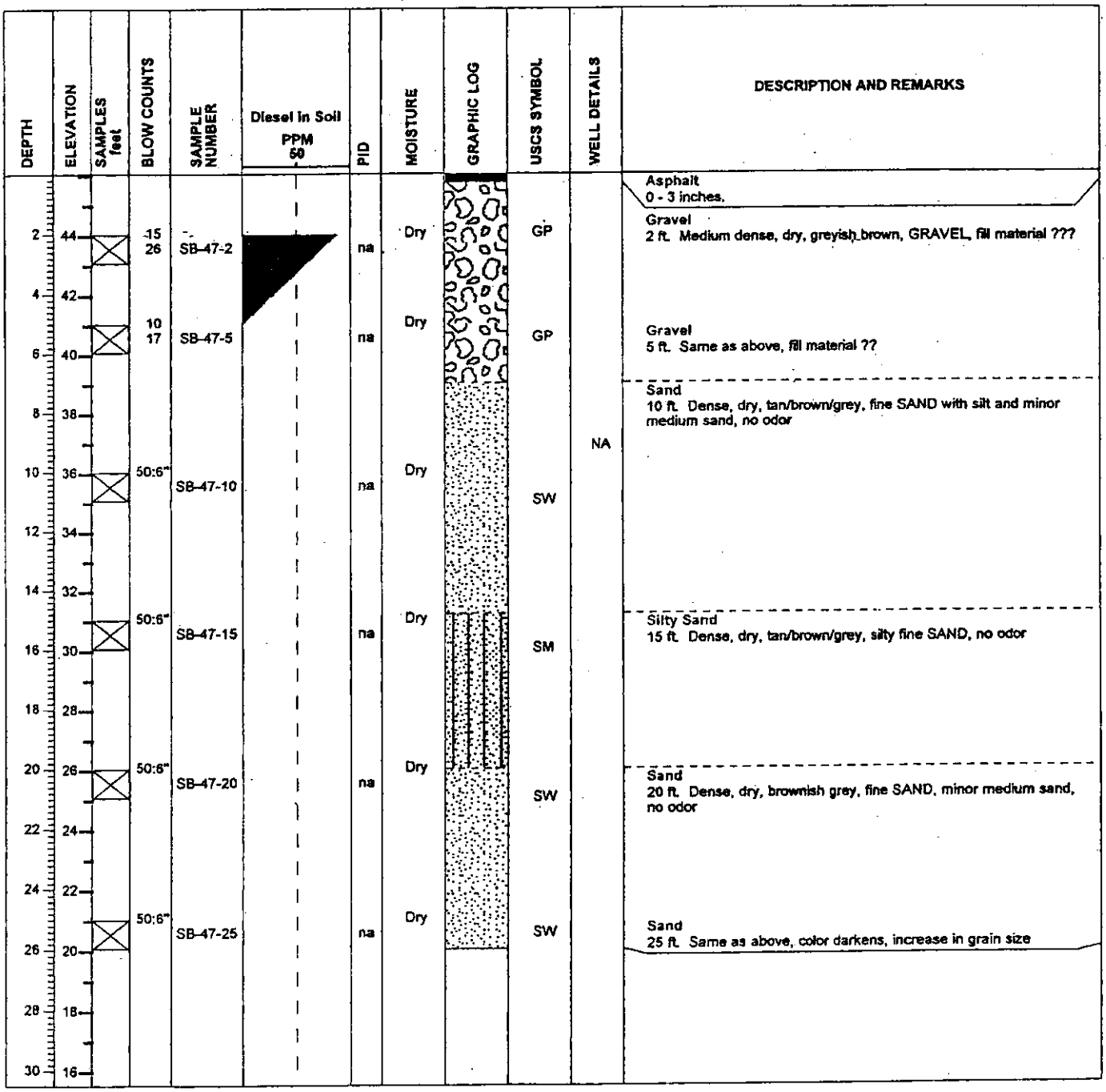
FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase II Site Assessment
BORING NUMBER: SB-47
LOCATION: 2805 West Commodore Way
AREA: Center of former UST
CLIENT: Time Oil Company
SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-Inch HSA
DRILLING CONTRACTOR: Cascade
DATE/TIME STARTED: 11/28/00 1400
DATE/TIME COMPLETED: 11/28/00 1440
TOTAL DEPTH: 25 feet
WATER DEPTH: na



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FOSTER WHEELER ENVIRONMENTAL CORP.

PROJECT NAME: Phase II Site Assessment

BORING NUMBER: SB-48

LOCATION: 2805 West Commodore Way

AREA: East of former UST

CLIENT: Time Oil Company

SITE MANAGER: Scott Sloan

DRILLING METHOD: 4-inch HSA

DRILLING CONTRACTOR: Cascade

DATE/TIME STARTED: 11/29/00 0800

DATE/TIME COMPLETED: 11/28/00 0845

TOTAL DEPTH: 25 feet

WATER DEPTH: na

DEPTH	ELEVATION	SAMPLES feet	BLOW COUNTS	SAMPLE NUMBER	Diesel in Soil PPM 20 30 40	PID	MOISTURE	GRAPHIC LOG	USCS SYMBOL	WELL DETAILS	DESCRIPTION AND REMARKS
0											Asphalt 0 - 3 inches.
2	44		27 25	SB-48-2		na	Dry		SM		Silty Sand 2 ft. Medium dense, dry, dark brown, silty fine SAND, trace organics, no odor
4	42										
6	40		25 30	SB-48-5		na	Dry		SW		Sand 5 ft. Medium dense, dry, brown, fine SAND with minor silt, minor medium sand, no odor
8	38										
10	36		65:6"	SB-48-10		na	Dry		SM	NA	Sandy Silt 10 ft. Dense, dry, tan/brown/grey, fine sandy SILT, organics, layering, no odor
12	34										
14	32										
16	30		50:6"	SB-48-15		na	Dry		SW		Sand 15 ft. Dense, dry, brown, fine SAND, minor medium sand, trace of silt, no odor
18	28										
20	26		55:6"	SB-48-20		na	Dry		SW		Sand 20 ft. Same as above
22	24										
24	22										
26	20		50:6"	SB-48-25		na	Dry		SW		Sand 25 ft. Same as above, color darkens, increase in grain size
28	18										
30	16										

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West Commodore Way

OWS location?

SB-46

SB-47

SB-48

FORMER HEATING OIL UST AREA

ASPHALT PAVING

ASKO HYDRAULIC BUILDING

CONCRETE PAVING

SB-50

SB-49

OIL AND SOLVENT STORAGE AREA

STEAM-CLEANING AREA

SB-40

LEGEND

PROPERTY LINE

SOIL BORING

SB-50

N

GRAPHIC SCALE

0 10 20

SCALE IN FEET

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Figure 3
Soil Boring Locations at
2805 West Commodore Way
Seattle, Washington

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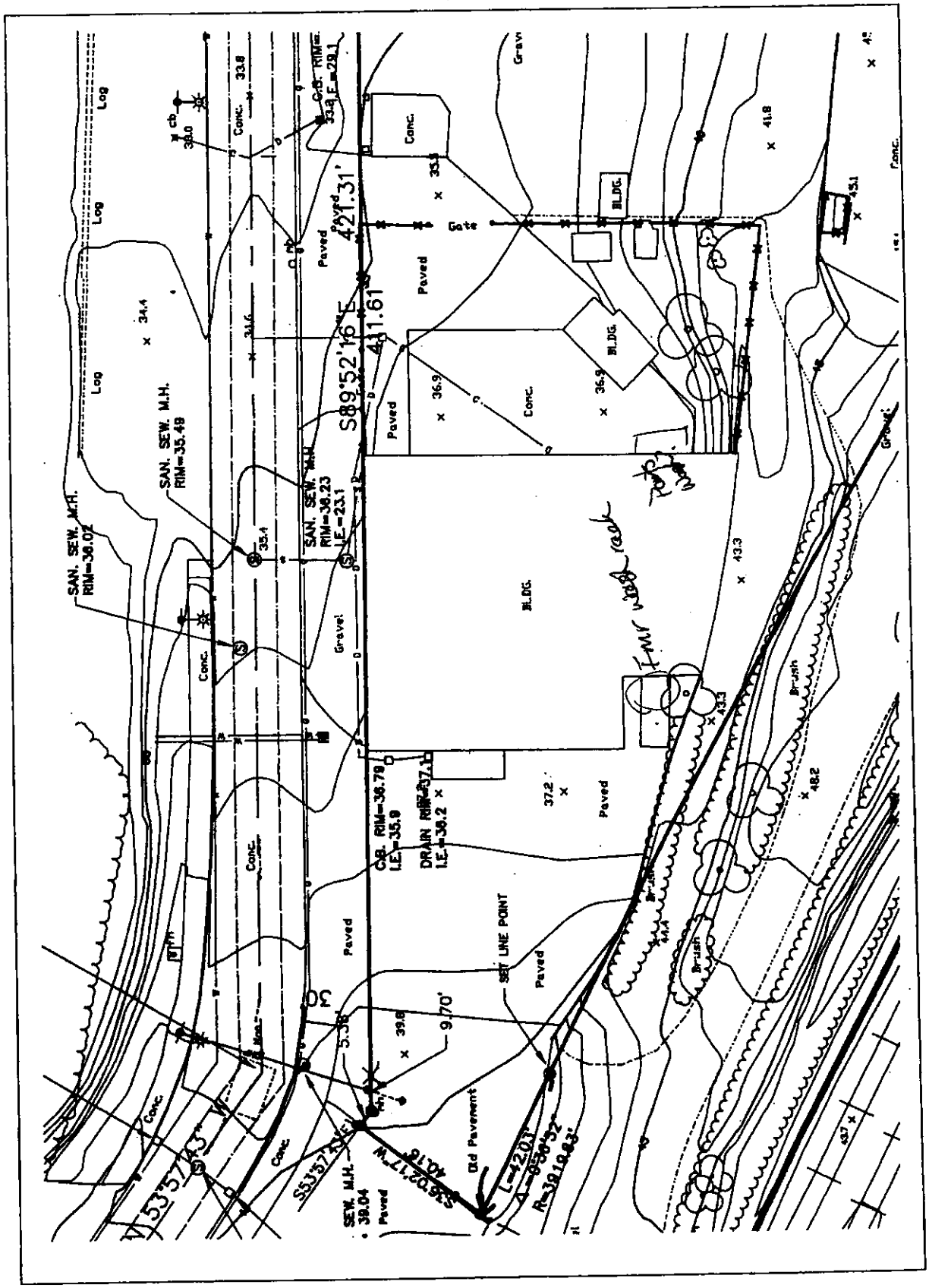

Figure 2. Layout of the Property at 2805 West Commodore Way

Main Terminal/Office Property (2737)
Areas of Potential Environmental Concern

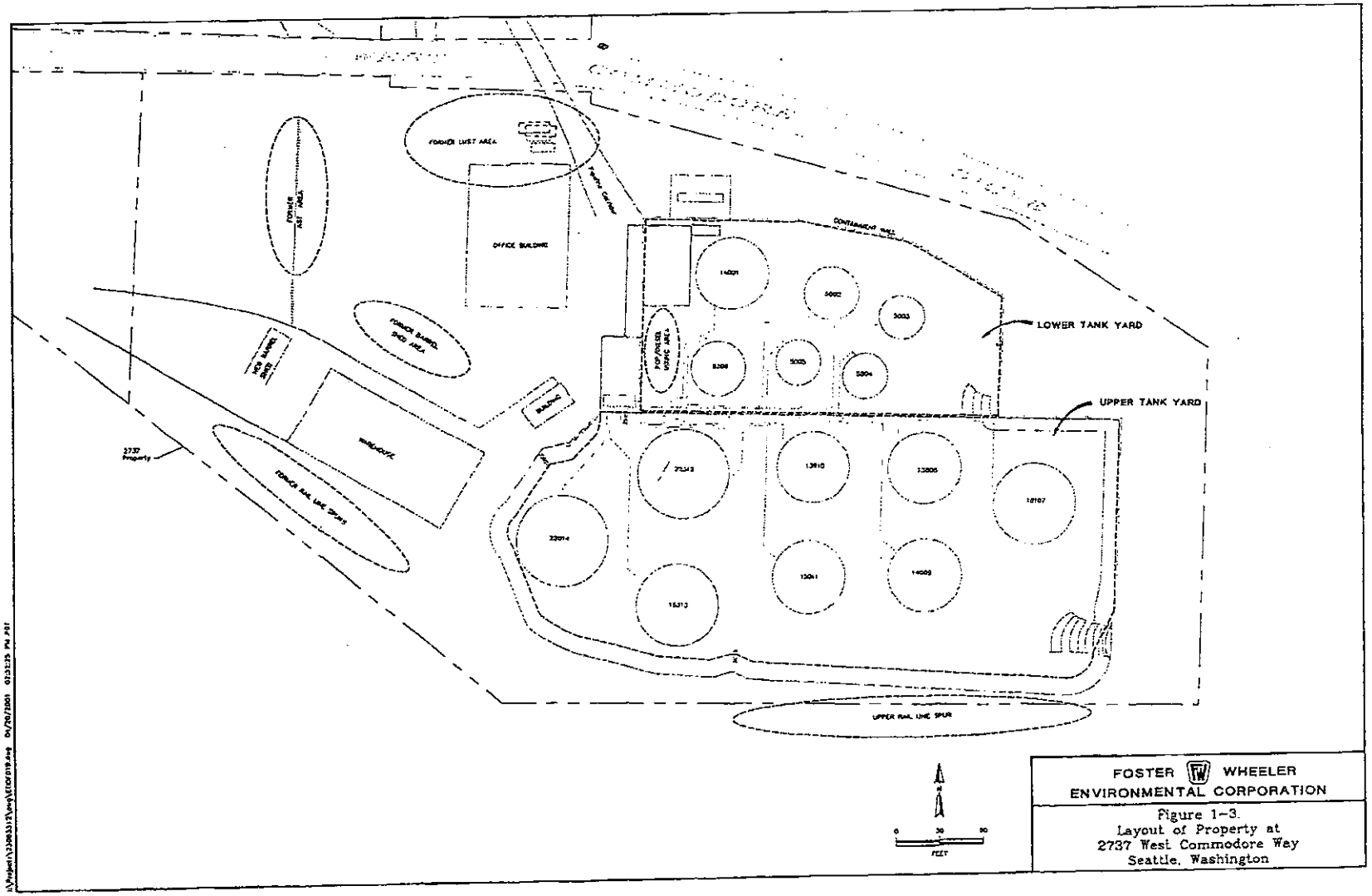

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Figure 1-3.
Layout of Property at
2737 West Commodore Way
Seattle, Washington

FINAL
LIMITED SOIL REMOVAL REPORT AT THE FORMER PCP/DIESEL MIXING AREA

at

2737 West Commodore Way
Seattle, Washington

Prepared for

Time Oil Company

December 18, 2002

Prepared by

FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION

12100 NE 195th, Suite 200

Bothell, WA 98011

EXECUTIVE SUMMARY

The Time Oil Company is in the process of decommissioning the petroleum terminal located at 2737 West Commodore Way, Seattle, Washington. The use of the site as a petroleum terminal was discontinued in October 2001. During a series of field investigations conducted in 2000 and 2001, pentachlorophenol-impacted soil was observed in a limited area located within the Lower Tank Yard. The limited area showed surface soil concentrations and two sub-surface detections of PCP above the MTCA Method B Cleanup Level for unrestricted land use. The Washington State Department of Ecology was notified and Time Oil entered the Voluntary Cleanup Program to address the limited PCP-impacted soil. A focused Work Plan was submitted for review by Ecology, and no objections were found with the proposed activities (Ecology correspondence dated August 22, 2002).

On September 11 and 12, 2002, an area measuring approximately 28 feet by 65 feet was excavated to a depth of approximately 6 to 18 inches. Two additional locations were excavated to a depth of 5 feet to address sub-surface exceedances. On September 18, 2002, approximately 70 cubic yards of soil were transported to Sensor Environmental, Ltd's, incineration facility in Swan Hills, Alberta. Confirmation samples were collected from the excavated area and the analytical results showed that the PCP-impacted soil had been removed. The excavation area was backfilled with clean imported material.

The limited soil removal activities were conducted in accordance with the applicable portions of Ecology's MTCA regulation (Chapter 173-340) and the VCP guidelines. The Site Summary form (ECY 020-73) is included in this executive summary to document the activities conducted and the findings. Based on the successful execution of the Ecology approved plan, and the results of the confirmation samples that do not show concentrations of PCP above the MTCA Method B Clean up Level, the Time Oil Company requests a finding of "No Further Action" for PCP-impacted soils at the site.

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Appendix A Work Plan
Appendix B Ecology Correspondence
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Figure 1.1. Location of Property at 2737 West Commodore Way
Figure 2-1. Layout of Site and Previous Investigation Areas
Figure 3-1. Locations of Phase II Soil Borings
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Figure 5-1. Removal Area Limits and Confirmation Sample Locations

TABLES

Table 3-1. Analytical Results for PCP in Soil
Table 5-1. Analytical Results for Confirmation Samples

1. INTRODUCTION

During site investigation activities conducted in November 2000 and July 2001, pentachlorophenol (PCP)-impacted soil was found on the surface and in two subsurface locations at the Time Oil Company (TOC) bulk storage facility at 2737 West Commodore Way (Figure 1-1). Several of the soil samples showed concentrations above the Model Toxics Control Act (MTCA) Method B Formula Value (8.33 mg/kg). Consequently, a decision was made to remove the PCP-impacted soil from the area.

The Washington State Department of Ecology (Ecology) was informed of the previous investigation results (Time Oil Company correspondence dated November 29, 2001), and a focused Work Plan for limited soil removal (Foster Wheeler Environmental, 2002) was submitted through Ecology's Voluntary Cleanup Program (VCP). The Work Plan was reviewed and Ecology found no objections with the planned activities. The purpose of this report is to provide documentation for the successful execution of the Work Plan and removal of PCP-impacted soil in the Former PCP/Diesel Mixing Area.

1.1 PURPOSE AND ORGANIZATION

The purpose of the field activities conducted in September 2002 was to remove PCP-impacted soil with concentrations above the MTCA Method B Cleanup Level for unrestricted land use. The excavated soil was transported off site to an approved facility for recycling. This report provides documentation of the soil removal activities conducted and the results of the field analyses in accordance with the VCP protocols (ECY 020-73). The report does not address potential impacts from fuels or fuel-related compounds to soil and groundwater. Likewise, the report is not intended to address potential PCP impacts to groundwater. Potential impacts to groundwater and soil caused by fuel are being addressed separately. Potential impacts to groundwater from PCP are being evaluated through quarterly groundwater sampling.

This Limited Soil Removal Report is organized into six sections as follows:

- **Section 1 – Introduction**: Describes the purpose of the PCP-Impacted Limited Soil Removal Activity.
- **Section 2 – Property Description, Operation, and History**: Provides a description of the site and history
- **Section 3 – Site History Characterization**: Identifies the PCP-impacted site and summarizes previous investigations.

- **Section 4 – Cleanup Levels**: Describes the cleanup standards and regulations applicable to the area (primarily MTCA B Formula Values).
- **Section 5 – Removal Action**: Describes the methods used in soil removal activity.
- **Section 6 – Conclusion**

Appendix A Provides a copy of the accepted Work Plan

Appendix B Provides correspondence with Ecology

Appendix C Shows site photographs taken during the removal activity

Appendix D Provides the analytical reports for the contractor samples

Appendix E Provides the soil recycling documentation

1.2 LEGAL DESCRIPTION

Site Address:	Time Oil Company, Inc. 2737 West Commodore Way Seattle, Washington 98199
Property Owner:	Time Oil Company, Inc. 2737 West Commodore Way Seattle, Washington 98199
Legal Description:	Section 11, township 25 north, range 3 east, Lawton Park, portions of Blocks 3, 4, and 5

2. PROPERTY DESCRIPTION, OPERATION, AND HISTORY

The following sections provide a physical description of the site, current site operations, and historical operations.

2.1 SITE DESCRIPTION

The property runs from West Commodore Way south to the Burlington Northern rail line (Figure 2-1). Most of the property has been paved, except the area of the former rail lines behind the warehouse and tank yard located on the east side of the property. A two-story office building is located in the center of the property near West Commodore Way. A three-section warehouse is located behind this office building, and a former boiler room is connected to the east side of the warehouse via a covered loading dock. An existing open-air barreling shed is located northwest of the warehouse. The tank yard is divided into two sections; the Lower Tank Yard Area and the Upper Tank Yard Area, each constructed at a different time. The Lower Tank Yard Area contains six aboveground storage tanks (ASTs), and the Upper Tank Yard Area contains eight ASTs that are larger in volume than those in the Lower Tank Yard Area. The south side of the Upper Tank Yard Area banks steeply upward to the fence line and former rail line spur. The surface of the tank yards is primarily unpaved gravel with patches of grass. A few concrete walkways are located in the yards including the area surrounding the Former PCP/Diesel Mixing Area located in the Lower Tank Yard. Immediately to the west of the tank yards are a pump shed and foamite shed (used for fire suppression).

There are no known drinking water wells on the property, but several monitoring wells from site investigations are installed within the shallow water-bearing zone beneath the property.

2.2 PROPERTY OPERATION

The petroleum terminal discontinued operation in October 2001. The site will not be used as a petroleum terminal again. Currently it is the site for TOCs administrative offices and for storage of equipment and supplies (i.e., fascia, signs) for service stations. Most of the stored material is kept in the warehouse near the New Barreling Shed.

2.3 PROPERTY HISTORY

The Property was acquired by TOC around 1941. Historical photographs (presented in Volume 1, Appendix B of the Final Environmental Site Assessment: Phase I [Foster Wheeler

Environmental, 2000]) demonstrate a number of changes that have taken place at the Property since 1936. Prior to 1936, the Property appears to have been used for agricultural purposes.

The 1946 photograph shows the original office building, the Lower and Upper Tank Yard Areas, the pump shed and foamite building, a former barreling shed located immediately west of the office building, and overhead fuel loading racks. 55-gallon drums were filled with petroleum products in the former barreling shed, rolled under West Commodore Way via a barrel incline and tunnel to the TOC dock in the ship canal, and then loaded onto ships. This operation was conducted primarily to support World War II efforts.

The historical photograph from 1960 (Volume 1, Appendix B, Foster Wheeler Environmental, 2001) depicts the Property mainly as it is today. A warehouse building, built in the late 1940s according to the Puget Sound Regional Archives, is located south of the office building, parallel with the rail spurs (several of the rail spurs were deactivated by the time of this photograph). A new barreling shed, built in 1952 according to the Puget Sound Regional Archive files, is located just northwest of the warehouse, and the boiler house was added in 1950 (Puget Sound Regional Archive files). The barreling shed seen in the 1946 photograph is no longer on the Property in the 1960 photograph.

According to TOC employees, PCP crystals were mixed with warm diesel fuel in a small AST near the west wall of the Lower Tank Yard Area. The mixture of PCP and diesel was transferred via underground lines to the new barreling shed where 55-gallon drums and 5-gallon drums were filled, rolled onto a loading dock between the warehouse and the barreling shed, and finally rolled onto rail cars. During the mixing process, some of the PCP crystals were spilled on the ground surface in the Former PCP/Diesel Mixing Area. This PCP/diesel mixing operation reportedly occurred for 3 to 4 months during 1967 as part of a military contract. The 1997 photograph shows the Property as it exists today (Volume 1, Appendix B, Foster Wheeler Environmental, 2000).

3. PREVIOUS INVESTIGATIONS

Previous investigations have been conducted near the Former PCP/Diesel Mixing Area and are documented in the following reports:

- Final Environmental Site Assessment: Phase I, Foster Wheeler Environmental, August 2000.
- Final Environmental Site Assessment: Phase II, Foster Wheeler Environmental, April 2001a.
- Final Environmental Site Assessment: Phase III, Foster Wheeler Environmental, December 2001b.

A summary of these reports and their findings are discussed in the following sections.

3.1 FINAL ENVIRONMENTAL SITE ASSESSMENT: PHASE I

A Phase I Environmental Site Assessment was conducted at 2737 West Commodore Way in the summer of 2000 (Foster Wheeler Environmental, 2000). The Phase I Investigation was conducted in accordance with the applicable American Society for Testing Methods (ASTM) standard at the time (ASTM E 1527-97). Based on a review of available documents, interviews, and site reconnaissance, further field investigations were recommended in the Former PCP/Diesel Mixing Area, Former Barrel Shed, and New Barrel Shed to assess the potential impacts of PCP use. Figure 3-1 shows the locations of the three areas at the site.

3.2 FINAL ENVIRONMENTAL SITE ASSESSMENT: PHASE II

In November 2000, Foster Wheeler conducted the initial field investigation in the Former PCP/Diesel Mixing Area to evaluate the potential for PCP-impacted soil and groundwater. Five soil borings (SB-01 through SB-05) were drilled around the former AST location. The borings were drilled manually using a hand auger. The depths of the borings ranged from 3 feet below ground surface (bgs) to 14 feet bgs. Four surface (0 to 0.6 inches) soil samples (SS-01 through SS-04) were also collected around the area where PCP was mixed with diesel. The sample locations are shown on Figure 3-1.

Six soil borings (SB-26 through SB-31) were installed near the Former Barrel Shed using a hollow-stem auger (HSA) drill rig operated by Cascade drilling. The borings ranged in depth from 20 to 25 feet. Three soil borings were drilled near the New Barrel Shed. Two of the

borings were abandoned at a shallow depth (< 1 foot) due to refusal caused by concrete. Only one boring (SB-06) was completed; south of the New Barrel Shed and between the former rail spurs.

Soil samples were collected and analyzed for petroleum products and PCP using EPA Method 8270-selective ion monitoring (sim). The analyses were conducted by North Creek Analytical Laboratories, Inc., in Bothell, Washington.

The analytical results from the soil borings (Table 3-1) in the Former PCP/Diesel Mixing Area showed PCP concentrations exceeding the MTCA Method B Cleanup Level in surface soil samples (0 to 0.6 inches) at SB-03 (202 mg/kg) and SB-04 (803 mg/kg). PCP was also detected above the MTCA Method B Level at a depth of 5 feet bgs in SB-04 (20.9 mg/kg). Trace amounts of PCP were detected throughout most of the borings. The trace levels (< 0.2 mg/kg) are believed to be a result of smearing of the surface material caused by the sampling method (hand auger) and not representative of actual subsurface conditions. The surface soil samples collected from the Former PCP/Diesel Mixing Area were below the reporting limit with the exception of SS-01 (3.87 mg/kg); though still below the MTCA Method B Level.

3.3 FINAL ENVIRONMENTAL SITE ASSESSMENT: PHASE III

In July 2001, five additional soil borings were drilled and one near surface sample was collected in the Former PCP/Diesel Mixing Area (Figure 3-2). Some of the soil boring locations were new (SB-56 and SB-55), while the other three locations (SB-52, SB-53, and SB-54) were located near previous boring locations. The borings were completed with a 1-inch inner diameter Acker Soil Mechanic, operated by BoreTec, Inc. Some of the bores were located near previous borings in order to collect representative sub-surface, since the sub-surface hand-auger samples collected in March 2001 were suspect. One of the borings (SB-56) was completed as a temporary well (01MW-14). A boring (SB-58) was installed hydraulically down-gradient and in front of the New Barrel Shed Area and completed as a well (01MW-15). A soil boring (SB-59) was also drilled in the Former Barrel Shed Area, adjacent to well 01MW-06, to collect soil samples for the analysis of PCP. The soil samples from the boring for well 01MW-06 were not analyzed for PCP during the Phase II activities. One round of groundwater sampling showed low concentrations (below the action level) of PCP in well 01MW-06. Therefore, in order to fill a data gap, a boring was co-located to the well to assess the potential presence of PCP in soil. Borings SB-58 and SB-59 were drilled by Cascade Drilling using a CME 75 High Torque hollow stem auger drill rig.

The analytical results showed concentrations of PCP in the Former PCP/Diesel Mixing Area above the MTCA Method B Level (8.33 mg/kg) in SB-56 (8.88 mg/kg) at a depth of 5 feet below ground surface. None of the other samples from the Former PCP Diesel/Mixing Area, Former Barrel Shed Area (SB-59), or New Barrel Shed Area (SB-58) showed concentrations of PCP above the MTCA level.

3.4 SUMMARY OF PREVIOUS INVESTIGATIONS

Based on the analytical results of samples collected during the previous investigations, the extent of PCP-impacted soil is limited to the surface soil surrounding the AST in the Former PCP/Diesel Mixing Area. Only two subsurface samples within the area showed concentrations above the MTCA Method B Cleanup Level for soil.

The samples in the New Barrel Shed Area and Former Barrel Shed Area did not show concentrations of PCP in soil above the MTCA Method B Cleanup Level or applicable screening level.

4. CLEANUP LEVELS

4.1 SOIL CLEANUP LEVELS

The primary contaminant of concern for the removal activity conducted was PCP. The removal action was limited in spatial extent to the area of previous use (Former PCP/Diesel Mixing Area) where the material had been used historically and was limited to soil. The primary goal of the removal action was guided by MTCA (WAC 173-340). MTCA contains cleanup standards and regulations to protect human health and the environment from past releases of hazardous substances. Potential exposure of humans to PCP-impacted soil, and the potential leaching by PCP-impacted soil into the groundwater, were appropriate exposure scenarios in the Former PCP/Diesel Mixing Area. MTCA (WAC 173-340-900) lists cleanup levels for various contaminants in soil and groundwater. The cleanup levels for soil are divided into restricted land use and unrestricted land use categories. These tables are commonly referred to as MTCA Method B Formula Values. There are no MTCA Method A Cleanup Levels for PCP. Therefore, MTCA provides Method B Formula Values, which are risk-based values. These values are found in Ecology's Cleanup Levels and Risk Calculations Under the MTCA Cleanup Levels and Risk Calculation (CLARC), Version 3.1 (Ecology, 2001). The MTCA Method B Formula Value for carcinogenic PCP based on direct contact pathway is 8.33 mg/kg. This is the most conservative value for unrestricted land use and is applicable for the Former PCP/ Diesel Mixing Area based on the exposure scenarios that were present prior to the removal action.

5. REMOVAL ACTION

The limited soil removal activity for the Former PCP/Diesel Mixing Area was conducted from September 11 through September 17, 2002. Prior to the commencement of the removal activity, a Work Plan was prepared and submitted to Ecology for review under the VCP. Based on the Work Plan and other supplemental information, Ecology had "no objections to proceeding with the proposed remediation of PCP-impacted soil" (correspondence with Ecology, August 22, 2002). The following sections describe in greater detail removal activities taken to remediate PCP-impacted soil in the Former PCP/Diesel Mixing Area.

5.1 SITE PREPARATION

Prior to removing the PCP-impacted soil, any ancillary piping, including the manifold system, and surface structures were removed for ease of access. The AST, which had been cleaned previously, was removed from the site and transported to Schnitzer Steel for recycling. Other surface piping, including the above ground manifold system were cleaned during the terminal decommissioning in October 2001. The piping was disconnected at the flanges or cut and lifted out of the Lower Tank Yard by a boom truck and into a drop box provided by Schnitzer Steel. The piping and AST were transported to Schnitzer Steel for recycling.

A portion of the northern wall in the Lower Tank Yard was removed to allow equipment to enter the area. An asphalt ramp was made leading into the Lower Tank Yard from the driveway outside the area. The extent of the area to be excavated was marked based on the historical analytical results and the accepted Work Plan (Foster Wheeler Environmental, 2002).

5.2 SOIL REMOVAL

The soil was removed from the area using a trackhoe in two stages. The soil from the south end of the area was excavated first and mounded near the north end of the area. The depth of the excavation was approximately 6 inches to 18 inches. Confirmation samples (PEC-ES-01 and PEC-SS-01 through PEC-SS-03) were then collected. The northern extent of the area was excavated when the soil was loaded into trucks for transportation and recycling. The remaining confirmation samples (PEC-ES-02 and PEC-SS-04 through PEC-SS-07) were then collected. Two subsurface locations (SB-04 and SB-56) were excavated using the bucket of the trackhoe. The subsurface excavation near SB-56 was approximately 5 feet wide and 5 feet deep. SB-56 was the location of monitoring well 01MW-14, which was removed during the excavation activity. The entire well and all annular material were removed. The subsurface excavation

near SB-04 was increased due to a subsurface concrete pad in the vicinity that forced the excavation limits to expand. The final subsurface excavation near SB-04 was approximately 5 feet wide, 10 feet long, and 7 feet deep.

All excavated soil was stockpiled in a lined area adjacent to the excavation. The stockpiled soil was bermed and covered to control runoff and water accumulation prior to final disposition. Approximately 70 cubic yards of soil was excavated from the area.

5.3 CONFIRMATION SAMPLING

Confirmation samples were collected after the soil had been removed from the area. The samples were collected using a clean stainless steel spoon and placing the soil directly into the appropriate sample jar provided by the analytical laboratory. The samples were analyzed for PCP using EPA Method 8270-sim by North Creek Analytical, Inc., in Bothell, Washington. The samples were hand carried to the laboratory in a chilled cooler the day they were collected. The locations of the confirmation samples are shown on Figure 5-1.

5.4 SITE RESTORATION

The analytical results from the confirmation samples (Table 5-1) showed that the PCP-impacted soil had been successfully removed from the Former PCP/Diesel Mixing Area. Clean imported fill was brought into the area and used to bring the surface to grade.

5.5 SOIL TREATMENT

The excavated soil was transported from the site on September 17, 2002. Because the soil removed was generated during the manufacturing of a wood treating solution containing PCP, the soil was designated as an USEPA category F027 waste. There are no treatment facilities in the United States to treat category F027 waste; therefore, the soil was transported to an incineration facility in Canada for proper treatment. TOC contracted with Sensor Environmental Services, Ltd., to transport and treat the soil at their incineration facility in Swan Hills, Alberta. The EPA and Environment Canada (Canada's EPA equivalent) were notified prior to the transportation of the material.

6. CONCLUSIONS AND RECOMMENDATIONS

On behalf of the Time Oil Company, Foster Wheeler prepared a Work Plan to address the rationale and procedures for removing PCP-impacted soil from the Former PCP/Diesel Mixing Area at 2737 West Commodore Way. The historical data showed that PCP-impacted soil was present in the surface and at two other locations at a depth of approximately 5 feet below ground surface. In July 2002, TOC/Foster Wheeler entered Ecology's VCP for the limited soil removal of PCP-impacted soil. A Work Plan was prepared, reviewed by Ecology in August 2002, and the removal activity was approved.

Approximately 70 cubic yards of PCP-impacted soil was removed from the area on September 11 and 12, 2002. Confirmation samples were collected and the analytical results showed that the PCP-impacted soil had been removed. The excavated soil was removed for proper treatment at Sensor Environmental Services, Ltd's incineration facility in Swan Hills, Alberta. The excavated area was then backfilled with clean import material.

Based on the successful execution of the Work Plan, analytical results indicating no soil exceedances for PCP, and completion of the VCP requirement, we respectfully request a finding of "no further action" in regard to PCP-impacted soil in the Former PCP/Diesel Mixing Area.

7. REFERENCES

Ecology (Washington State Department of Ecology). 2002. Technical Correspondence from Jerome B. Cruz of Ecology to Bryan S. Graham of Foster Wheeler Environmental. August 22, 2002.

Ecology. 2001. Cleanup Levels and Risk Calculations under the Model Toxics Control Act Cleanup Regulation CLARC, Version 3.1, November 2001.

Foster Wheeler Environmental (Foster Wheeler Environmental Corporation). 2002. Limited Soil Removal Activity Work Play for Former PCP/Diesel Mixing Area, 2737 West Commodore Way, Seattle, Washington. July 3, 2002.

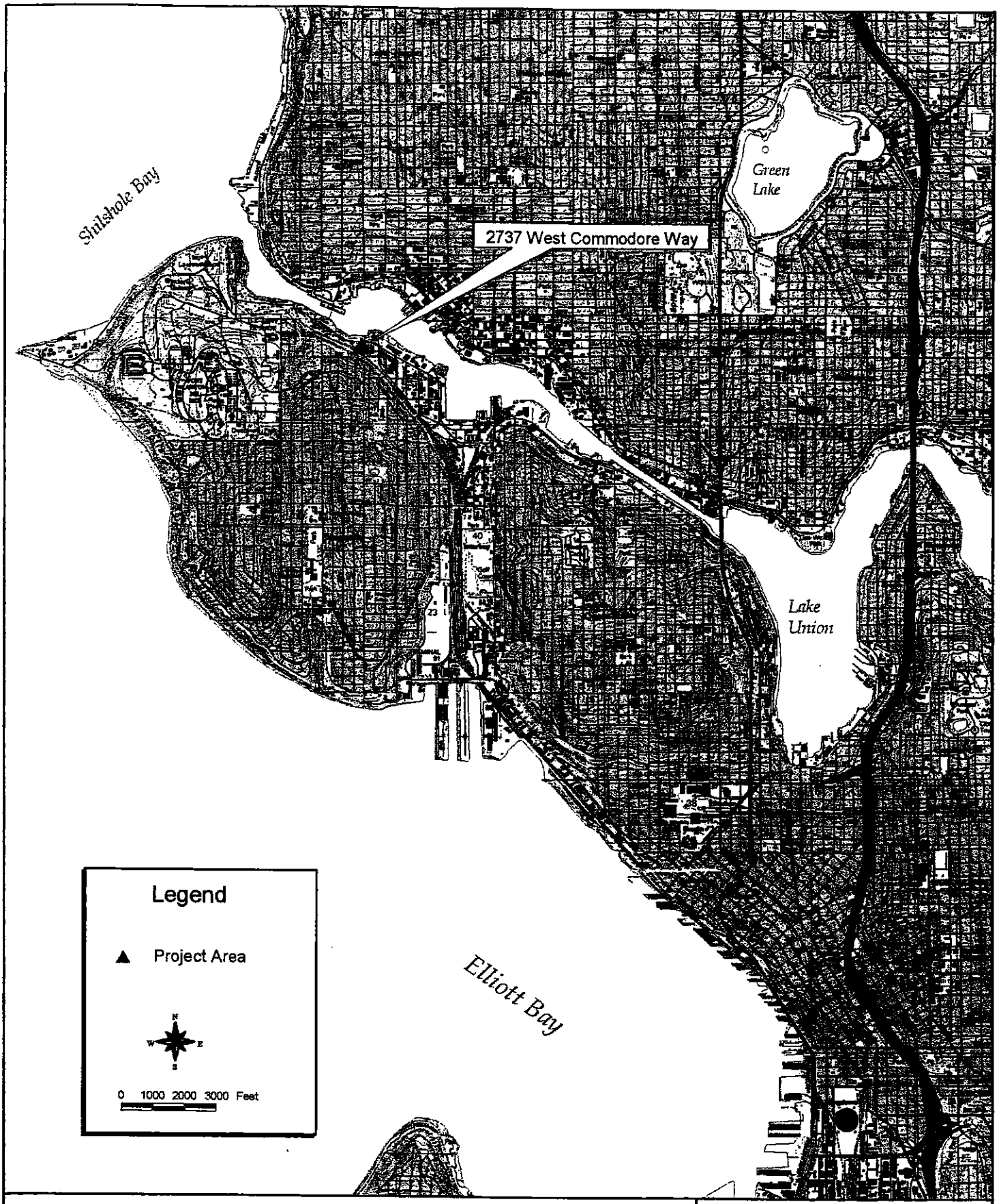
Foster Wheeler Environmental. 2001a. Environmental Site Assessment: Phase II at 2737 West Commodore Way, Seattle, Washington. Prepared for Time Oil Company by Foster Wheeler Environmental Corporation, Bothell, Washington. April 2001.

Foster Wheeler Environmental. 2001b. Phase III Environmental Site Assessment at 2737 and 2750 West Commodore Way properties, Seattle, Washington. Prepared for Time Oil Company by Foster Wheeler Environmental Corporation, Bothell, Washington. October 16, 2001.

Foster Wheeler Environmental. 2000. Environmental Site Assessment: Phase I for Time Oil Company, 2737 West Commodore Way, Seattle, Washington. Prepared for Time Oil Company by Foster Wheeler Environmental Corporation, Bothell, Washington. August 25, 2000.

Time Oil Company. 2001. Technical Correspondence from Scott Sloan of Time Oil Company to Uwanta Hickey of Washington State Department of Ecology. November 29, 2001.

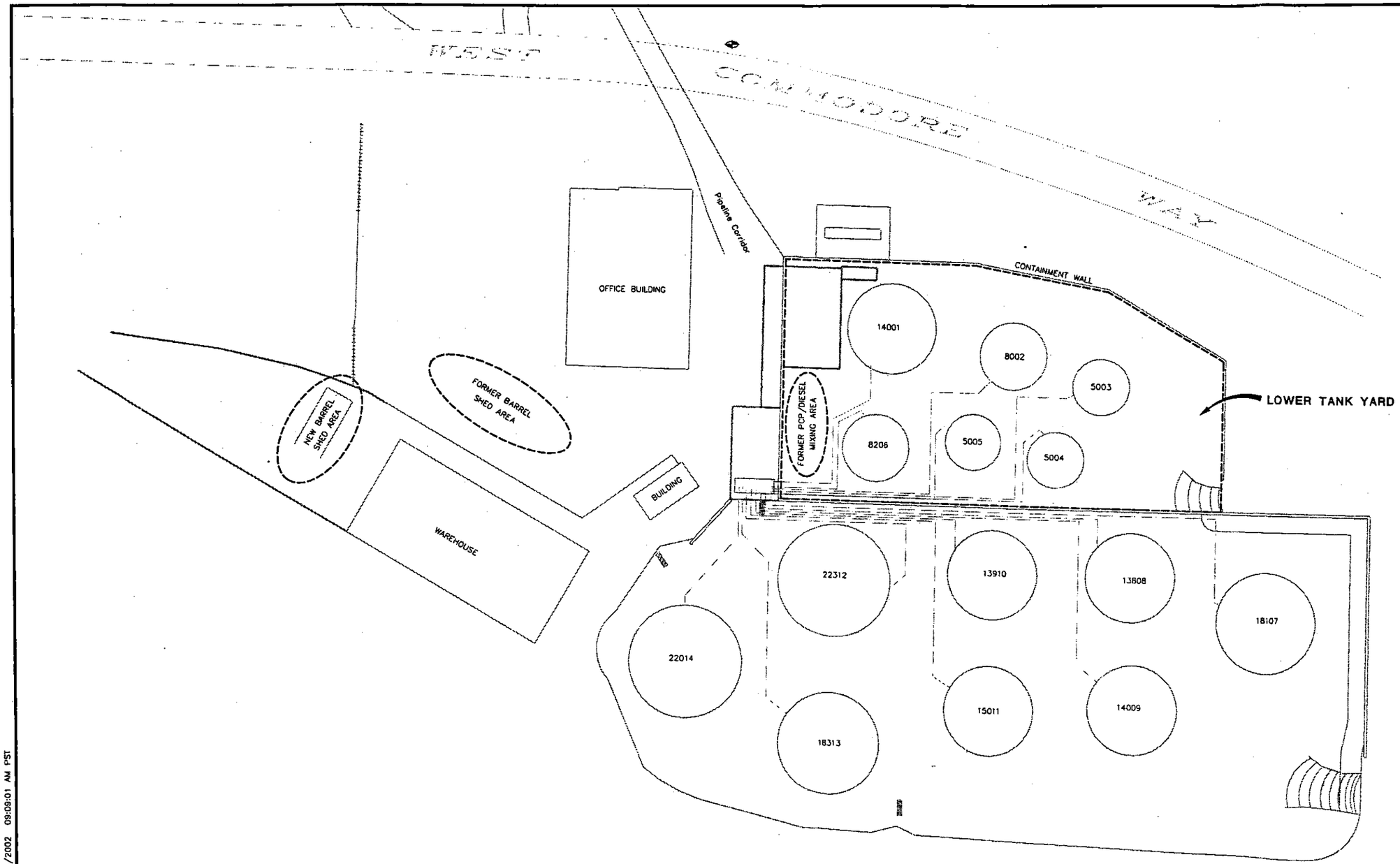
FIGURES



Time Oil Company
Limited Soil Removal Activity
Former PCP/Diesel Mixing Area

Figure 1-1

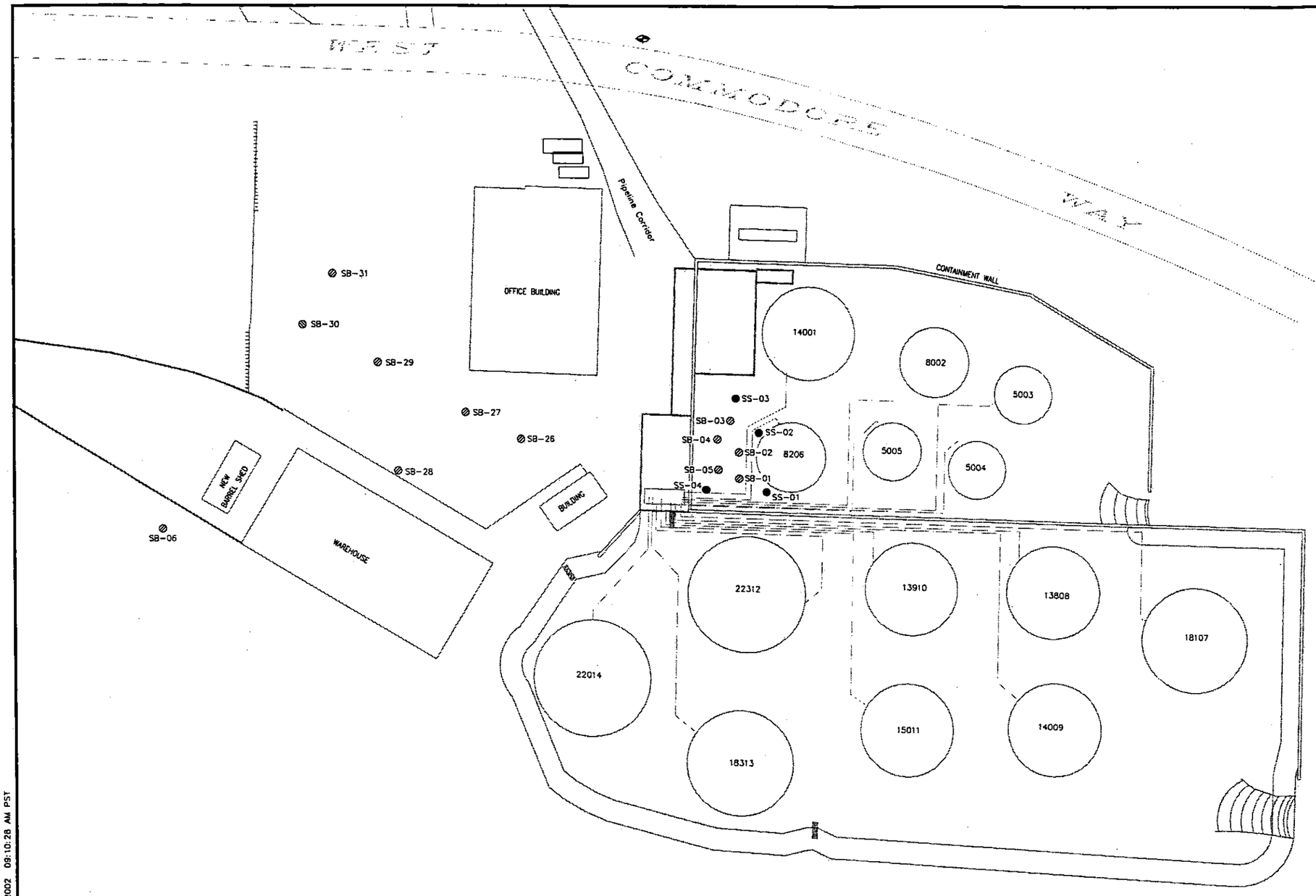
Location of Site



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 2–1
Layout of Site and Previous Ares of Investigation

I:\Projects\23063312\dwg\ETIOFG39.dwg 11/26/2002 09:09:01 AM PST



CITY OF SEATTLE
TBM #9962 = EL. 79.61

GRAPHIC SCALE
0 30 60
SCALE IN FEET
HORIZONTAL SCALE

LEGEND

- SOIL BORING
- SURFACE SAMPLE
- SURVEY MONUMENT

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 3-1.
Locations of Phase II Soil Borings
Hand Auger Screening Borings at
2737 West Commodore Way
Seattle, Washington

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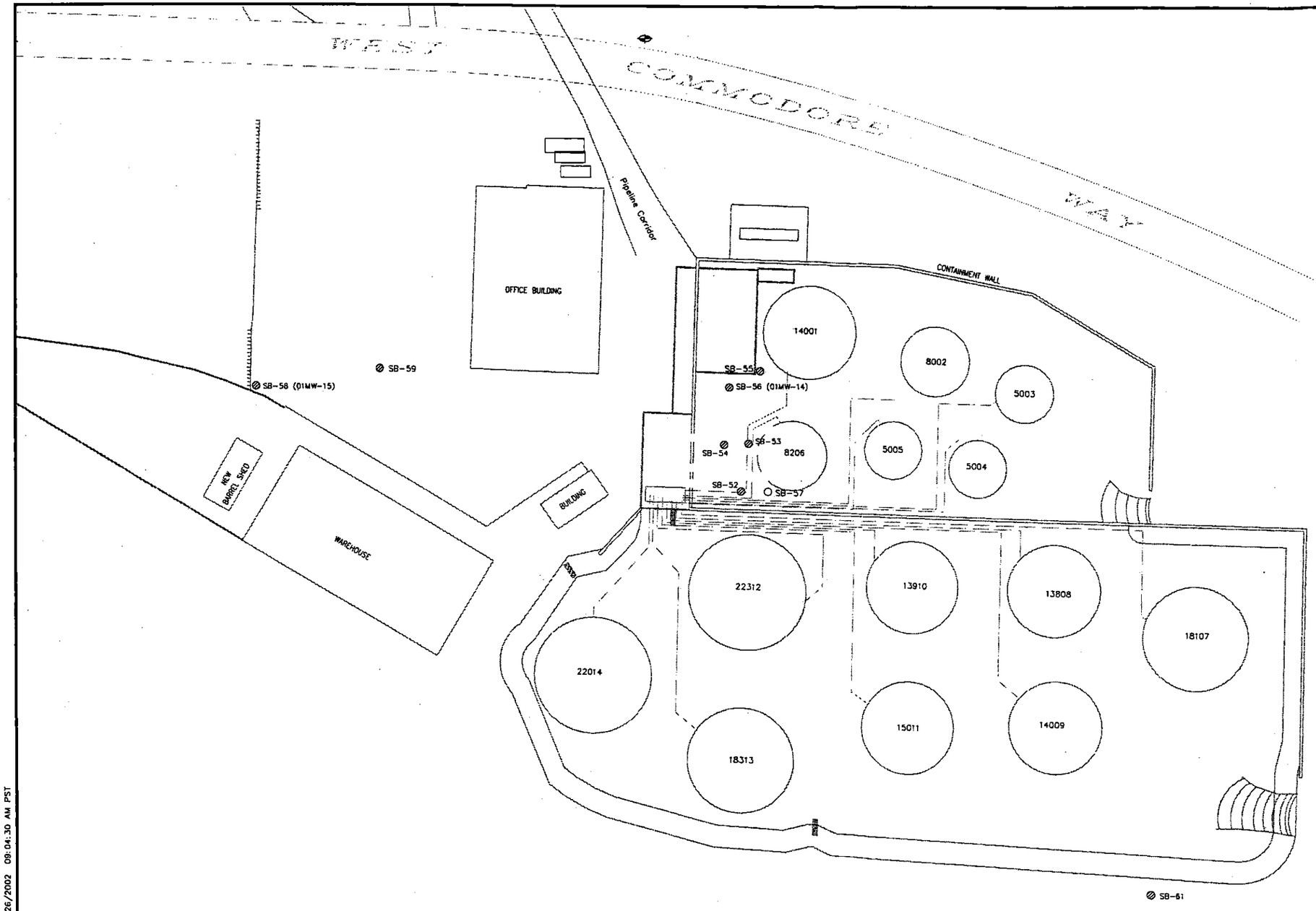


LEGEND

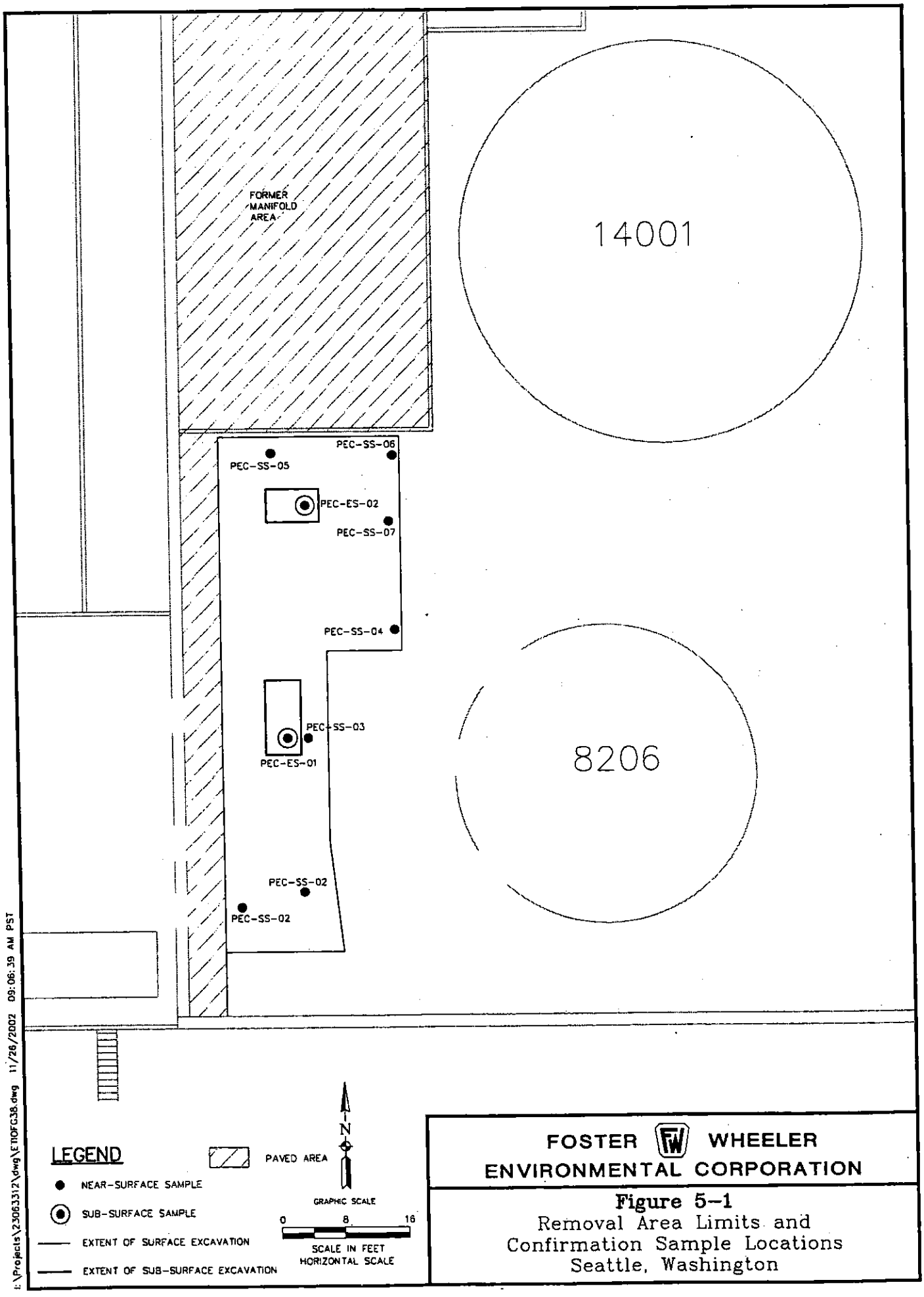
- SOIL BORING
- NEAR-SURFACE SAMPLE
- SURVEY MONUMENT

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 3-2

Locations of Phase III Soil Borings

i:\Projects\23063312\dwg\ETHOFG41.dwg 11/26/2002 09:04:30 AM PST



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Figure 5-1
Removal Area Limits and
Confirmation Sample Locations
Seattle, Washington

TABLES

Table 3-1. Analytical Results for PCP in Soil

Sample	PCP (mg/Kg)
MTCA[1/]	**8.33**
Former PCP/Diesel Mixing Area	
SS-01	3.870
SS-02	< 1.25
SS-03	< 2.50
SS-04	< 0.500
SB-01-0.6	0.930
SB-01-2	<0.250
SB-01-5	0.0871
SB-01-10	0.0812
SB-01-14	0.0578
SB-02-0.6	1.15
SB-02-2	<0.250
SB-02-5	0.0615
SB-02-10	0.0613
SB-02-14	0.0585
SB-03-0.6	***202***
SB03B (2 ft)	<0.500
SB-04-0.6	***803*** ✓
SB-04-2	1.26
SB-04-5	***20.9*** ✓
SB-04-10	0.2330 ✓
SB-05-0.6	2.18
SB-05-2	0.0761
SB-05-5	0.264
SB-05-10	0.0981
SB-53-2	0.0916
SB-53-5	<0.0500
SB-53-10	<0.0500

Sample	PCP (mg/Kg)
MTCA[1/]	**8.33**
Former PCP/Diesel Mixing Area	
SB-54-2	0.181
SB-54-5	<0.0500
SB-54-10	0.0780
SB-55-2.5	<0.0500
SB-55-6	0.174
SB-55-10	0.0770
SB-56-2.5	<0.500
SB-56-5	***8.88*** ✓
SB-56-10	0.0765
SB-57-1.5	<0.0500
New Barrel Shed	
SB-06-5	< 0.250
SB-06-10	0.0548
SB-06-15	0.0548
SB-07-5	< 0.250
SB-07-10	< 0.250
SB-07-15	0.0572
SB-08-5	0.0560
SB-58-2	<0.500
SB-58-5	<0.0500
SB-58-10	<0.0500
SB-58-15	0.159
SB-58-25	<0.0500
Former Barrel Shed	
SB-59-5	<0.500
SB-59-15	<0.0500

[1/]Results above MTCA Method B carcinogenic cleanup level in bold and italics.

Table 5-1. Analytical Results for Confirmation Samples

Sample	PCP (mg/Kg)
MTCA[1/]	**8.33**
PEC-ES-01	1.05
PEC-SS-01	< 0.250
PEC-SS-02	< 0.0500
PEC-SS-03	0.0754
PEC-ES-02	1.01
PEC-SS-04	< 0.0500
PEC-SS-05	< 0.0500
PEC-SS-06	< 0.0500
PEC-SS-07	< 0.0500

[1/]Results above MTCA Method B carcinogenic cleanup level in bold and italics

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Avenue SE • Bellevue, Washington 98008-5452 • (425) 649-7000

August 22, 2002

Mr. Bryan Graham
Foster Wheeler Environmental
12100 NE 195th Street, Suite 200
Bothell, WA. 98011

Dear Mr. Graham,

Re: Request for Review: Voluntary Cleanup Program # NW0931
Time Oil Terminal Property 01-600, 2737 West Commodore Way, Seattle, WA.

Thank you for submitting your reports for Ecology's review. Ecology appreciates your initiative in pursuing a voluntary cleanup under the Model Toxics Control Act (MTCA).

The Washington State Department of Ecology's Toxics Cleanup Program has reviewed the following information regarding the Time Oil Terminal Property 01-600 located at 2737 West Commodore Way, Seattle, WA:

1. Report titled "Final Limited Soil Removal Activity Work Plan For Former PCP/Diesel Mixing Area at 2737 West Commodore Way Seattle, Washington, prepared by Foster Wheeler Environmental Corporation, Bothell, WA, dated July 3, 2002.

2. Facsimile transmittal of amended Figure 3-2 showing "Anticipated Excavation Areas" prepared by Foster Wheeler Environmental Corporation, Bothell, WA, dated August 7, 2002.

3. Report titled "Final Environmental Assessment: Phase II PCP/Diesel Mixing Areas at 2737 West Commodore Way Seattle, Washington, prepared by Foster Wheeler Environmental Corporation, Bothell, WA, dated June 4, 2001.

Based upon the information listed above, Ecology has no objections to proceeding with the proposed remediation of PCP-impacted soil at this portion of the property (Former PCP/Diesel Mixing Area). It is understood by Ecology that further remediation will be performed at the site to address petroleum-impacted media. Ecology believes that, in order to address other contaminant issues not related to the cleanup of PCP-impacted soil at the Former PCP/Diesel Mixing Area, an environmental assessment plan and a remediation

APPENDIX B

ECOLOGY CORRESPONDENCE

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Avenue SE • Bellevue, Washington 98008-5452 • (425) 649-7000

July 25, 2002

Mr. Bryan Graham
Foster Wheeler Environmental
12100 NE 195th Street, Suite 200
Bothell WA 98011

Dear Mr. Bryan Graham:

Re: Request for Review: Independent Remedial Action
Time Oil Terminal, 2737 West Commodore Way, Seattle WA 98199

Thank you for submitting the independent remedial action report(s) for this site for Ecology's review. Ecology appreciates your initiative in pursuing a voluntary cleanup under the Model Toxics Control Act.

This is to acknowledge receipt of your *Request* and your $500 deposit. A copy of the *Request* form is enclosed. All correspondence relating to this project should include the site name and a reference to the TCP identification number NW0931.

The Department of Ecology (Ecology) will publish a notice in the *Site Register* that we have received the report(s) and of your request for Ecology review of the independent remedial action. The Site Register is a bi-weekly publication regarding sites undergoing cleanup or remedial action throughout the state.

If you have any questions about this letter or the Voluntary Cleanup Program, please do not hesitate to call me at (425) 649-4446.

Sincerely,

Theresa L. Fisher
Voluntary Cleanup Program Administrator

TLF: lg
Enclosure

Voluntary Cleanup Program

Washington State - Department of Ecology - Toxics Cleanup Program

Request For Assistance/ Review Form

Have you discussed this site with an Ecology representative in the past? Yes
If yes, what is that person's Name? Mr. Joe Hickey, Mr. Steve Bremer
And the approximate date? June 2002
Is this a leaking underground storage tank site? (includes piping leaks) No

Please submit the following with this signed form to the appropriate Ecology office (see back of form)

☐ Site Summary (ECY 020-73) ☒ Any other existing reports on this site
☒ A Check or Money Order for $500 made out to "Department of Ecology"

Applicant completes this section: ***(Note: The applicant is responsible for all billings)***

Applicant Name: Foster Wheeler Environmental (attn: Bryan Graham) **Phone:** (425) 482-7865

Applicant Address: 12100 NE 195th Street, Suite 200

City: Bothell **State:** WA **Zip:** 98011

Site Name: Time Oil Terminal **Alternate Name:** PCP/Diesel Mixing Area

Site Address: 2737 West Commodore Way

City: Seattle **State:** WA **Zip:** 98199 **County:** King

Site Owner Name: Time Oil Company

Site Owner Address: 2737 West Commodore Way, PO Box 24447 **Phone:** (206) 286-6457

City: Seattle **State:** WA **Zip:** 98199

I, Bryan Graham, request the assistance of the Department of Ecology. With this Application I have enclosed $500. I understand that: this payment is the equivalent of approximately eight (8) hours of staff review and/or assistance on the cleanup of my contaminated site; actual charges will depend on specific staff and charge-out rates of that staff; if total charges are greater than $500, I will be billed for and I agree to pay the remainder; and any excess payments will be refunded to me.

7/6/02
Signature of Applicant Date
Note: The applicant is responsible for all billings.

For Office Use Only Date: Hours: Rate: Staff Name: Date: Hours: Rate: Staff Name: Date: Hours: Rate: Staff Name: Date: Hours: Rate: Staff Name:	
For Office Use Only: Receipt Amount: Date Rec'd: Rec'd #:	FOR FISCAL USE ONLY (LUST/Non-LUST) (Office) LUST/Non-LUST: LUST - 30 Non-LUST - 20 OFFICE: NWRO - 40 SWRO - 50 ERO - 60 CRO - 70 IND - 80 HDQR - 90

Ecology is an Equal Opportunity and Affirmative Action employer. (SIS, LUST, VCP)

APPENDIX D

ANALYTICAL REPORTS

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
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16 September 2002

Bryan Graham
Foster Wheeler Environmental Corporation
12100 NE 195th St
Bothell, WA/USA 98011

RE: PCP

Enclosed are the results of analyses for samples received by the laboratory on 09/12/02 14:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Emanuel Hignutt For Amar Gill
Project Manager

www.ncalabs.com

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/16/02 09:54

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PEC-ES-01	B2I0232-01	Soil	09/12/02 10:45	09/12/02 14:15
PEC-SS-01	B2I0232-02	Soil	09/12/02 11:10	09/12/02 14:15
PEC-SS-02	B2I0232-03	Soil	09/12/02 11:20	09/12/02 14:15
PEC-SS-03	B2I0232-04	Soil	09/12/02 11:30	09/12/02 14:15

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Emanuel Hignutt For Amar Gill, Project Manager

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/16/02 09:54

Pentachlorophenol by GC/MS with Selected Ion Monitoring
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PEC-ES-01 (B2I0232-01) Soil Sampled: 09/12/02 10:45 Received: 09/12/02 14:15									
Pentachlorophenol	**1.05**	0.0500	mg/kg dry	1	2I12025	09/12/02	09/13/02	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*87.3 %*	*20-173*			"	"	"	"	
PEC-SS-01 (B2I0232-02) Soil Sampled: 09/12/02 11:10 Received: 09/12/02 14:15									
Pentachlorophenol	ND	0.250	mg/kg dry	5	2I12025	09/12/02	09/13/02	EPA 8270 Mod	Q-32
Surrogate: 2,4,6-TBP	*168 %*	*20-173*			"	"	"	"	*Q-32*
PEC-SS-02 (B2I0232-03) Soil Sampled: 09/12/02 11:20 Received: 09/12/02 14:15									
Pentachlorophenol	ND	0.0500	mg/kg dry	1	2I12025	09/12/02	09/13/02	EPA 8270 Mod	Q-32
Surrogate: 2,4,6-TBP	*107 %*	*20-173*			"	"	"	"	*Q-32*
PEC-SS-03 (B2I0232-04) Soil Sampled: 09/12/02 11:30 Received: 09/12/02 14:15									
Pentachlorophenol	**0.0754**	0.0500	mg/kg dry	1	2I12025	09/12/02	09/13/02	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*93.3 %*	*20-173*			"	"	"	"	

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/16/02 09:54

Physical Parameters by APHA/ASTM/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PEC-ES-01 (B2I0232-01) Soil	**Sampled: 09/12/02 10:45**	**Received: 09/12/02 14:15**							
Dry Weight	**81.3**	1.00	%	1	2I12026	09/12/02	09/13/02	BSOPSPL003R07	
PEC-SS-01 (B2I0232-02) Soil	**Sampled: 09/12/02 11:10**	**Received: 09/12/02 14:15**							
Dry Weight	**83.7**	1.00	%	1	2I12026	09/12/02	09/13/02	BSOPSPL003R07	
PEC-SS-02 (B2I0232-03) Soil	**Sampled: 09/12/02 11:20**	**Received: 09/12/02 14:15**							
Dry Weight	**82.2**	1.00	%	1	2I12026	09/12/02	09/13/02	BSOPSPL003R07	
PEC-SS-03 (B2I0232-04) Soil	**Sampled: 09/12/02 11:30**	**Received: 09/12/02 14:15**							
Dry Weight	**79.1**	1.00	%	1	2I12026	09/12/02	09/13/02	BSOPSPL003R07	

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Emanuel Hignutt For Amar Gill, Project Manager

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/16/02 09:54

Pentachlorophenol by GC/MS with Selected Ion Monitoring - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2I12025: Prepared 09/12/02 Using EPA 3550B										
Blank (2I12025-BLK1)										
Pentachlorophenol	ND	0.0500	mg/kg							
Surrogate: 2,4,6-TBP	*1.30*		"	*1.67*		*77.8*	*20-173*			
LCS (2I12025-BS1)										
Pentachlorophenol	0.322	0.0500	mg/kg	0.667		48.3	24-141			
Surrogate: 2,4,6-TBP	*1.16*		"	*1.67*		*69.5*	*20-173*			
LCS Dup (2I12025-BSD1)										
Pentachlorophenol	0.307	0.0500	mg/kg	0.667		46.0	24-141	4.77	50	
Surrogate: 2,4,6-TBP	*1.47*		"	*1.67*		*88.0*	*20-173*			
Matrix Spike (2I12025-MS1)					**Source: B2I0232-02**					
Pentachlorophenol	0.487	0.250	mg/kg dry	0.791	ND	61.6	20-167			Q-32
Surrogate: 2,4,6-TBP	*6.83*		"	*1.98*		*345*	*20-173*			*Q-32,S-04*
Matrix Spike Dup (2I12025-MSD1)					**Source: B2I0232-02**					
Pentachlorophenol	0.623	0.250	mg/kg dry	0.794	ND	78.5	20-167	24.5	50	Q-32
Surrogate: 2,4,6-TBP	*6.39*		"	*1.98*		*323*	*20-173*			*Q-32,S-04*

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/16/02 09:54

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2I12026: Prepared 09/12/02 Using Dry Weight										
Blank (2I12026-BLK1)										
Dry Weight	100	1.00	%							

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/16/02 09:54

Notes and Definitions

Q-32	The internal standard associated with this analyte was outside normal aceptance criteria. Re-analysis verified the original result.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #: B2E0232

CLIENT: TIME OIL COMPANY
REPORT TO: SCOTT SLOAN (BURLHAM & FWENC)
ADDRESS: 2737 W COMMODORE WY SEATTLE WA 98199
PHONE: 206-286-6457 FAX:

INVOICE TO: SAME AS LEFT
P.O. NUMBER:

PROJECT NAME: PCP IMPACT REMOVAL
PROJECT NUMBER:
SAMPLED BY: JEFF SPECIE

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1 (STD.)
Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1 (STD.)
OTHER — Please Specify: 24 HOUR
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES: PCP 8270 - SIM

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. PEC-ES-01	091202 1045	S	1		01
2. PEC-SS-01	091202 1110	S	1		02
3. PEC-SS-02	091202 1120	S	1		03
4. PEC-SS-03	091202 1130	S	1		04
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					

RELINQUISHED BY: [signature] DATE: 091202 RECEIVED BY: [signature] DATE: 9/12/02
PRINT NAME: JEFF SPECIE FIRM: FWENC TIME: 1415 PRINT NAME: Katie Brown FIRM: NCA TIME: 14:15
RELINQUISHED BY: DATE: RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME: PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: W/D TEMP: 9.0 PAGE 1 OF 1

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18 September 2002

Bryan Graham
Foster Wheeler Environmental Corporation
12100 NE 195th St
Bothell, WA/USA 98011

RE: PCP

Enclosed are the results of analyses for samples received by the laboratory on 09/17/02 13:55. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Emanuel Hignutt For Amar Gill
Project Manager

www.ncalabs.com

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/18/02 16:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PEC-ES-02	B2I0321-01	Soil	09/17/02 10:10	09/17/02 13:55
PEC-SS-04	B2I0321-02	Soil	09/17/02 10:35	09/17/02 13:55
PEC-SS-05	B2I0321-03	Soil	09/17/02 10:40	09/17/02 13:55
PEC-SS-06	B2I0321-04	Soil	09/17/02 12:05	09/17/02 13:55
PEC-SS-07	B2I0321-05	Soil	09/17/02 12:10	09/17/02 13:55

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Emanuel Hignutt For Amar Gill, Project Manager

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/18/02 16:37

Pentachlorophenol by GC/MS with Selected Ion Monitoring
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PEC-ES-02 (B2I0321-01) Soil Sampled: 09/17/02 10:10 Received: 09/17/02 13:55									
Pentachlorophenol	**1.01**	0.0500	mg/kg dry	1	2I17009	09/17/02	09/18/02	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*85.6 %*	*19-138*			"	"	"	"	
PEC-SS-04 (B2I0321-02) Soil Sampled: 09/17/02 10:35 Received: 09/17/02 13:55									
Pentachlorophenol	ND	0.0500	mg/kg dry	1	2I17009	09/17/02	09/18/02	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*80.4 %*	*19-138*			"	"	"	"	
PEC-SS-05 (B2I0321-03) Soil Sampled: 09/17/02 10:40 Received: 09/17/02 13:55									
Pentachlorophenol	ND	0.0500	mg/kg dry	1	2I17009	09/17/02	09/18/02	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*64.7 %*	*19-138*			"	"	"	"	
PEC-SS-06 (B2I0321-04) Soil Sampled: 09/17/02 12:05 Received: 09/17/02 13:55									
Pentachlorophenol	ND	0.0500	mg/kg dry	1	2I17009	09/17/02	09/18/02	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*67.2 %*	*19-138*			"	"	"	"	
PEC-SS-07 (B2I0321-05) Soil Sampled: 09/17/02 12:10 Received: 09/17/02 13:55									
Pentachlorophenol	ND	0.0500	mg/kg dry	1	2I17009	09/17/02	09/18/02	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*108 %*	*19-138*			"	"	"	"	

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Emanuel Hignutt For Amar Gill, Project Manager

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/18/02 16:37

Physical Parameters by APHA/ASTM/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PEC-ES-02 (B2I0321-01) Soil	**Sampled: 09/17/02 10:10**	**Received: 09/17/02 13:55**							
Dry Weight	**81.4**	1.00	%	1	2I17024	09/17/02	09/18/02	BSOPSPL003R07	
PEC-SS-04 (B2I0321-02) Soil	**Sampled: 09/17/02 10:35**	**Received: 09/17/02 13:55**							
Dry Weight	**84.2**	1.00	%	1	2I17024	09/17/02	09/18/02	BSOPSPL003R07	
PEC-SS-05 (B2I0321-03) Soil	**Sampled: 09/17/02 10:40**	**Received: 09/17/02 13:55**							
Dry Weight	**82.5**	1.00	%	1	2I17024	09/17/02	09/18/02	BSOPSPL003R07	
PEC-SS-06 (B2I0321-04) Soil	**Sampled: 09/17/02 12:05**	**Received: 09/17/02 13:55**							
Dry Weight	**84.3**	1.00	%	1	2I17024	09/17/02	09/18/02	BSOPSPL003R07	
PEC-SS-07 (B2I0321-05) Soil	**Sampled: 09/17/02 12:10**	**Received: 09/17/02 13:55**							
Dry Weight	**84.2**	1.00	%	1	2I17024	09/17/02	09/18/02	BSOPSPL003R07	

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/18/02 16:37

Pentachlorophenol by GC/MS with Selected Ion Monitoring - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2I17009: Prepared 09/17/02 Using EPA 3550B										
Blank (2I17009-BLK1)										
Pentachlorophenol	ND	0.0500	mg/kg							
Surrogate: 2,4,6-TBP	*1.34*		"	*1.67*		*80.2*	*19-138*			
LCS (2I17009-BS1)										
Pentachlorophenol	0.326	0.0500	mg/kg	0.667		48.9	24-141			
Surrogate: 2,4,6-TBP	*1.27*		"	*1.67*		*76.0*	*19-138*			
LCS Dup (2I17009-BSD1)										
Pentachlorophenol	0.318	0.0500	mg/kg	0.667		47.7	24-141	2.48	50	
Surrogate: 2,4,6-TBP	*1.14*		"	*1.67*		*68.3*	*19-138*			

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Emanuel Hignutt For Amar Gill, Project Manager

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/18/02 16:37

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2I17024: Prepared 09/17/02 Using Dry Weight										
Blank (2I17024-BLK1)										
Dry Weight	100	1.00	%							

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Foster Wheeler Environmental Corporation	Project: PCP	
12100 NE 195th St	Project Number: [none]	**Reported:**
Bothell WA/USA, 98011	Project Manager: Bryan Graham	09/18/02 16:37

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244 (425) 420-9200 FAX 420-9210
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #: BZI037

CLIENT: Time Oil

REPORT TO: Bryan Graham

ADDRESS: 12100 NE 195th St. Ste. 200
Bothell, WA 98011

PHONE: 425-482-7600 FAX: 425-482-7641

INVOICE TO: Scott Sloan
Time Oil

P.O. NUMBER:

PROJECT NAME: Time Oil

PROJECT NUMBER: 2306.3312.0007.00002

SAMPLED BY: Jim Rogers

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1

STD. Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1

STD. OTHER 12 hour — Please Specify

*Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	REQUESTED ANALYSES: PCP 8270 SIM	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. PEC-BS-02	9/17 10:10	X	S	1	12 hour TAT	01
2. PEC-SS-04	9/17 1035	X	S	1		02
3. PEC-SS-05	9/17 1040	X	S	1		03
4. PEC-SS-06	9/17 1205	X	S	1		04
5. PEC-SS-07	9/17 1210	X	S	1		05
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						

RELINQUISHED BY: James Rogers FIRM: FWENC DATE: 9/17 TIME: 1415

RECEIVED BY: [signature] PRINT NAME: DAN MUNN FIRM: NCA DATE: 9/17/05 TIME: 1415

RELINQUISHED BY: PRINT NAME: FIRM: DATE: TIME:

RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS:

TEMP: 1 1

Voluntary Cleanup Program

Washington State Department of Ecology – Toxics Cleanup Program

SITE SUMMARY

This form is a required component of your request for assistance under the Voluntary Cleanup Program. Please include it with your application, consultation fee, and terrestrial ecological evaluation form (if applicable).

WHICH OF THE FOLLOWING APPLY TO YOUR SITE?

☐ You are requesting assistance on a planned cleanup.

☐ You are requesting assistance on an ongoing cleanup.

☒ You are requesting review of a completed cleanup.

☐ You are requesting review of monitoring reports.

PERSON/ORGANIZATION MAKING REQUEST FOR ASSISTANCE

Name: Bryan S. Graham		
Firm: Foster Wheeler Environmental		
Mailing address: 12100 NE 195th Street, Suite 200		
City: Bothell	State: WA	Zip code: 98011
Telephone number: 425-482-7600	Fax number: 425-482-7652	E-mail address: bgraham@fwenc.com

WHICH BEST DESCRIBES YOUR INVOLVEMENT AT THIS SITE (CHECK AS MANY THAT APPLY)

Current Owner	Former Owner	Potential Purchaser	Current Operator	Former Operator	Environmental Consultant	Attorney	Insurance Carrier	Other
					X			

If other, please specify:

SITE IDENTIFICATION

Name of site: Time Oil Company Former Petroleum Terminal

Alternative name(s) for site:

Site address: 2737 West Commodore Way

City: Seattle State: WA Zip code: 98199-1233 County: King UBI Number:

Township:	25N	Range:	03E	Section:	S11	Quarter-Quarter:	SE ¼ of SW ¼
Latitude:		Degrees:		Minutes:		Seconds:	
Longitude:		Degrees:		Minutes:		Seconds:	

What method did you use to calculate latitude and longitude? NA

How many acres is the site? <1

Property type? Commercial ☐ Industrial ☒ Residential ☐ Other ☐ Please specify:

Is the property currently being used?

Are there plans for change in use? If yes, please specify:

STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES

Please list all that apply. If you do not know the SIC code(s), list the activities conducted at the site (i.e. automotive repair and maintenance, construction equipment storage, etc.)

SIC Code 4226

TANK INFORMATION

Please complete the table below for all above ground tanks (AST) and underground storage tanks (UST) existing or formerly existing on the property, including unregulated tanks.

TANK ID	AST/UST	SIZE	WASTE/PRODUCT ENCOUNTERED? PRODUCT?	ON GW	IN EXCAVATION	TANK STATUS & DATE
591	UST	3,000 gal	N	NA	NA	In use
951	UST	1,000 gal	N	NA	NA	In use
5003	AST	210,336	N	NA	NA	Temporally closed
5004	AST	214,410	N	NA	NA	Temporally closed
5005	AST	214,704	N	NA	NA	Temporally closed
8002	AST	341,206	N	NA	NA	Temporally closed
8206	AST	330,498	N	NA	NA	Temporally closed
14001	AST	589,302	N	NA	NA	Temporally closed
13808	AST	571,200	N	NA	NA	Temporally closed
13910	AST	574,518	N	NA	NA	Temporally closed
14009	AST	589,092	N	NA	NA	Temporally closed
12811	AST	589,470	N	NA	NA	Temporally closed
18107	AST	767,928	N	NA	NA	Temporally closed
18313	AST	739,872	N	NA	NA	Temporally closed
22014	AST	927,234	N	NA	NA	Temporally closed
22312	AST	908,544	N	NA	NA	Temporally closed

** Unleaded, leaded diesel, bunker-C, waste oil, heating oil, aviation fuel, other (please identify)*
***Left in-place, removed, closed-in-place*

SITE MAPS

Please include an area map that shows the general location of the site (mark the site location) and a site diagram that shows sampling and well locations.

DANGEROUS WASTE FACILITIES

Does the facility have a dangerous waste identification (WAD) number? WAD 0009591207
If yes, please specify.

SITE ASSESSMENT OR SITE REMEDIATION WORK COMPLETED TO-DATE

Has site assessment work been completed at the site? Yes

If yes, when? 2001 - 2002 Were the results reported to Ecology? Yes. A Phase I Environmental Assessment (August 2000) identified the use of PCP at the site as a potential issue. A Phase II investigation was conducted in the fall of 2000 and PCP-impact soil was detected in the Former PCP/Diesel Mixing Area. Phase III activities conducted in March 2001 defined the extent of PCP-impacted soil. A Work Plan was submitted to Ecology for review in July 2002 under the VCP. No objections were found with the Plan.

Has site cleanup work been conducted at the site? None completed relative to PCP impacts

If yes, when? Were the results reported to Ecology?

Does contamination remain on-site after cleanup?

If yes, please describe the contamination?

INSTITUTIONAL CONTROLS (I.E. RESTRICTIVE COVENANT, ENGINEERED CONTROLS, FENCING)

Were institutional controls used at the site? If yes, please specify. None have been implemented. The area has always been secured by a locked fence.

DOCUMENTATION

Please list all known assessment and/or cleanup reports completed for the site. Include the title of the report, the name of the consulting firm that did the work, and the year it was completed.

TITLE	CONSULTING FIRM	DATE
Phase I Environmental Site Assessment	Foster Wheeler Environmental	August 2000
Phase II Environmental Site Assessment	Foster Wheeler Environmental	April 2001
Phase III Environmental Site Assessment	Foster Wheeler Environmental	December 2001
Final Limited Soil Removal Activity Work Plan for Former PCP/Diesel Mixing Area	Foster Wheeler Environmental	July 2002

AFFECTED MEDIA & CONTAMINANTS

Please list the known or suspected contaminants at the site prior to cleanup. Mark the appropriate medium (such as soil) with "C" (confirmed and above Model Toxics Control Act (MTCA) cleanup standards), "B" (confirmed but below MTCA standards), "S" (suspected), "N/A" (not applicable), "O" (tested and not present), "U" (unknown).

CONTAMINANT	SOIL	GROUND WATER	SURFACE WATER	AIR	SEDIMENT	DRINKING WATER	DATE OF RELEASE (IF KNOWN)
Example: Lead	**C**	**S**	**S**	**U**	**S**	**S**	**1967-82**
PCP	C	B	NA	NA	NA	NA	1967

METHODS & TREATMENT TECHNOLOGIES USED AT SITE

Please check all applicable boxes that apply to your site.

CLEANUP METHOD USED	SOIL	GROUND WATER	SURFACE WATER	DRINKING WATER	AIR	SEDIMENTS
Method A						
Method B	X					
Method C						
TREATMENT TECHNOLOGY USED	**SOIL**	**GROUND WATER**	**SURFACE WATER**	**DRINKING WATER**	**AIR**	**SEDIMENTS**
Air Sparging/Air Stripping						
Bioventing						
Capping (asphalt, concrete, topsoil, RCRA cover, soil-clay, synthetic membrane)						
Carbon Adsorption						
Containment On-Site						
Containment Off-Site						
Free-product Recovery						
In Situ Chemical Oxidation						
Natural Attenuation (dilution, volatilization, biodegradation, adsorption)						
Permeable Reactive Barriers						
Phytoremediation						
Soil Flushing						
Soil Vapor Extraction						
Thermal Desorption	X					
Other (please specify)						

AFFECTED MEDIA & CONTAMINANTS AFTER CLEANUP

Please list the contaminants from the box on page 4 and list their status after cleanup. Mark the appropriate medium (such as soil) with "C" (confirmed and above Model Toxics Control Act (MTCA) cleanup standards but contained), "B" (confirmed but below MTCA standards), "R" (remediated and below MTCA standards), "N/A" (not applicable), "O" (tested and not present), "U" (unknown).

CONTAMINANT	SOIL	GROUND WATER	SURFACE WATER	AIR	SEDIMENT	DRINKING WATER
Example: Lead	**R**	**O**	**B**	**U**	**B**	**O**
PCP	B	B	NA	NA	NA	NA

DRINKING WATER & AQUATICS INFORMATION

Are there any drinking wells within ½ mile of the site? No If yes, how many?

Was a drinking water system affected? No If yes, was an alternate drinking water source provided?

Was the affected drinking water system public, private, or both? NA

Are there any creeks, streams, ponds, wetlands, or shorelands on or adjacent to the site? No Within ¼ mile of the site? Yes

If yes, where are they located? Salmon Bay is located approximately 400 feet north of the site.

Were they impacted by the contamination from the site? No

OWNER/OPERATOR HISTORY

Please complete as many of the below boxes as possible. For type of owner/operator, please use the following codes: (1) Private, (2) Municipal, (3) County, (4) Federal, (5) State, (6) Tribal, (7) Mixed, (8) Other, (9) Unknown, (10) Public Entitle Acquisition via Bankruptcy.

Current site owner: Time Oil Company Type: Industrial (1)

Street address: 2737 West Commodore Way

City: Seattle State: WA Zip code: 98199-1233

Contact person (if different than owner listed above): Scott Sloan, RG Environmental Project Manager

Street address:

City: State: Zip code:

Phone: (206) 286-6457 Fax: E-mail address: ssloan@timeoil.com

Date of ownership: 1941 to present

Current operator: Type:

Street address:

City: State: Zip code:

Contact person (if different than owner listed above):

Street address:

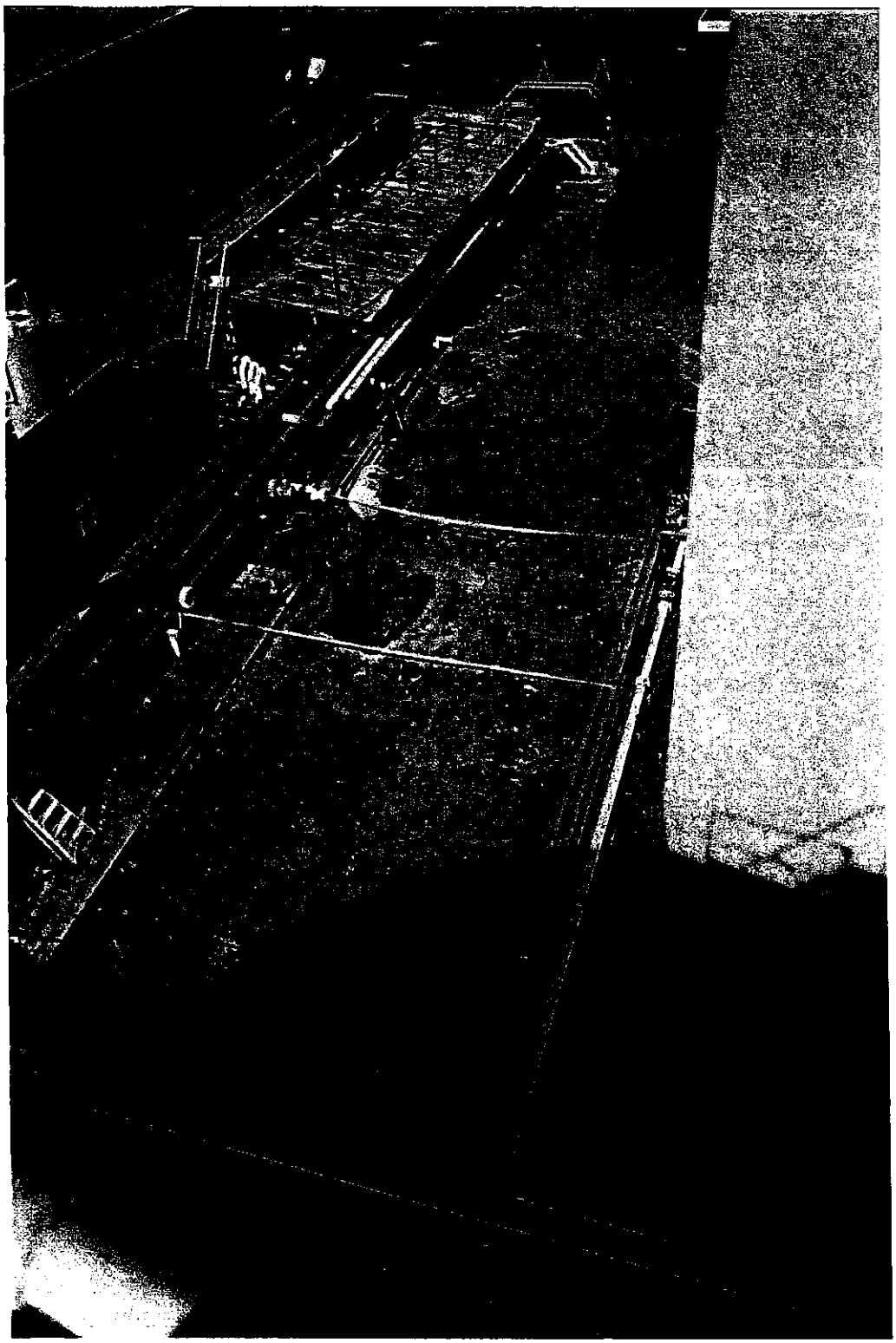
City: State: Zip code:

Phone: Fax: E-mail address:

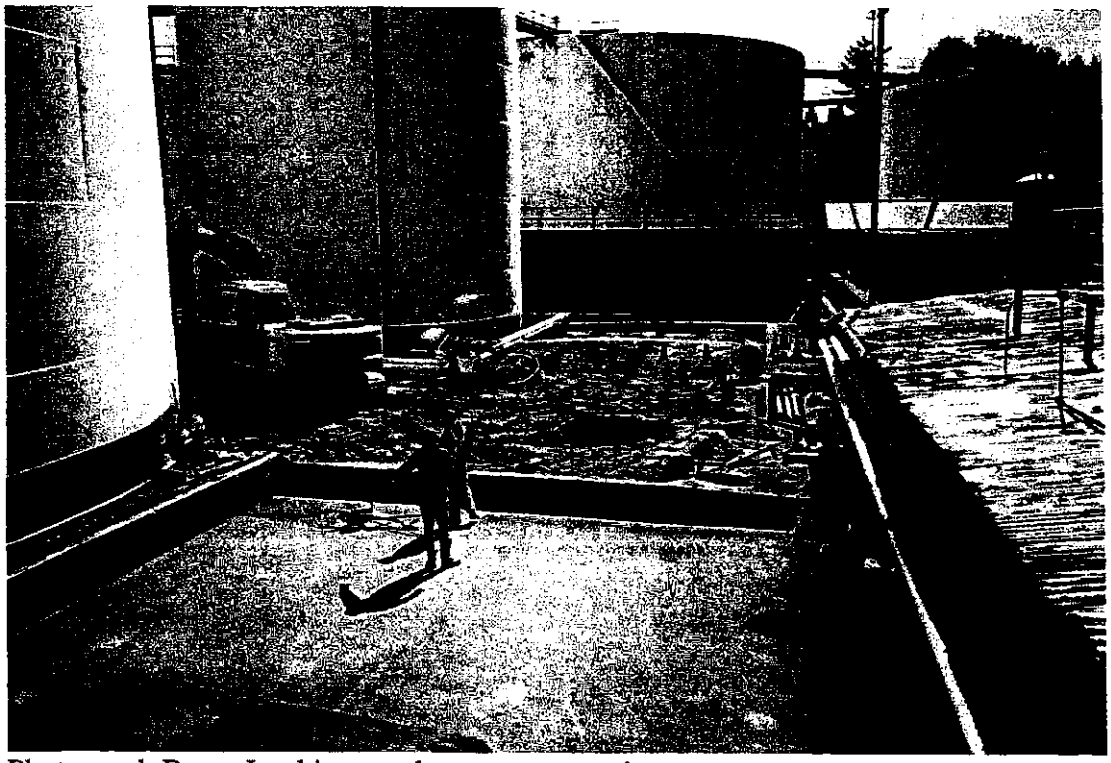
Date of operation: to

APPENDIX C

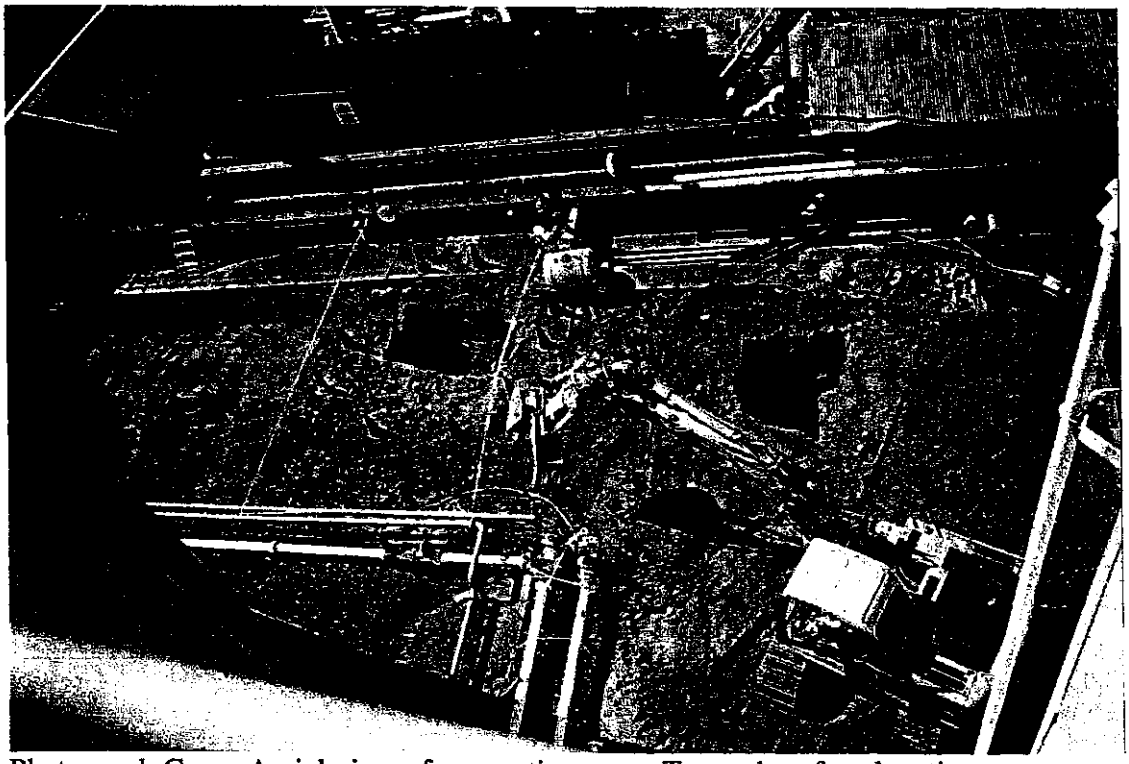
SITE PHOTOGRAPHS



Photograph A. Aerial view of final excavation area and loadout area prior to site restoration



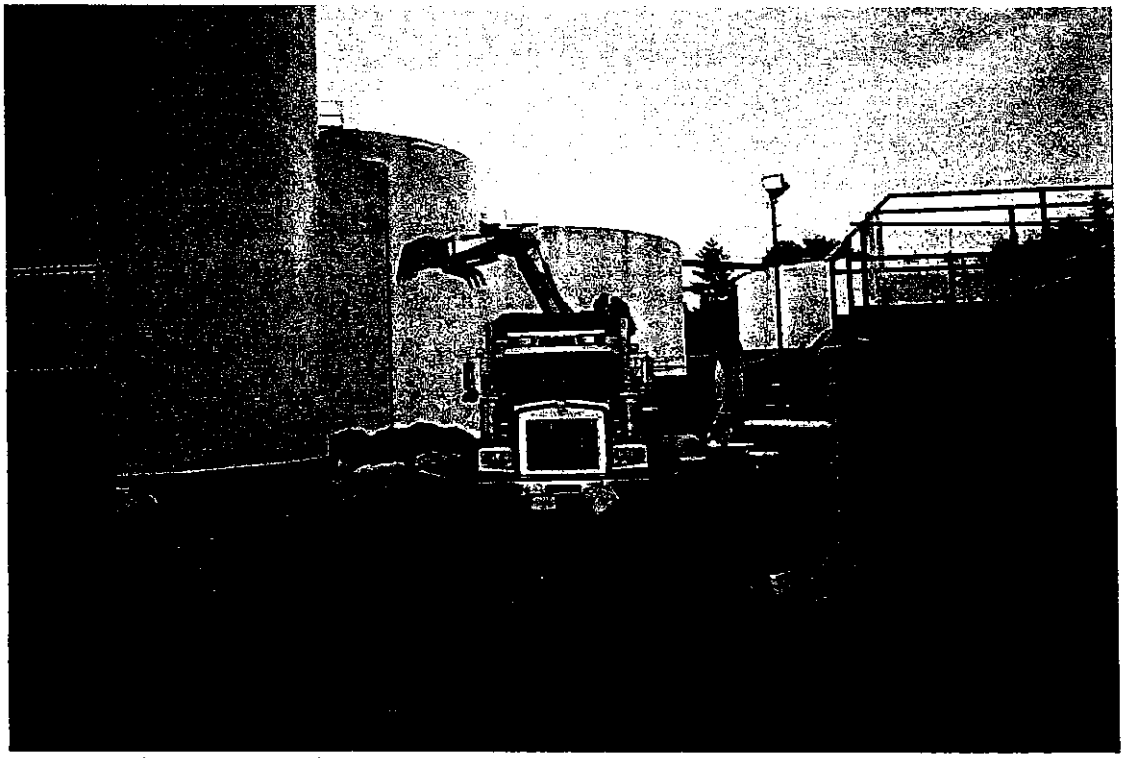
Photograph B. Looking south across excavation area



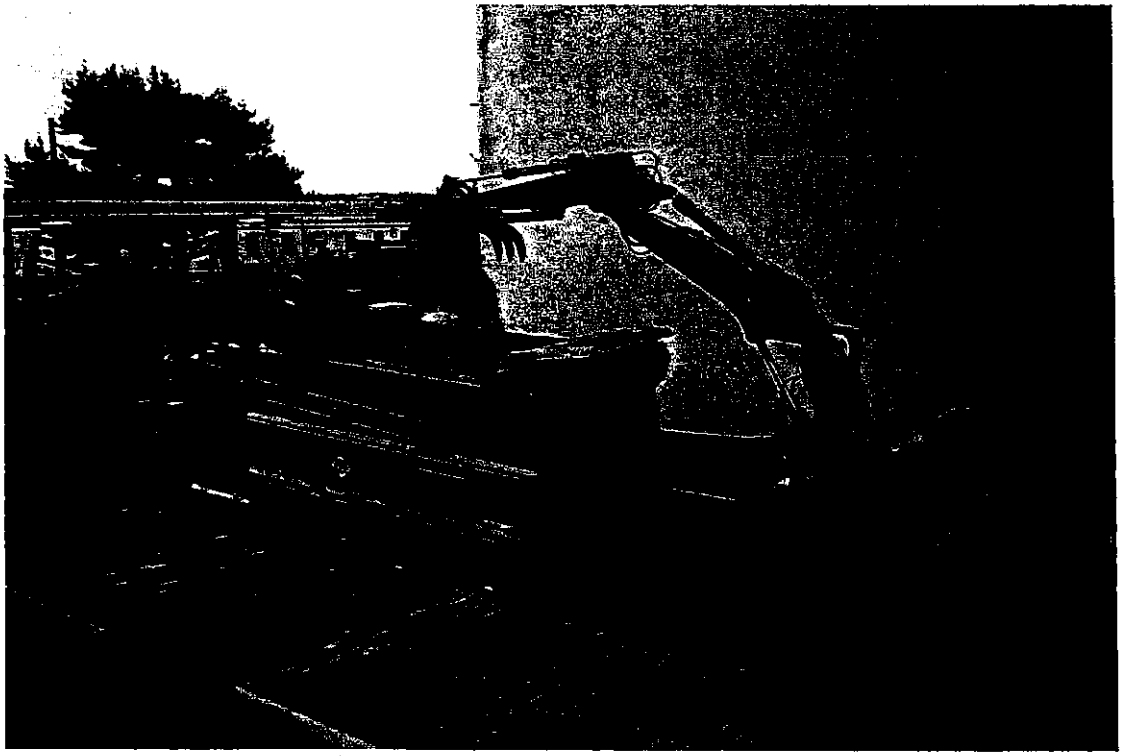
Photograph C. Aerial view of excavation area. Two subsurface locations are visible: former boring location SB-04 on left and former boring location SB-56 on right



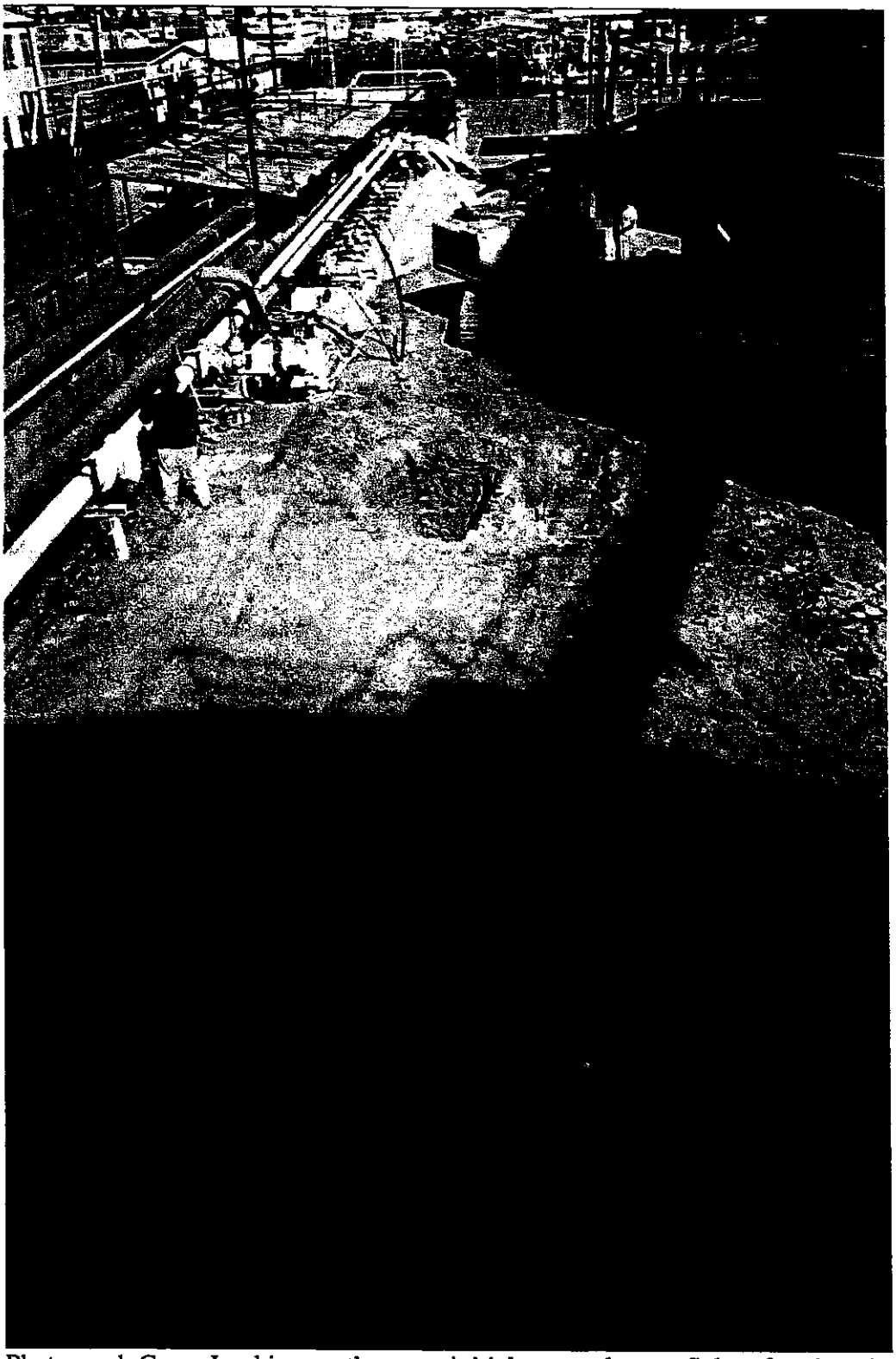
Photograph D. Trackhoe removing surface soil



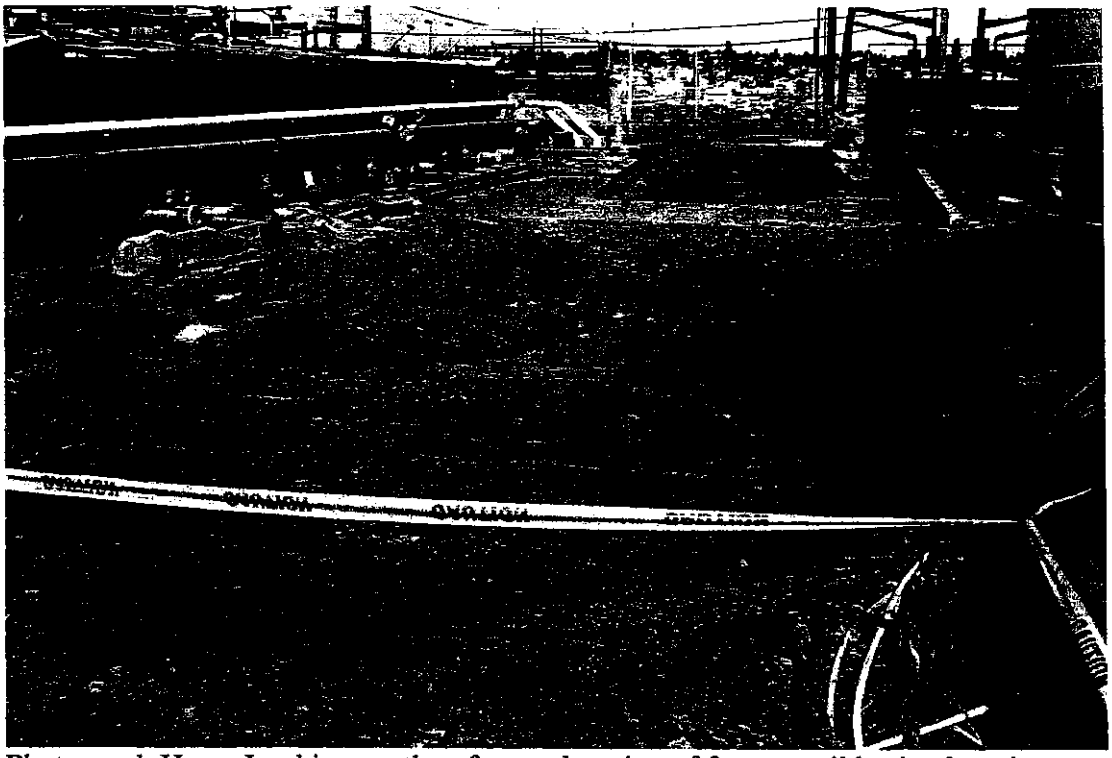
Photograph E. Looking south across soil loadout area as trucks are loaded with material



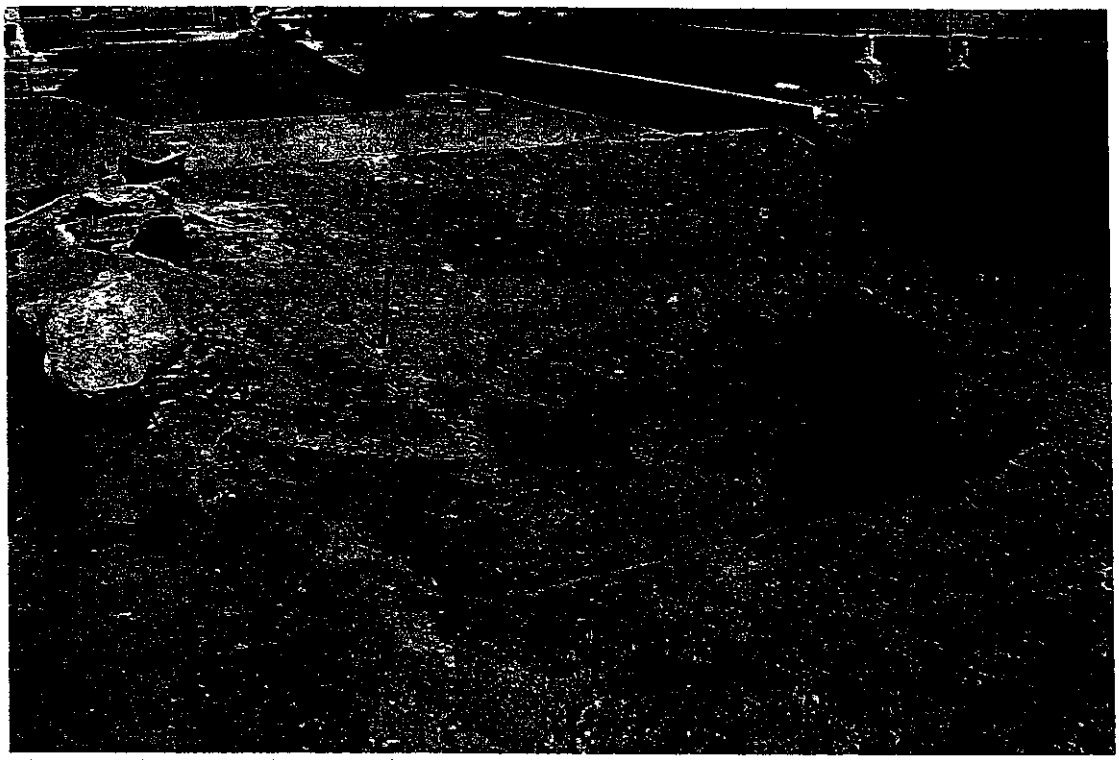
Photograph F. Soil is loaded into lined trucks for transport off site



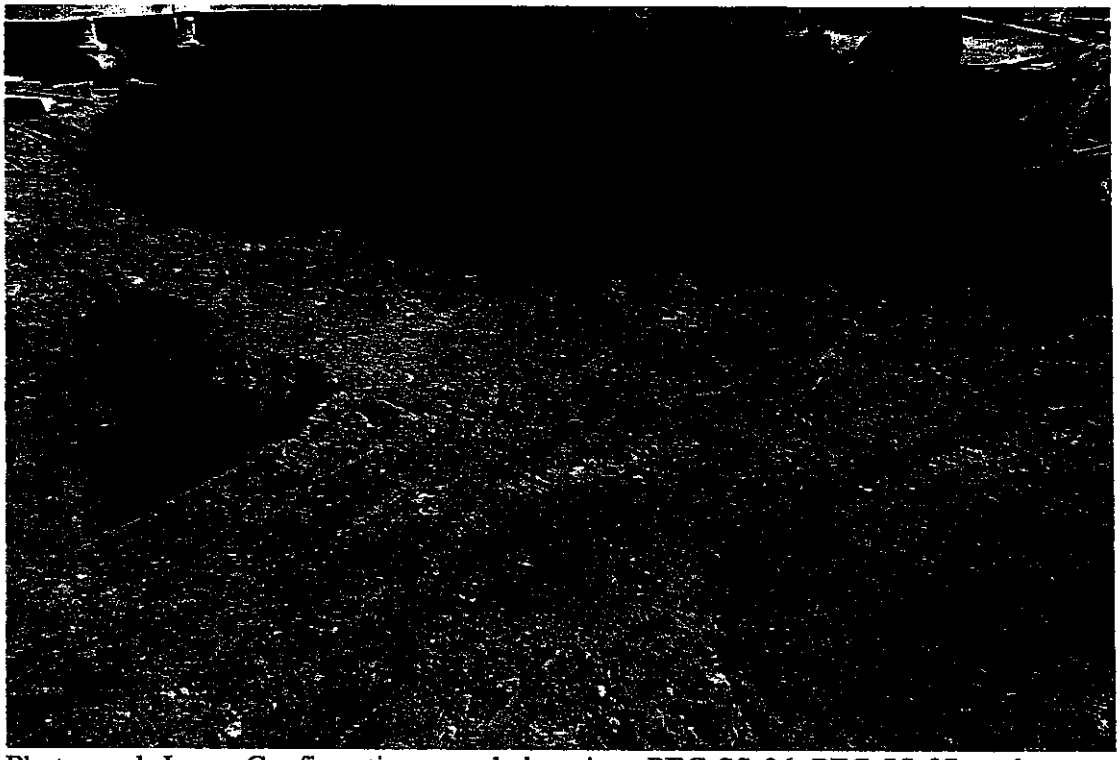
Photograph G. Looking north across initial removal area. Subsurface location PEC-ES-01 in background with sample location PEC-SS-03 on the right. Wooden stakes mark confirmation sample locations PEC-SS-01 on left and PEC-SS-02 on the right. Stockpile is visible on the right.



Photograph H. Looking north at former location of former soil boring location SB-56 (formerly well 01MW-14)



Photograph I. Close up of former location of 01MW-14 (SB-56) and confirmation sample locations; PEC-ES-02 in foreground and PEC-SS-05 in background



Photograph J. Confirmation sample locations PEC-SS-06; PEC-SS-07; and PEC-SS-04 (left to right)

APPENDIX E

SOIL RECYCLING DOCUMENTATION

Sensor *Environmental Services Ltd.*

WEIGH TICKET
WASTE ONLY

SENSOR
Environmental Services Ltd.
18:10 Wed 09/18/02
ID. NUMBER: 14138
HEIGHT IN: 45100 kg

19:19 Wed 09/18/02
ID. NUMBER: 14138
Gross 45100 kg
Tare 20370 kg

NET 24730 kg

14138

CARRIER

SHIPPER	WAY BILL #	MANIFEST #
		20851556

WEIGHED BY

DATE

Distribution: Scale House (White) — Administration (Blue) — Billing (Pink) — Trucker (Green)

A-195 - Rev 06/01

MANIFEST - MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / N° de référence du manifeste: **2085155-6**

A Consignor (Generator) / Expéditeur (Producteur)
Provincial ID No. / N° d'id. provincial: WAD009591207
Company name / Nom de l'entreprise: TIME OIL COMPANY
Mailing address / Adresse postale: 2737 W. COMMODORE WAY, SEATTLE, WA 98199-1233
Shipping site address / Origine de l'expédition: 2737 WEST COMMODORE WAY
City / Ville: SEATTLE | Province: WA | Postal code / Code postal: 98199-1233

Intended consignee / Destinataire prévu: HAZCO ENVIRONMENTAL SERVICES LTD.
Provincial ID No. / N° d'id. provincial: ABR 01101.
Address / Adresse: 200-5720 4TH STREET SE, CALGARY
City / Ville: Province: Postal code / Code postal: T2H 1K7
Receiving site address / Destination de l'expédition: 200-5720 4TH STREET SE
City / Ville: CALGARY | Province: A.B. | Postal code / Code postal:

B Carrier / Transporteur
Provincial ID No. / N° d'id. provincial: LIT-0973
Company name / Nom de l'entreprise: Z & R TRUCKING COMPANY LTD.
Address / Adresse: 23302 - 70A AVE.
City / Ville: LANGLEY | Prov.: | Postal code / Code postal:

	Registration No. / N° d'immatriculation	Prov.
Vehicle / Véhicule	P.535GL	B.C
Trailer/Rail Car No. 1 / 1er remorque – wagon	1116-01	B.C
Trailer/Rail Car No. 2 / 2e remorque – wagon		

Point of entry / Point d'entrée:
Point of exit / Point de sortie:

Carrier Certification: I declare that I have received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année: 02 | Month / Mois: 09 | Day / Jour: 17
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): DALDEV.S. SINGH
Signature:
Tel. No. / N° de tél.: (604) 318-7929

C Consignee (Receiver) / Destinataire (Réceptionnaire)
Provincial ID No. / N° d'id. provincial: R 1047
Reference nos. of other Manifest(s) used / N°'s de références des autres manifestes utilisés:

Consignee information same as intended Consignee in Part A / L'information à fournir par le destinataire est la même qu'en A
☐ Yes / Oui ☑ No, complete the boxed area below / Non, compléter la boîte ci-dessous

Company name / Nom de l'entreprise: Sensar Environmental
Address / Adresse: Box 1400
City / Ville: Sussex Hills | Province: NB | Postal code / Code postal: T0G 2C0
Receiving site address / Destination de l'expédition: Plant site
City / Ville: | Province: | Postal code / Code postal:

Date received / Date de réception: Year / Année: 02 | Month / Mois: 09 | Day / Jour: 18
Time / Heure: 0610 ☐ A.M. ☑ P.M.

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Waste Identification / Identification du déchet: Provincial No. / N° (Quebec-Ontario only) / (Québec-Ontario seul)	Waste Identification / Identification du déchet: TDGA/PIN LTMD/NIP	Quantity shipped / Quantité expédiée	Units / Unités	Classification	Packing group / Groupe d'emballage	Packaging / Contenants: No. / Nbre	Packaging / Contenants: Codes int.-ext.	Quantity received / Quantité reçue	Units / Unités	Identify any shipment discrepancy problems. Attach addendum if necessary. / Indiquer toute différence relative à l'expédition. Annexer une feuille au besoin.	Handling code / Code de manutention	Decontamination / Décontamination: Packaging / Contenants: Yes / Oui	Decontamination / Décontamination: Packaging / Contenants: No / Non	Decontamination / Décontamination: Vehicle / Véhicule: Yes / Oui	Decontamination / Décontamination: Vehicle / Véhicule: No / Non
S	ENVIRONMENTALLY [illegible] SUBSTANCES, SOLID, N.O.S. (SOIL CONTAMINATED WITH PETROCHEM[illegible])	32232	UN3077	23,600	Kg	9	III		03	23600	Kg		02				
	ENVIRONMENT CANADA L[illegible] NOTICE 02/00506/IMP																

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence: ☐ Attached / Ci-jointes ☒ Below / Ci-dessous
IN CASE OF EMERGENCY CALL 1-800-667-0444

Circulation no. – Quebec only / N° de circulation – Réservée au Québec:

If handling code "Other" (specify) / Si code de manutention "divers", spécifier:

Date shipped / Date d'expédition: Year / Année: 02 | Month / Mois: 09 | Day / Jour: 17
Time / Heure: 12:00 ☐ A.M. ☒ P.M.
Scheduled arrival date / Date d'arrivée prévue: Year / Année: 02 | Month / Mois: 09 | Day / Jour: 19

If waste to be transferred, specify intended company name / Si les déchets doivent être transférés, préciser le nom du destinataire:
Provincial ID No. / N° d'id. provinci:
Address / Adresse: City / Ville: Prov.:

Consignor Certification: I declare that the information contained in Part A is correct and complete. / Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Scott B. Sloan (for, and on behalf of, Time Oil Co.)
Signature:
Tel. no. / N° de tél.: (206) 286-6457

Consignee Certification: I declare that the information contained in Part C is correct and complete. / Déclaration du l'expéditeur : Je déclare que tous les renseignements à la partie C sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Erle Unrau
Signature:
Tel. no. / N° de tél.: 7903334197

EPS 04-1917 (02/01)

Sensor *Environmental Services Ltd.*

WEIGH TICKET
WASTE ONLY

SENSOR
Environmental Services Ltd.
19:05 Wed 09/18/02
ID. NUMBER: 14141
WEIGHT IN: 45730 kg

19:43 Wed 09/18/02
ID. NUMBER: 14141
Gross 45730 kg
Tare 19960 kg

NET 25770 kg

14141

CARRIER

SHIPPER	WAY BILL #	MANIFEST #
		2085154 9

WEIGHED BY: _____ DATE: _____

Distribution: Scale House – Administration – Billing – Trucker
(White) (Blue) (Pink) (Green)

INTERNATIONAL

A-195 – Rev 06/01

MANIFEST - MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / N° de référence du manifeste: **2085154-9**

A Consignor (Generator) / Expéditeur (Producteur)
Provincial ID No. / N° d'id. provincial: WAD009591207
Company name / Nom de l'entreprise: TIME OIL COMPANY
Mailing address / Adresse postale: 2737 W. COMMODORE WAY, SEATTLE, WA 98199-1233
Shipping site address / Origine de l'expédition: 2737 WEST COMMODORE WAY
City / Ville: SEATTLE | Province: WA | Postal code / Code postal: 98199-1233

Intended consignee / Destinataire prévu: HAZCO ENVIRONMENTAL SERVICES LTD.
Provincial ID No. / No d'id. provincial: ABR 01101
Address / Adresse: 200-5720 4TH STREET SE, CALGARY, AB T2H 1K7
Receiving site address / Destination de l'expédition: 200-5720 4TH STREET SE
City / Ville: CALGARY | Province: A.B. | Postal code / Code postal: T2H 1K7

B Carrier / Transporteur
Provincial ID No. / N° d'id. provincial: LIT 0973
Company name / Nom de l'entreprise: Z & R TRUCKING COMPANY LTD.
Address / Adresse: 23302 - 70A AVE.
City / Ville: LANGLEY | Prov.: BC | Postal code / Code postal: V2Y 2Y9

	Registration No. / N° d'immatriculation	Prov.
Vehicle / Véhicule	P.S. 3681	B.C.
Trailer/Rail Car No. 1 / 1er remorque – wagon	09.1.24	B.C.
Trailer/Rail Car No. 2 / 2e remorque – wagon		

Point of entry / Point d'entrée:
Point of exit / Point de sortie:

Carrier Certification: I declare that I have received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année: 02 | Month / Mois: 09 | Day / Jour: 17
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): HARJIT S. HANS.
Signature:
Tel. No. / N° de tél.: (403) 279-7129

C Consignee (Receiver) / Destinataire (Réceptionnaire)
Provincial ID No. / N° d'id. provincial: R 1047
Reference nos. of other Manifest(s) used / N°s de références des autres manifestes utilisés:
Consignee information same as intended Consignee in Part A / L'information à fournir par le destinataire est la même qu'en A
☐ Yes / Oui ☒ No, complete the boxed area below / Non, compléter la boîte ci-dessous

Company name / Nom de l'entreprise: Sensor Environmental
Address / Adresse: Box 1400
City / Ville: Swan Hills | Province: AB | Postal code / Code postal: T0G 2C0
Receiving site address / Destination de l'expédition: Plant site
City / Ville: | Province: | Postal code / Code postal:

Date received / Date de réception: Year / Année: 02 | Month / Mois: 09 | Day / Jour: 18
Time / Heure: 0705 ☐ A.M. ☒ P.M.

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Waste Identification / Identification du déchet: Provincial No. / N° (Quebec-Ontario only) (Québec-Ontario seul)	Waste Identification / Identification du déchet: TDGA/PIN LTMD/NIP	Quantity shipped / Quantité expédiée	Units L or ou kg unités	Classification	Packing group / Groupe d'emballage	Packaging Containers: No. Nbre	Packaging Containers: Codes int.-est.	Quantity received / Quantité reçu	Units L or ou kg unités	Identify any shipment discrepancy problems. Attach addendum if necessary. / Indiquer toute différence relative à l'expédition. Annexer une feuille au besoin.	Handling code / Code de manutention	Decontamination / Décontamination: Packaging Contenants Yes Oui	Packaging Contenants No Non	Vehicle / Véhicule Yes Oui
S	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (SOIL CONTAMINATED WITH PENTACHLOROPHENOL)	32232	UN3077	23,600	Kg	9	III		03	23600	Kg		02			
	ENVIRONMENT CANADA I/E NOTICE 02/00506/IMP															

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence: ☐ Attached / Ci-jointes ☒ Below / Ci-dessous
IN CASE OF EMERGENCY CALL 1-800-667-0444

Circulation no. – Quebec only / N° de circulation – Réservé au Québec:

If handling code "Other" (specify) / Si code de manutention "divers", spécifier:

Date shipped / Date d'expédition: Year / Année: 02 | Month / Mois: 09 | Day / Jour: 17
Time / Heure: 12:00 ☐ A.M. ☒ P.M.
Scheduled arrival date / Date d'arrivée prévue: Year / Année: 02 | Month / Mois: 09 | Day / Jour: 19

If waste to be transferred, specify intended company name / Si les déchets doivent être transférés, préciser le nom du destinataire:
Provincial ID No. / N° d'id. provin:
Address / Adresse: | City / Ville: | Prov.:

Consignor Certification: I declare that the information contained in Part A is correct and complete.
Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Scott B. Sloan (For and on behalf of Time Oil Co.)
Signature:
Tel. no. / N° de tél.: (206) 286-6457

Consignee Certification: I declare that the information contained in Part C is correct and complete. / Déclaration du l'expéditeur : Je déclare que tous les renseignements à la partie C sont véridiques et complets.
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Erle Unrau
Signature:
Tel. no / N° de tél.: 7803334195

Sensor *Environmental Services Ltd.*

WEIGH TICKET
WASTE ONLY

SENSOR
Environmental Services Ltd.
18:08 Wed 09/18/02
ID. NUMBER: 14137
WEIGHT IN: 45310 kg

19:09 Wed 09/18/02
ID. NUMBER: 14137
Gross 45310 kg
Tare ~~20420 kg~~ 20350
NET ~~24890 kg~~ 24,960kg

14137

CARRIER

SHIPPER	WAY BILL #	MANIFEST #
		2085153 1

WEIGHED BY: _____ DATE: _____

Distribution: Scale House – Administration – Billing – Trucker
(White) (Blue) (Pink) (Green)

INTERNATIONAL

A-195 – Rev 06/01

MANIFEST - MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / N° de référence du manifeste: **2085153-1**

A Consignor (Generator) / Expéditeur (Producteur)
Provincial ID No. / N° d'id. provincial: WAD009591207
Company name / Nom de l'entreprise: TIME OIL COMPANY
Mailing address / Adresse postale: 2737 W. COMMODORE WAY, SEATTLE, WA 98199-1233
Shipping site address / Origine de l'expédition: 2737 WEST COMMODORE WAY
City / Ville: SEATTLE | Province: WA | Postal code / Code postal: 98199-1233

Intended consignee / Destinataire prévu: HAZCO ENVIRONMENTAL SERVICES LTD.
Provincial ID No. / No d'id. provincial: ABR 01101
Address / Adresse: 200-5720 4TH STREET SE
City / Ville: CALGARY | Province: A.B. | Postal code / Code postal: T2H 1K7
Receiving site address / Destination de l'expédition: 200-5720 4TH STREET SE
City / Ville: CALGARY | Province: A.B. | Postal code / Code postal: T2H 1K7

B Carrier / Transporteur
Provincial ID No. / N° d'id. provincial: UT-0973
Company name / Nom de l'entreprise: Z & R TRUCKING COMPANY LTD.
Address / Adresse: 23302 - 70A AVE.
City / Ville: LANGLEY | Prov.: BC | Postal code / Code postal: V2Y 2H9

	Registration No. / N° d'immatriculation	Prov.
Vehicle / Véhicule	P53587	B.C
Trailer/Rail Car No. 1 / 1re remorque – wagon	7769 OW	B.C
Trailer/Rail Car No. 2 / 2e remorque – wagon		

Point of entry / Point d'entrée:
Point of exit / Point de sortie:

Carrier Certification: I declare that I have received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année: 02 | Month / Mois: 09 | Day / Jour: 17 | Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): JASBIR DHALIWAL
Signature:
Tel. No. / N° de tél.: (604) 318-7929

Reference nos. of other Manifest(s) used / N°'s de références des autres manifestes utilisés:

C Consignee (Receiver) / Destinataire (Réceptionnaire)
Provincial ID No. / N° d'id. provincial: R1047
Consignee information same as intended Consignee in Part A / L'information à fournir par le destinataire est la même qu'en A: ☐ Yes / Oui ☑ No, complete the boxed area below / Non, compléter la boîte ci-dessous
Company name / Nom de l'entreprise: Sensor Environmental
Address / Adresse: Box 1400
City / Ville: Swan Hills | Province: AB | Postal code / Code postal: T0G 2C0
Receiving site address / Destination de l'expédition: Plant site
City / Ville: | Province: | Postal code / Code postal:

Date received / Date de réception: Year / Année: 02 | Month / Mois: 09 | Day / Jour: 18
Time / Heure: 0600 ☐ A.M. ☑ P.M.

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Waste identification / Identification du déchet: Provincial No. / N° (Quebec-Ontario only) (Québec-Ontario seul)	Waste identification / Identification du déchet: TDGA/PIN LTMO/NIP	Quantity shipped / Quantité expédiée	Units L or kg / unités	Classification	Packing group / Groupe d'emballage	Packaging Containers: No. / N°s	Packaging Containers: Codes Int.-ext.	Quantity received / Quantité reçu	Units L or kg / unités	Identify any shipment discrepancy problems. Attach addendum if necessary. / Indiquer toute différence relative à l'expédition. Annexer une feuille au besoin.	Handling code / Code de manutention	Decontamination / Décontamination: Packaging Containers Yes/Oui	Packaging Containers No/Non	Vehicle / Véhicule Yes/Oui	Vehicle / Véhicule No/Non
S	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (SOIL CONTAMINATED WITH PENTACHLOROPHENOL)	32232	UN3077	23,600	Kg	9	III		03	23600	Kg		02				
	ENVIRONMENT CANADA I/E NOTICE 02/00506/IMP																

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence: ☐ Attached / Ci-jointes ☑ Below / Ci-dessous
IN CASE OF EMERGENCY CALL 1-800-667-0444

Circulation no. – Quebec only / N° de circulation – Réservé au Québec

If handling code "Other" (specify) / Si code de manutention "divers", spécifier

Date shipped / Date d'expédition: Year / Année: 02 | Month / Mois: 09 | Day / Jour: 17
Time / Heure: 12:00 ☐ A.M. ☒ P.M.
Scheduled arrival date / Date d'arrivée prévue: Year / Année: 02 | Month / Mois: 09 | Day / Jour: 19

If waste to be transferred, specify intended company name / Si les déchets doivent être transférés, préciser le nom du destinataire
Provincial ID No. / N° d'id. provinci
Address / Adresse
City / Ville
Prov.

Consignee Certification: I declare that the information contained in Part C is correct and complete. / Déclaration du l'expéditeur : Je déclare que tous les renseignements à la partie C sont véridiques et complets.
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Erle Unrau
Signature:
Tel. no. / N° de tél.: 7803334197

Consignor Certification: I declare that the information contained in Part A is correct and complete. / Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Scott B. Sloan (For, and on behalf of Time Oil Co.)
Signature:
Tel. no. / N° de tél.: (206) 286-6457

MOE 04-1917 (12/01)

Sensor *Environmental Services Ltd.*

WEIGH TICKET
WASTE ONLY

SENSOR
Environmental Services Ltd.
18:13 Wed 09/18/02
ID. NUMBER: 14140
WEIGHT IN: 45900 kg

19:40 Wed 09/18/02
ID. NUMBER: 14140
Gross 45900 kg
Tare 20160 kg

NET 25740 kg

14140

CARRIER

SHIPPER	WAY BILL #	MANIFEST #
		2085152 3

WEIGHED BY: _____ DATE: _____

Distribution: Scale House – Administration – Billing – Trucker
(White) (Blue) (Pink) (Green)

INTERNATIONAL

A-195 – Rev 06/01

MANIFEST - MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / N° de référence du manifeste: **2085152-3**

A Consignor (Generator) / Expediteur (Producteur)
Provincial ID No. / N° d'id. provincial: WAD009591207
Company name / Nom de l'entreprise: TIME OIL COMPANY
Mailing address / Adresse postale — City / Ville — Province — Postal code / Code postal: 2737 W. COMMODORE WAY, SEATTLE, WA 98199-1233
Shipping site address / Origine de l'expédition: 2737 WEST COMMODORE WAY
City / Ville — Province — Postal code / Code postal: SEATTLE — WA — 98199-1233

Intended consignee / Destinataire prévu: HAZCO ENVIRONMENTAL SERVICES LTD.
Provincial ID No. / No d'id. provincial: ABR 01101
Address / Adresse — City / Ville — Province — Postal code / Code postal: 200-5720 4TH STREET SE, CALGARY, AB T2H 1K7
Receiving site address / Destination de l'expédition: 200-5720 4TH STREET SE
City / Ville — Province — Postal code / Code postal: CALGARY — A.B. — T2H 1K7

B Carrier / Transporteur
Provincial ID No. / N° d'id. provincial: UT 0973
Company name / Nom de l'entreprise: Z & R TRUCKING COMPANY LTD.
Address / Adresse: 23302 - 70A AVE.
City / Ville — Prov. — Postal code / Code postal: LANGLEY — BC — V2Y 2H9

	Registration No. / N° d'immatriculation	Prov.
Vehicle / Véhicule	P53683	BC.
Trailer/Rail Car No. 1 / 1er remorque - wagon	79689W	BC.
Trailer/Rail Car No. 2 / 2e remorque - wagon		

Point of entry / Point d'entrée:
Point of exit / Point de sortie:

Carrier Certification: I declare that I have received wastes as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année: 02 — Month / Mois: 09 — Day / Jour: 17
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): JAGTAR SEKHON
Signature:
Tel. No. / N° de tél.: (604) 318 7927

Reference nos. of other Manifest(s) used / N°'s de références des autres manifestes utilisés:

C Consignee (Receiver) / Destinataire (Réceptionnaire)
Provincial ID No. / N° d'id. provincial: R 1047
Consignee information same as intended Consignee in Part A / L'information à fournir par le destinataire est la même qu'en A: ☐ Yes / Oui ☒ No, complete the boxed area below / Non, compléter la boîte ci-dessous
Company name / Nom de l'entreprise: Sensor Environmental
Address / Adresse: Box 1400
City / Ville — Province — Postal code / Code postal: Swan Hills — AB — T0G 2C0
Receiving site address / Destination de l'expédition: Plant site
City / Ville — Province — Postal code / Code postal:

Date received / Date de réception — Year / Année: 02 — Month / Mois: 09 — Day / Jour: 18
Time / Heure: 0613 ☐ A.M. ☒ P.M.

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Waste identification / Identification du déchet: Provincial No. / N° (Quebec-Ontario only) (Québec-Ontario seul)	Waste identification / Identification du déchet: TDGA/PIN LTMD/NIP	Quantity shipped / Quantité expédiée	Units / Unités	Classification	Packaging group / Groupe d'emballage	Packaging Contents: No. / N°s	Packaging Contents: Codes int.-ext.	Quantity received / Quantité reçu	Units / Unités	Identify any shipment discrepancy problems. Attach addendum if necessary. / Indiquer toute différence relative à l'expédition. Annexer une feuille au besoin.	Handling code / Code de manutention	Decontamination / Décontamination: Packaging Contents Yes/Oui	Packaging Contents No/Non	Vehicle / Véhicule Yes/Oui	Vehicle / Véhicule No/Non
S	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (SOIL CONTAMINATED WITH PENTACHLOROPHENOL)	32232	UN3077	23,600	kg	9	III		03	23600	kg		02				
	ENVIRONMENT CANADA I/E NOTICE 02/00506/IMP																

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence: IN CASE OF EMERGENCY CALL 1-800-667-0444
☐ Attached / Ci-jointes ☒ Below / Ci-dessous

Circulation no. - Quebec only / N° de circulation - Réservés au Québec

If handling code "Other" (specify) / Si code de manutention "divers", spécifier:

If waste to be transferred, specify intended company name / Si les déchets doivent être transférés, préciser le nom du destinataire:
Provincial ID No. / N° d'id. provinci
Address / Adresse — City / Ville — Prov.

Date shipped / Date d'expédition — Year / Année: 02 — Month / Mois: 09 — Day / Jour: 17
Time / Heure: 12:00 ☐ A.M. ☒ P.M.
Scheduled arrival date / Date d'arrivée prévue — Year / Année: 02 — Month / Mois: 09 — Day / Jour: 19

Consignor Certification: I declare that the information contained in Part A is correct and complete. / Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Scott B. Sloan (For, and on behalf of, Time Oil Co.)
Signature:
Tel. no. / N° de tél.: (206) 286-6457

Consignee Certification: I declare that the information contained in Part C is correct and complete. / Déclaration du l'expéditeur : Je déclare que tous les renseignements à la partie C sont véridiques et complets.
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Erle Lunan
Signature:
Tel. no. / N° de tél.: (780) 333-4197

DE 04-1917 (12/01)

Instructions for completion and distribution on reverse / Instructions pour compléter et distribuer au verso — Copy / Copie 2

HAZCO

SUMMARY OF SOIL DESTRUCTION
TIME OIL LIMITED - SEATTLE, WA

Load Date	Source Location	Load Type	US Manifest #	Cdn. Manifest Primary	Sub #	Cert. Dest #	Weight Destroyed ~~(lbs.)~~	(Kg's)	Base Rate	Moisture Surcharge	High Con. Surcharge	Billing Rate	Gross Billing
17-Sep-02	Seattle	Soil	SEA02	2085152	3	3339	28,374	25,740	$ 308.00	$ -	$ -	$ 308.00	$ 8,739.04
17-Sep-02	Seattle	Soil	SEA01	2085153	1	3339	27,514	24,960	$ 308.00	$ -	$ -	$ 308.00	$ 8,474.16
17-Sep-02	Seattle	Soil	SEA03	2085154	9	3339	28,407	25,770	$ 308.00	$ -	$ -	$ 308.00	$ 8,749.20
17-Sep-02	Seattle	Soil	SEA04	2085155	6	3339	27,260	24,730	$ 308.00	$ -	$ -	$ 308.00	$ 8,396.08
TOTAL							111,554	101,200					$ 34,358.48

Sensor *Environmental Services Ltd.*

CERTIFICATE OF DESTRUCTION

HAZCO ENVIRONMENTAL SERVICES LTD-TIME OI
160-13511 VULCAN WAY

FOR PERIOD ENDING: 2002/09/19

RICHMOND BC
CANADA V6V 1K4
ATTN: GREG MCCREA

POINT OF ORIGIN:
CALGARY AB
CANADA

Shipment Number	Manifest Number	International Manifest	WPS Number	Date Received	Qty Destroyed		Last Destruction	Waste Description
210193	20856811		32231	2002/SEP/18	1	BL	2002/SEP/18	SOIL CONTAMINATED WITH PENTACHLOROPHENOLS, LOW PCP
210235	20851119		32231	2002/SEP/18	1	BL	2002/SEP/19	SOIL CONTAMINATED WITH PENTACHLOROPHENOLS, LOW PCP
210236	20851531		32232	2002/SEP/18	1	BL	2002/SEP/19	SOIL CONTAMINATED WITH PENTACHLOROPHENOLS,HIGH PCP
210237	20851556		32232	2002/SEP/18	1	BL	2002/SEP/19	SOIL CONTAMINATED WITH PENTACHLOROPHENOLS,HIGH PCP
210238	20851135		32231	2002/SEP/18	1	BL	2002/SEP/19	SOIL CONTAMINATED WITH PENTACHLOROPHENOLS, LOW PCP
210239	20851523		32232	2002/SEP/18	1	BL	2002/SEP/19	SOIL CONTAMINATED WITH PENTACHLOROPHENOLS,HIGH PCP
210240	20851549		32232	2002/SEP/18	1	BL	2002/SEP/19	SOIL CONTAMINATED WITH PENTACHLOROPHENOLS,HIGH PCP
210242	20857330		32231	2002/SEP/18	1	BL	2002/SEP/19	SOIL CONTAMINATED WITH PENTACHLOROPHENOLS, LOW PCP

Verified By: _____ Authorized By: A. Wahab

Date: Sept. 19, 2002 Date: 18 September 2002

Swan Hills Treatment Centre
Mail Bag 1400, Swan Hills, Alberta T0G 2C0 Telephone: 780.333.4197 Fax: 780.333.4196

CAN 2000135-6

Emergency Contact Telephone Numbe.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . WAD009591207. | Manifest Document No. S.E.A.0.4 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
TIME OIL COMPANY
2737 W.COMMODORE WAY,SEATTLE,WA 98199-1233
4. Generator's Phone (206 286-6443

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: Z & R TRUCKING COMPANY LTD.
6. US EPA ID Number: WAR000012393
C. State Transporter's ID
D. Transporter's Phone 604-318-7929

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
HAZCO ENVIRONMENTAL SERVICES LTD.
200-5720 4TH ST.,SE,CALGARY,AB T2H 1K7
10. US EPA ID Number: WAR000011981. . . .
G. State Facility's ID ABR01101
604-214-7000
H. Facility's Phone

	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.(F027),9,UN3077,III (SOIL CONTAMINATED WITH PENTACHLOROPHENOL) RCRA REGULATED SOLID (F027)	X	1	DT	23,600	K	
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

Canada Customs and Revenue Agency Huntingdon
Agence des douanes et du revenu du Canada Huntingdon
SEP 17 2002
Bureau STD, secteur Pacific Highway, C.P.
Area Port 847 Pacific Highway, B.C.

15. Special Handling Instructions and Additional Information
POINT OF DEPARTURE: SUMAS. WA DATE: September 17, 2002
IN CASE OF EMERGENCY: 1-800-667-0444

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.
and conforms to the attached EPA acknowledgement of consent
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimized the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: ~~KEVIN MURPHY~~ | Signature: (For, and on behalf of, Time Oil Co.) | Month 09 Day 17 Year 02

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: BALDEV S KALER | Signature | Month 09 Day 17 Year 02

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month . Day . Year .

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
HAZCO Environmental Services Ltd.
Printed/Typed Name: Leslie Burke | Signature: Leslie Burke | Month 09 Day 18 Year 02

ORIGINAL — RETURN TO GENERATOR

Cdn 20875154-4

Emergency Contact Telephone Number

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . WAD009591207
Manifest Document No. S.E.A.03
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
TIME OIL COMPANY
2737 W.COMMODORE WAY,SEATTLE,WA 98199-1233
4. Generator's Phone (206)286-6443

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: Z & R TRUCKING COMPANY LTD.
6. US EPA ID Number: WAR000012393
C. State Transporter's ID
D. Transporter's Phone 604-318-7929

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
HAZCO ENVIRONMENTAL SERVICES LTD.
200-5720 4TH ST.,SE,CALGARY,AB T2H 1K7
10. US EPA ID Number: WAR000011981 . . .
G. State Facility's ID ABR01101
604-214-7000
H. Facility's Phone

	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	L Waste No.
a.	WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.(F027),9,UN3077,III (SOIL CONTAMINATED WITH PENTACHLOROPHENOL) RCRA REGULATED SOLID (F027)	X	1	DT	23,600	K	
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
POINT OF DEPARTURE: SUMAS. WA DATE: September 17, 2002
IN CASE OF EMERGENCY: 1-800-667-0444

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.
and conforms to the attached EPA acknowledgement of consent.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimized the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: ~~KEVIN MURPHY~~ Scott B. Sloan
Signature: (For and on behalf of) Time Oil Co.
Month 09 Day 17 Year 02

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: HARJIT S. HANS.
Signature:
Month 09 Day 17 Year 02

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Month . Day . Year .

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
HAZCO Environmental Services Ltd.
Printed/Typed Name: Leslie Burke
Signature:
Month 09 Day 18 Year 02

ORIGINAL — RETURN TO GENERATOR

Cdn 2085152-3

Emergency Contact Telephone Number

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . WAD009591207 | Manifest Document No. SEA-02 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
TIME OIL COMPANY
2737 W.COMMODORE WAY,SEATTLE,WA 98199-1233
4. Generator's Phone (206) 286-6443

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: Z & R TRUCKING COMPANY LTD.
6. US EPA ID Number: WAR000012393
C. State Transporter's ID
D. Transporter's Phone: 604-318-7929

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
HAZCO ENVIRONMENTAL SERVICES LTD.
200-5720 4TH ST.,SE,CALGARY,AB T2H 1K7
10. US EPA ID Number: WAR000011981 . . . .
G. State Facility's ID: ABR011101
604-214-7000
H. Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.(F027),9,UN3077,III (SOIL CONTAMINATED WITH PENTACHLOROPHENOL)	X	1	DT	23,600	K	
b. RCRA REGULATED SOLID (F027)						
c.						
d.						

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
POINT OF DEPARTURE: SUMAS. WA DATE: September 17, 2002
IN CASE OF EMERGENCY: 1-800-667-0444

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimized the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.
and conforms to the attached EPA acknowledgement of consent

Printed/Typed Name: ~~KEVIN MURPHY~~ Scott B. Sloan | Signature: (for, and on behalf of, Time Oil Co.) | Month 09 Day 17 Year 02

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JAGTAR SEKHON. | Signature | Month 09 Day 17 Year 02

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month . Day . Year .

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
HAZCO Environmental Services Ltd.
Printed/Typed Name: Leslie Burke | Signature | Month 09 Day 18 Year 02

ORIGINAL — RETURN TO GENERATOR

Cdn 20875153-1

Emergency Contact Telephone Number

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . WAD009591207. | Manifest Document No. SEA01 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
TIME OIL COMPANY
2737 W.COMMODORE WAY,SEATTLE,WA 98199-1233
4. Generator's Phone (206 286-6443

A. State Manifest Document Number
B. State Generator's ID
C. State Transporter's ID
D. Transporter's Phone 604-318-7929
E. State Transporter's ID
F. Transporter's Phone
G. State Facility's ID ABR011.01
604-214-7000
H. Facility's Phone

5. Transporter 1 Company Name: Z & R TRUCKING COMPANY LTD. | 6. US EPA ID Number: . . . WAR000012393
7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address
HAZCO ENVIRONMENTAL SERVICES LTD.
200-5720 4TH ST.,SE,CALGARY,AB T2H 1K7
10. US EPA ID Number: WAR000011981. . . .

	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.(F027),9,UN3077,III (SOIL CONTAMINATED WITH PENTACHLOROPHENOL)	X	1	DT	23,600	K	
b.	RCRA REGULATED SOLID (F027)						
c.							
d.							

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
POINT OF DEPARTURE: SUMAS. WA DATE: September 17, 2002
IN CASE OF EMERGENCY: 1-800-667-0444

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.
and conforms to the attached EPA acknowledgement of consent
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimized the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: ~~KEVIN MURPHY~~ Scott B. Sloan | Signature: Scott B. Sloan (For, and on behalf of Time Oil Co.) | Month 09 Day 17 Year 02

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JASBIR DHALIWAL | Signature | Month 09 Day 17 Year 02

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month . Day . Year .

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
HAZCO Environmental Services Ltd.
Printed/Typed Name: Leslie Burke | Signature | Month 09 Day 18 Year 02

ORIGINAL — RETURN TO GENERATOR

Canadian Food Inspection Agency
Government of Canada

Agence canadienne d'inspection des aliments
Gouvernement du Canada

Permit No./N° de permis:
P-2002-04922
AMENDED
2002/08/28
year/mo/day
année/mois/jour

IMPORT PERMIT PERMIS D'IMPORTATION

THIS PERMIT IS ISSUED PURSUANT TO:/CE PERMIS EST DÉLIVRÉ CONFORMÉMENT A:

THE PLANT PROTECTION ACT AND REGULATIONS/LOI ET RÈGLEMENT SUR LA PROTECTION DES VEGÉTAUX

Importer/Importateur	Exporter/Exportateur
HAZCO ENVIRONMENTAL SERVICES LTD 13511 VULCAN WAY RICHMOND, BRITISH COLUMBIA V6V1K4 Applicant Name: CAMPBELL, GREGORY Phone: 604-214-7000 Fax: 604-214-7017	TIMB OIL COMPANY 3737 W COMMODORE WAY SEATTLE WASHINGTON UNITED STATES 98199

Selected Conditions / Conditions Choisies (Continued/Suite)

Any residual material must be processed to prevent contamination.

3. At all times (i.e., during importation, research and storage, and until disposal), the material shall be identified with labels or other efficient identification means.

4. The importer and their facilities shall keep a log book of all importations. This log book shall show where the material is in the facility and its status (e.g., forwarded, treated, stored, ...).

Barb Peterson

Authorized By:/Approuvé par:
Robert Carberry

Executive Director / Directeur Exécutif
Plant Products Directorate/
Direction des produits végétaux

The information is required by (for) the Canadian Food Inspection Agency for the purposes of verifying import products. Information may be accessible or protected as required under the provisions of the Access to Information Act.

Canada

CFIA / ACIA 5067 (98/04)

Canadian Food Inspection Agency
Government of Canada

Agence canadienne d'inspection des aliments
Gouvernement du Canada

Permit No./N° de permis:
P-2002-04922
AMENDED
2002/08/28
year/mo/day
année/mois/jour

IMPORT PERMIT PERMIS D'IMPORTATION

THIS PERMIT IS ISSUED PURSUANT TO/CE PERMIS EST DÉLIVRÉ CONFORMÉMENT A:

THE PLANT PROTECTION ACT AND REGULATIONS/LOI ET RÈGLEMENT SUR LA PROTECTION DES VÉGÉTAUX

Importer/Importateur HAZCO ENVIRONMENTAL SERVICES LTD 13511 VULCAN WAY RICHMOND, BRITISH COLUMBIA V6V1K4 Applicant Name: CAMPBELL, GREGORY Phone: 604-214-7000 Fax: 604-214-7017	Exporter/Exportateur TIMS OIL COMPANY 2737 W COMMODORE WAY SEATTLE WASHINGTON UNITED STATES 98199
Quarantine/Destination/Quarantaine SWAN HILLS TREATMENT CENTRE NE 1/4 SEC 6-67-8 WSM SWAN HILLS, ALBERTA	Producer/Producteur
Valid/Valide from/du 2002/08/20 year/month/day année/mois/jour to/au 2003/08/20 year/month/day année/mois/jour	Country of Propagation or Production/Le pays de multiplication ou de production UNITED STATES (WASHINGTON)
For the entry of/ Pour l'entrée de: ____ Single shipment/Chargement simple XX Multiple shipments/Chargements multiples	
Place of entry into Canada/Lieu d'entrée au Canada: ALL REGULATED PORTS	
FOR THE IMPORTATION OF:/POUR L'IMPORTATION DE: (Description of things(s)/Description de la ou des choses) CONTAMINATED SOIL	
A PERSON WHO IMPORTS A THING UNDER THIS PERMIT SHALL COMPLY WITH ALL THE CONDITIONS SET OUT HEREIN/TOUTE PERSONNE QUI IMPORTE UNE CHOSE EN VERTU DE CE PERMIS DEVRA RESPECTER TOUTES LES CONDITIONS DÉCRITES CI-DESSOUS	

Selected Conditions / Conditions Choisies

CONTAMINATED SOIL

1. 1. Importation is authorized under Section 43 of the Plant Protection Regulations. Phytosanitary Certification at origin is waived.

2. The material must be routed directly to the approved premises or facility. The material must be packaged and transported in sturdy leak proof containers. Not for sale or distribution. For industrial use only. The material must be contained at all times to prevent any post escape or exposure to the environment.

Canada

Building, Room 5124, 1200 Pennsylvania Avenue, NW, Washington, DC 20004.

All shipments of hazardous waste must conform to all applicable State and Federal hazardous waste regulations and transportation requirements as well as these specific export requirements.

Any questions you may have concerning this Acknowledgment of Consent or other export requirements may be directed to Mr. Scott Nelson (Phone 202/564-5032), or Mr. Bob Small (Phone 202/564-5043), EPA, Office of Enforcement and Compliance Assurance.

Sincerely,

Robert G. Heiss

Robert G. Heiss
Director
Import-Export Program
Enforcement, Planning, Targeting and
Data Division
Office of Compliance (2222A)

You are also reminded of the following special RCRA requirements for export shipments of hazardous waste. Specific details of these requirements are contained in Title 40 of the Code of Federal Regulations, Part 262, Subpart E.

1. If the major terms of the original notice of intent to export on which this consent is based should change, you must renotify EPA. Please mail your renotification to: USEPA, Ariel Rios Building, Mail Code 2222A, 1200 Pennsylvania Avenue, NW, Washington, D.C. 20460, with "ATTENTION: IMPORT-EXPORT PROGRAM" prominently displayed on the front of the envelope. (262.53(c)) Alternately, notices may be sent by courier to the same office at the Ariel Rios Building, Room 5124, 1200 Pennsylvania Avenue, NW, Washington, DC 20004.

2. The Uniform Hazardous Waste Manifest Form for each shipment must identify the point of departure from the United States in Item 15, Special Handling Instructions. (262.54(c))

3. The following statement must be added to the end of the first sentence of the certification set forth in Item 16 of the Uniform Hazardous Waste Manifest Form: "and conforms to the terms of the attached EPA Acknowledgment of Consent". (262.54(d))

4. A copy of this Acknowledgment of Consent must be attached to the U.S. hazardous waste manifest that accompanies each shipment of hazardous waste. (262.54(h))

5. You must provide the waste transporter with an additional copy of the U.S. hazardous waste manifest accompanying the shipment for delivery to a U.S. Customs official at the point the hazardous waste leaves the United States in accordance with 263.20(g)(4) and (262.54(i)).

6. You must file an exception report with the USEPA, Ariel Rios Building, Mail Code 2222A, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, ATTN: IMPORT-EXPORT PROGRAM, if you have not received a copy of the manifest signed by the transporter stating the date and place of departure from the U.S. within forty five (45) days from the date it was accepted by the initial transporter; if within ninety (90) days from the date the waste was accepted by the initial transporter, the primary exporter has not received written confirmation from the consignee that the hazardous waste was received; or if the waste is returned to the United States. (262.55). Alternately, exception reports may be sent by courier to the same office at the Ariel Rios Building, Room 5124, 1200 Pennsylvania Avenue, NW, Washington, DC 20004.

7. You must file an annual report by March 1 of each year with the USEPA, Ariel Rios Building, Mail Code 2222A, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, ATTN: IMPORT-EXPORT PROGRAM, summarizing all hazardous waste shipments exported during the previous calendar year. The report must include all items listed in 262.56. Alternately, annual reports may be sent by courier to the same office at the Ariel Rios

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

August 29, 2002

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

EPA Notice No.: 506/02

MR. SCOTT SLOAN
TIME OIL COMPANY
2737 WEST COMMODORE WAY
SEATTLE, WA 98199
EPA I.D. No.: WAD009591207

Dear MR. SLOAN:

This is to acknowledge receipt of your notice, dated July 9, 2002, of intent to export hazardous waste to Canada as required by Title 40, Code of Federal Regulations, Part 262, Subpart E, Section 262.53 promulgated pursuant to the Resource Conservation and Recovery Act (RCRA). In accordance with the U.S.-Canada Bilateral Agreement on the Transboundary Movement of Hazardous Waste, the U.S. Environmental Protection Agency (EPA) forwarded your notice to the Government of Canada and Canada has no objection to your shipment(s) of hazardous waste.

This letter constitutes the EPA Acknowledgment of Consent for the export of the following hazardous waste as specified in your notice:

> Waste Description: CONTAMINATED SOIL. EPA Waste Code: F027. DOT Shipping Name: HAZARDOUS WASTE, SOLID, NOS; DOT Hazard Class: 9; DOT I.D. No.: NA3077. Total Volume to be Exported: 300 TONS. Estimated Frequency: 20 loads per YEAR.

You may ship this waste to the following consignee:

> SENSOR ENVIRONMENTAL SERVICES, LTD.
> BOX 1400
> SWAN HILLS, ALBERTA
> CANADA T0G 2C0

Shipments may occur during the period from August 21, 2002 to July 18, 2003.

Internet Address (URL) • http://www.epa.gov
Recycled/Recyclable • Printed with Vegetable Oil Based Inks on Recycled Paper (Minimum 50% Postconsumer content)

MANIFEST - MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / N° de référence du manifeste: **2085155-6**

A Consignor (Generator) / Expéditeur (Producteur)

Provincial ID No. / N° d'id. provincial: [illegible]

Company name / Nom de l'entreprise: TIME OIL COMPANY

Mailing address / Adresse postale — City / Ville — Province — Postal code / Code postal: 2737 W. COMMODORE WAY SEATTLE, WA 98199-1233

Shipping site address / Origine de l'expédition: 2737 WEST COMMODORE WAY

City / Ville — Province — Postal code / Code postal: SEATTLE — WA — 98199-1233

Intended consignee / Destinataire prévu: HAZEN ENVIRONMENTAL SERVICES LTD.

Provincial ID No. / No d'id. provincial: NR 01101

Address / Adresse — City / Ville — Province — Postal code / Code postal: 200-5720 4TH STREET SE, CALGARY, AB T2H 1E7

Receiving site address / Destination de l'expédition: 200-5720 4TH STREET SE

City / Ville — Province — Postal code / Code postal: CALGARY — A.B. — T2H 1E7

B Carrier / Transporteur

Provincial ID No. / N° d'id. provincial: [illegible]

Company name / Nom de l'entreprise: [illegible]

Address / Adresse: [illegible]

City / Ville — Prov. — Postal code / Code postal: [illegible]

	Registration No. / N° d'immatriculation	Prov.
Vehicle / Véhicule		
Trailer/Rail Car No. 1 / 1er remorque – wagon		
Trailer/Rail Car No. 2 / 2e remorque – wagon		

Point of entry / Point d'entrée: [illegible]

Point of exit / Point de sortie: [illegible]

Carrier Certification: I declare that I have received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année — Month / Mois — Day / Jour — Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): [illegible]

Signature: [illegible]

Tel. No. / N° de tél.: [illegible]

C Consignee (Receiver) / Destinataire (Réceptionnaire)

Provincial ID No. / N° d'id. provincial: R 1047

Reference nos. of other Manifest(s) used / N°s de références des autres manifestes utilisés: [illegible]

Consignee information same as Intended Consignee in Part A / L'information à fournir par le destinataire est la même qu'en A — ☐ Yes / Oui — ☐ No, complete the boxed area below / Non, compléter la boîte ci-dessous

Company name / Nom de l'entreprise: Sensar Environmental

Address / Adresse: Box 1400

City / Ville — Province — Postal code / Code postal: Cowan Hills — AB — T0G 2S0

Receiving site address / Destination de l'expédition: Plant site

City / Ville — Province — Postal code / Code postal: [illegible]

Date received / Date de réception — Year / Année — Month / Mois — Day / Jour: 02 09 18

Time / Heure: 0640 ☐ A.M. ☑ P.M.

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Waste identification / Identification du déchet: Provincial No. / N° (Quebec-Ontario only) (Québec-Ontario seul)	Waste identification / Identification du déchet: TDGA/PIN LTMD/NIP	Quantity shipped / Quantité expédiée	Units L or kg / ou kg unités	Classification	Packaging group / Groupe d'emballage	Packaging Containers: No. Nbre	Packaging Containers: Codes int.-ext.
S	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (SOIL CONTAMINATED WITH PENTACHLOROPHENOL)	32232	UN3077	22,000	kg	9	III		03
	ENVIRONMENT CANADA I/E NOTICE 02/00506/IMP								

Quantity received / Quantité reçu	Units L or kg / ou kg unités	Identify any shipment discrepancy problems. Attach addendum if necessary. / Indiquer toute différence relative à l'expédition. Annexer une feuille au besoin.	Handling code / Code de manutention	Decontamination / Décontamination: Packaging Containers Yes / Oui	Packaging Containers No / Non	Vehicle / Véhicule Yes / Oui	Vehicle / Véhicule No / Non
22600	Kg		02				

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence — ☐ Attached / Ci-jointes — ☒ Below / Ci-dessous

IN CASE OF EMERGENCY CALL 1-800-667-0444

Circulation no. – Quebec only / N° de circulation – Réservée au Québec: [illegible]

If handling code "Other" (specify) / Si code de manutention "divers", spécifier: [illegible]

If waste to be transferred, specify intended ... company name / Si les déchets doivent être transférés, préciser le nom du destinataire: [illegible]

Provincial ID No. / N° d'id. provincia: [illegible]

Address / Adresse — City / Ville — Prov.: [illegible]

Date shipped / Date d'expédition — Year / Année — Month / Mois — Day / Jour: 02 09 17

Time / Heure: 12:00 ☐ A.M. ☒ P.M.

Scheduled arrival date / Date d'arrivée prévue — Year / Année — Month / Mois — Day / Jour: 02 09 19

Consignor Certification: I declare that the information contained in Part A is correct and complete.
Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Scott B. Sloan (for and on behalf of M. Time Oil Co.)

Signature: [illegible]

Tel. no. / N° de tél.: (206) 204-4457

Consignee Certification: I declare that the information contained in Part C is correct and complete. / Déclaration du l'expéditeur : Je déclare que tous les renseignements à la partie C sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Eric Lawson

Signature: [illegible]

Tel. no. / N° de tél.: 4803334197

MANIFEST - MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / N° de référence du manifeste: **2085154-9**

A Consignor (Generator) / Expéditeur (Producteur)
Provincial ID No. / N° d'id. provincial: WAD009591207
Company name / Nom de l'entreprise: TIME OIL COMPANY
Mailing address / Adresse postale: 2737 W. COMMODORE WAY, SEATTLE, WA 98199-1233
Shipping site address / Origine de l'expédition: 2737 WEST COMMODORE WAY
City / Ville: SEATTLE | Province: WA | Postal code / Code postal: 98199-1233

Intended consignee / Destinataire prévu: HAZCO ENVIRONMENTAL SERVICES LTD.
Provincial ID No. / No d'id. provincial: ABR 01101
Address / Adresse: 300-5720 4TH STREET SE, CALGARY, AB T2H 1K7
Receiving site address / Destination de l'expédition: 200-5720 4TH STREET SE
City / Ville: CALGARY | Province: A.B. | Postal code / Code postal: T2H 1K7

B Carrier / Transporteur
Provincial ID No. / N° d'id. provincial: TT 0973
Company name / Nom de l'entreprise: Z & R TRUCKING COMPANY LTD.
Address / Adresse: 23302 - 70A AVE.
City / Ville: LANGLEY | Prov. | Postal code / Code postal

	Registration No. / N° d'immatriculation	Prov.
Vehicle / Véhicule	P.S. 36171	
Trailer/Rail Car No. 1 / 1re remorque – wagon		
Trailer/Rail Car No. 2 / 2e remorque – wagon		

Point of entry / Point d'entrée:
Point of exit / Point de sortie:

Carrier Certification: I declare that I have received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année: 02 | Month / Mois: 09 | Day / Jour: 17
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie):
Signature:
Tel. No. / N° de tél.:

C Consignee (Receiver) / Destinataire (Réceptionnaire)
Provincial ID No. / N° d'id. provincial: R 10417
Reference nos. of other Manifest(s) used / N°s de références des autres manifestes utilisés:
Consignee information same as intended Consignee in Part A / L'information à fournir par le destinataire est la même qu'en A: ☐ Yes / Oui ☒ No, complete the boxed area below / Non, compléter la boîte ci-dessous

Company name / Nom de l'entreprise: Sensor Environmental
Address / Adresse: Box 1400
City / Ville: Swan Hills | Province: AB | Postal code / Code postal: T0G 2C0
Receiving site address / Destination de l'expédition: Plant site
City / Ville: | Province: | Postal code / Code postal:

Date received / Date de réception — Year / Année: 02 | Month / Mois: 09 | Day / Jour: 18
Time / Heure: 0705 ☐ A.M. ☒ P.M.

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Waste identification / Identification du déchet: Provincial No. / N° (Quebec-Ontario only) (Québec-Ontario seul)	Waste identification: TDGA/PIN LTMD/NIP	Quantity shipped / Quantité expédiée	Units L or kg / unités	Classification	Packing group / Groupe d'emballage	Packaging Containers: No. / Nbre	Packaging Containers: Codes int.-ext.
S	ENVIRONMENTALLY HAZARDOUS	32232	UN3077	23,000	kg	9	III		03
	SUBSTANCES, SOLID, N.O.S. (SOIL CONTAMINATED WITH PENTACHLOROPHENOL)								
	ENVIRONMENT CANADA T/C								
	NOTICE 02/00506/IMP								

Quantity received / Quantité reçu	Units L or kg / unités	Identify any shipment discrepancy problems. Attach addendum if necessary. / Indiquer toute différence relative à l'expédition. Annexer une feuille au besoin.	Handling code / Code de manutention	Decontamination / Décontamination: Packaging Containers Yes / Oui	Packaging Containers No / Non	Vehicle / Véhicule Yes / Oui	Vehicle / Véhicule No / Non
23000	kg		02				

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence: ☐ Attached / Ci-jointes ☒ Below / Ci-dessous
IN CASE OF EMERGENCY CALL 1-800-667-0444

Circulation no. – Quebec only / N° de circulation – Réservée au Québec

If handling code "Other" (specify) / Si code de manutention "divers", spécifier:

If waste to be transferred, specify intended company name / Si les déchets doivent être transférés, préciser le nom du destinataire:
Provincial ID No. / N° d'id. provincial:
Address / Adresse:
City / Ville:
Prov.:

Date shipped / Date d'expédition — Year / Année: 02 | Month / Mois: 09 | Day / Jour: 17
Time / Heure: 12:00 ☐ A.M. ☒ P.M.
Scheduled arrival date / Date d'arrivée prévue — Year / Année: 02 | Month / Mois: 09 | Day / Jour: 19

Consignor Certification: I declare that the information contained in Part A is correct and complete.
Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Scott B. Sloan (Transport on behalf of Time Oil Co.)
Signature:
Tel. no. / N° de tél.: (706) 781-6457

Consignee Certification: I declare that the information contained in Part C is correct and complete.
Déclaration du l'expéditeur : Je déclare que tous les renseignements à la partie C sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Earle Unrau
Signature:
Tel. no. / N° de tél.: 7803334197

MANIFEST - MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / N° de référence du manifeste: **2085153-1**

A Consignor (Generator) / Expéditeur (Producteur)

Provincial ID No. / N° d'id. provincial: [illegible]

Company name / Nom de l'entreprise: TIME OIL COMPANY

Mailing address / Adresse postale: 2737 W. COMMODORE WAY, SEATTLE, WA 98199-1233

Shipping site address / Origine de l'expédition: 2737 WEST COMMODORE WAY

City / Ville: SEATTLE | Province: WA | Postal code / Code postal: 98199-1233

Intended consignee / Destinataire prévu: NUCO ENVIRONMENTAL SERVICES LTD.

Provincial ID No. / No d'id. provincial: AER 01101

Address / Adresse: 300-5720 4TH STREET SE

City / Ville: CALGARY | Province: AB | Postal code / Code postal: T2H 1K7

Receiving site address / Destination de l'expédition: 300-5720 4TH STREET SE

City / Ville: CALGARY | Province: AB | Postal code / Code postal: T2H 1K7

B Carrier / Transporteur

Provincial ID No. / N° d'id. provincial: UP 0973

Company name / Nom de l'entreprise: [illegible]

Address / Adresse: [illegible]

City / Ville: [illegible] | Prov. | Postal code / Code postal

	Registration No. / N° d'immatriculation	Prov.
Vehicle / Véhicule	[illegible]	[illegible]
Trailer/Rail Car No. 1 / 1re remorque – wagon	[illegible]	[illegible]
Trailer/Rail Car No. 2 / 2e remorque – wagon		

Point of entry / Point d'entrée:

Point of exit / Point de sortie:

Carrier Certification: I declare that I have received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année: 02 | Month / Mois: 01 | Day / Jour: 17

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): [illegible]

Signature: [signature]

Tel. No. / N° de tél.: [illegible]

C Consignee (Receiver) / Destinataire (Réceptionnaire)

Provincial ID No. / N° d'id. provincial: R1047

Consignee information same as Intended Consignee in Part A / L'information à fournir par le destinataire est le même qu'en A
☐ Yes / Oui ☑ No, complete the boxed area below / Non, compléter la boîte ci-dessous

Company name / Nom de l'entreprise: Sensor Environmental

Address / Adresse: Box 1400

City / Ville: Sundre | Province: AB | Postal code / Code postal: T0M 2C0

Receiving site address / Destination de l'expédition: Plant site

City / Ville: [illegible] | Province: [illegible] | Postal code / Code postal: [illegible]

Reference nos. of other Manifest(s) used / N°'s de références des autres manifestes utilisés: [illegible]

Date received / Date de réception — Year / Année: 02 | Month / Mois: 01 | Day / Jour: 18

Time / Heure: 0800 ☐ A.M. ☐ P.M.

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Waste identification / Identification du déchet: Provincial No. / N° (Québec–Ontario only) (Québec–Ontario seul)	Waste identification: TDGA/PIN LTMD/NIP	Quantity shipped / Quantité expédiée	Units L or kg / unités	Classification	Packing group / Groupe d'emballage	Packaging Containers: No. / Nbre	Packaging Containers: Codes Int.–ext.
S	ENVIRONMENTALLY HAZARDOUS SUBSTANCE,SOLID,N.O.S.(SOIL CONTAMINATED WITH HYDROCARBONS)	32.32	UN3077	23.00	kg	9	III		03
	ENVIRONMENT CANADA I/E POLICE 02/00506/IMP								

Quantity received / Quantité reçu	Units L or kg / unités	Identify any shipment discrepancy problems. Attach addendum if necessary. / Indiquer toute différence relative à l'expédition. Annexer une feuille au besoin.	Handling code / Code de manutention	Decontamination / Décontamination: Packaging Containers Yes / Oui	Packaging Containers No / Non	Vehicle / Véhicule Yes / Oui	Vehicle / Véhicule No / Non
23.00	kg		02				

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence
☐ Attached / Ci-jointes ☑ Below / Ci-dessous

IN CASE OF EMERGENCY CALL 1-800-057-0444

Circulation no. – Quebec only / N° de circulation – Réservée au Québec

If handling code "Other" (specify) / Si code de manutention "divers", spécifier

If waste to be transferred, specify intended company name / Si les déchets doivent être transférés, préciser le nom du destinataire

Provincial ID No. / N° d'id. provincial

Address / Adresse | City / Ville | Prov.

Date shipped / Date d'expédition — Year / Année: 02 | Month / Mois: 01 | Day / Jour: 17

Time / Heure: 12:00 ☐ A.M. ☑ P.M.

Scheduled arrival date / Date d'arrivée prévue — Year / Année: 02 | Month / Mois: 01 | Day / Jour: 19

Consignor Certification: I declare that the information contained in Part A is correct and complete.
Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Scott B. Sloan (for, and on behalf)

Signature: [signature]

Tel. no. / N° de tél.: (780) 701-5167

Consignee Certification: I declare that the information contained in Part C is correct and complete. / Déclaration du l'expéditeur : Je déclare que tous les renseignements à la partie C sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Eric Unrau

Signature: [signature]

Tel. no. / N° de tél.: 4808334197

MOE 01-1017 (12/01)

MANIFEST - MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / N° de référence du manifeste: **2085152-3**

A Consignor (Generator) / Expediteur (Producteur)

Provincial ID No. / N° d'id. provincial: VAN000591207

Company name / Nom de l'entreprise: TIME OIL COMPANY

Mailing address / Adresse postale: 2737 W. COMMODORE WAY, SEATTLE, WA 98199-1233

Shipping site address / Origine de l'expédition: 2737 WEST COMMODORE WAY

City / Ville: SEATTLE | Province: WA | Postal code / Code postal: 98199-1233

Intended consignee / Destinataire prévu: HAZO ENVIRONMENTAL SERVICES LTD.

Provincial ID No. / No d'id. provincial: NSR 01101

Address / Adresse: 200-5720 4TH STREET SE | City / Ville: CALGARY | Province: AB | Postal code / Code postal: T2H 1K7

Receiving site address / Destination de l'expédition: 200-5720 4TH STREET SE

City / Ville: CALGARY | Province: A.B. | Postal code / Code postal: T2H 1K7

B Carrier / Transporteur

Provincial ID No. / N° d'id. provincial: LT 0972

Company name / Nom de l'entreprise: Z & R TRUCKING COMPANY LTD.

Address / Adresse: 22302 - 70A AVE.

City / Ville: LANGLEY | Prov.: BC | Postal code / Code postal: V2Y 2Z2

	Registration No. / N° d'immatriculation	Prov.
Vehicle / Véhicule	P5 3683	BC.
Trailer/Rail Car No. 1 / 1er remorque – wagon	776891W	BC.
Trailer/Rail Car No. 2 / 2e remorque – wagon		

Point of entry / Point d'entrée:

Point of exit / Point de sortie:

Carrier Certification: I declare that I have received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année: 02 | Month / Mois: 09 | Day / Jour: 17 | Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): JAGTAR SEKHON

Signature:

Tel. No. / N° de tél.: (403) 238 7927

C Consignee (Receiver) / Destinataire (Réceptionnaire)

Provincial ID No. / N° d'id. provincial: R 1047

Consignee information same as intended Consignee in Part A / L'information à fournir par le destinataire est la même qu'en A: ☐ Yes / Oui ☑ No, complete the boxed area below / Non, compléter la boîte ci-dessous

Company name / Nom de l'entreprise: Sensor Environmental

Address / Adresse: Box 1400

City / Ville: Swan Hills | Province: AB | Postal code / Code postal: T0G 2C0

Receiving site address / Destination de l'expédition: Plant site

City / Ville: | Province: | Postal code / Code postal:

Date received / Date de réception — Year / Année: 02 | Month / Mois: 09 | Day / Jour: 18 | Time / Heure: 0913 ☐ A.M. ☑ P.M.

Reference nos. of other Manifest(s) used / N°s de références des autres manifestes utilisés:

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Waste Identification / Identification du déchet: Provincial No. / N° (Quebec–Ontario only) (Québec–Ontario seul)	Waste Identification / Identification du déchet: TDGA/PIN LTMD/NIP	Quantity shipped / Quantité expédiée	Units L or kg / unités L ou kg	Classification	Packing group / Groupe d'emballage	Packaging Containers: No. / Nbre	Packaging Containers: Codes Int.–ext.
S	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (SOIL CONTAMINATED WITH PENTACHLOROPHENOL)	32.32	UN3077	23.100	kg	9	III		03
	ENVIRONMENT CANADA T/E								
	NOTICE 02/00506/IMP								

Quantity received / Quantité reçu	Units L or kg / unités L ou kg	Identify any shipment discrepancy problems. Attach addendum if necessary. / Indiquer toute différence relative à l'expédition. Annexer une feuille au besoin.	Handling code / Code de manutention	Decontamination / Décontamination: Packaging Contenants Yes / Oui	Packaging Contenants No / Non	Vehicle / Véhicule Yes / Oui	Vehicle / Véhicule No / Non
23.100	kg		02				

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence: ☐ Attached / Ci-jointes ☒ Below / Ci-dessous

IN CASE OF EMERGENCY CALL 1-800-667-0444

Circulation no. – Quebec only / N° de circulation – Réservée au Québec

If handling code "Other" (specify) / Si code de manutention "divers", spécifier:

If waste to be transferred, specify intended company name / Si les déchets doivent être transférés, préciser le nom du destinataire:

Provincial ID No. / N° d'id. provincial:

Address / Adresse: | City / Ville: | Prov.:

Date shipped / Date d'expédition — Year / Année: 02 | Month / Mois: 09 | Day / Jour: 17 | Time / Heure: 12:00 ☐ A.M. ☒ P.M. | Scheduled arrival date / Date d'arrivée prévue — Year / Année: 02 | Month / Mois: 09 | Day / Jour: 19

Consignor Certification: I declare that the information contained in Part A is correct and complete. / Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Scott B. Slorm (For, and on behalf of, Time Oil Co.)

Signature:

Tel. no. / N° de tél.: (206) 786-6457

Consignee Certification: I declare that the information contained in Part C is correct and complete. / Déclaration du l'expéditeur : Je déclare que tous les renseignements à la partie C sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Eric Lavack

Signature:

Tel. no. / N° de tél.: (780) 333-4197

MOE 84-1917 (12/01)

RA TECH FW, INC.

May 28, 2004
TTFWI-SEA-2004-GEO16

Mr. Jerome Cruz
Washington State Department of Ecology
Northwest Region
3190 16th Avenue SE
Bellevue, WA 98008-5452

RE: Transmittal of April 2004 Groundwater Monitoring Report

Dear Mr. Cruz:

Please find enclosed herewith copies of the above referenced document produced for Time Oil Co. by Tetra Tech FW, Inc. (TTFW).

The enclosed groundwater monitoring report contains detailed descriptions of conditions encountered during regularly scheduled quarterly groundwater monitoring conducted in October 2004. Groundwater conditions observed during both monitoring events were similar to those documented during previous groundwater monitoring events. The area of affected groundwater remains fully defined and does not appear to be migrating. The next groundwater monitoring event is currently planned for July 2004.

Time Oil Co. and TTFW looks forward to working with Ecology on this project and the upcoming implementation of the Engineering Design Report and Cleanup Action Plan, previously submitted for Ecology's review under the Voluntary Cleanup Program.

Sincerely,
TETRA TECH FW, INC.

Bryan S. Graham, R.G., L.Hg
Project Manager

Encl: "Quarterly Groundwater Sampling Report for April 2004," May 2004

cc: Mr. Scott Sloan – Time Oil Company
Mr. Kevin Murphy – Time Oil Company
Mr. Brad Maza – Gordon, Thomas, Honeywell, et al.
Ms. Patty Dost – Schwabe, Williamson & Wyatt

FINAL
QUARTERLY GROUNDWATER SAMPLING REPORT FOR JULY 2004

at

2737 West Commodore Way and
2750 West Commodore Way
Seattle, Washington

Prepared for

Time Oil Company
2737 West Commodore Way
Seattle, WA 98199
(206) 285-2400

November 2004

Prepared by

TETRA TECH FW, INC.

12100 NE 195th, Suite 200
Bothell, WA 98011
(425) 482-7600

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ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
°C	degrees Celsius
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
HDPE	high-density polyethylene
mg/L	milligrams per liter
mL/min	milliliters per minute
mS/cm	millisiemens per centimeter
msl	mean sea level
µg/L	micrograms per liter
MTCA	Model Toxics Control Act
NOAA	National Oceanic and Atmospheric Administration
NTU	nephelometric turbidity unit
NWTPH-Dx	Northwest total petroleum hydrocarbon-diesel range hydrocarbons
NWTPH-Gx	Northwest total petroleum hydrocarbon-gasoline range hydrocarbons
ORP	oxidation reduction potential
PCP	pentachlorophenol
sim	selective ion monitoring
SQuiRT™	Screening Quick Reference Tables
TOC	Time Oil Company
VOC	volatile organic compound

1. INTRODUCTION

Investigations to assess groundwater levels and specific chemical concentrations were conducted at two Time Oil Company (TOC) properties located at 2737 West Commodore Way and 2750 West Commodore Way, Seattle, Washington (Figure 1-1). TOC retained Tetra Tech FW, Inc. (TtFW) to conduct quarterly groundwater monitoring at these properties as part of an independent cleanup action.

Monitoring wells at the properties are sampled on a quarterly basis, which began in July 2001. This quarterly report presents the results of the July 2004 groundwater sampling activities at 2737 and 2750 West Commodore Way. The document also serves as an annual report summarizing trends in data collected over the last year of sampling (October 2003 through July 2004). Figure 1-2 provides a plan view of the properties relative to one another. The report is organized as follows:

- **Section 1** briefly describes the purpose and organization of the report.
- **Section 2** describes the field methods used to measure water levels and to collect samples.
- **Section 3** presents the groundwater level data.
- **Section 4** presents the analytical results.
- **Section 5** describes the conclusions and provides recommendations for future actions.
- **Appendix A** provides the data packages from the analytical laboratory for July 2004.

2. METHODS AND PROCEDURES

Field activities for July 2004 at the two TOC properties included water level measurement and quarterly groundwater sampling. This section presents a brief description of the specific methods and procedures used for quarterly monitoring.

2.1 GROUNDWATER ELEVATION SURVEY

Groundwater elevations are determined each quarter by measuring the depth to water in 28 wells at 2737 West Commodore Way and 7 wells at 2750 West Commodore Way. The depth to water measurements are collected on a single day and subtracted from the survey level at the top of the well casing to calculate the potentiometric surface (water table elevation).

Before measuring the depth to groundwater in the first well, the water level indicator is calibrated by visually comparing the markings on the tape to the markings on a measurement tape. After removing the well cap and allowing the well to stabilize, the probe is lowered into the well until the sound alarm is activated, indicating that the probe has touched the water surface. The static depth to water is read directly from the tape by holding the tape to the permanent mark on the well casing or cap. The probe is then raised and lowered to confirm the reading. An oil/water interface probe is then used in a similar manner in wells where floating product is suspected to be present.

2.2 GROUNDWATER SAMPLING

Groundwater samples are collected each quarter using a low-flow micro-purging technique in accordance with U.S. Environmental Protection Agency (EPA) guidelines (EPA 1996, EPA/540/S-95/504). Each monitoring well is micro-purged (300 to 500 milliliters per minute [mL/min]) using a peristaltic pump with disposable high-density polyethylene (HDPE) tubing. A small section of thick-walled silicon is used around the head of the peristaltic pump to achieve the pressures necessary to draw the groundwater up the well. Groundwater samples are collected in laboratory-supplied glassware and hand delivered to the laboratory each evening after sampling.

Groundwater sampling was conducted in July 2004 in accordance with the following sampling procedures:

1. Calibrate field instruments in accordance with the manufacturer's directions. Record all calibration data in the field log book.
2. Confirm well identification using site map.
3. Measure the depth to water at each well. Record the depth to water. Decontaminate the water level meter before each measurement.
4. Carefully lower the HDPE tubing into the well with as little disturbance to the groundwater as possible. Place the intake at the middle of the screen interval. Set pump rate to ensure the water column in the well does not drop more than 0.2 feet below the initial water level reading.
5. Purge the well at a flow rate of 300 to 500 mL/min. Monitor water level to ensure minimal drawdown. Monitor water quality parameters every 3 to 5 minutes during purging (turbidity, pH, temperature, conductivity, oxidation reduction potential [ORP], and dissolved oxygen) using in-line monitoring equipment. Stabilization is achieved if three successive readings are within ±0.1 pH units, ±1 degree Celsius (°C) for temperature, ±10 percent for conductivity, ±10 percent for dissolved oxygen, and ± 10 millivolts for ORP.
6. When water quality parameters are stable for three consecutive readings, turn off the pump and remove the tubing from the well or leave the tubing in place securing it at the surface within the well head. Place the tubing in a sealed, labeled plastic bag. Replace the well cap and seal the monument.
7. Return within 24 hours and insert the appropriate HDPE tubing into the well. Connect the pump and adjust the pump flow to a rate of approximately 200 mL/min. Collect samples for volatile organic compounds (VOC) and gasoline analyses first. Fill the containers so that no headspace exists.
8. Increase the flow rate to approximately 300 to 500 mL/min while maintaining minimal to no drawdown and collect the remaining samples.

2.3 GROUNDWATER ANALYSES

Groundwater samples were collected on July 13 through July 20, 2004, using laboratory-supplied glassware. The groundwater samples were delivered to the laboratory

each evening after sampling and, depending on the specific data needs, were analyzed for all or some of the following contaminants:

- Gasoline range hydrocarbons, using Washington State Department of Ecology's (Ecology's) Northwest total petroleum hydrocarbon-gasoline (NWTPH-Gx) method;
- Benzene, toluene, ethylbenzene, xylene (BTEX) using EPA Method 8021B;
- Diesel and Lube oil range hydrocarbons, using Ecology's Northwest total petroleum hydrocarbon-diesel extended (NWTPH-Dx) method; and
- Pentachlorophenol (PCP), using EPA Method 8270-sim (selective ion monitoring).

The groundwater samples analyzed for diesel and oil underwent a silica gel cleanup before analysis. This cleanup was done to remove naturally occurring organic material that may interfere with the analysis. Groundwater samples were analyzed by North Creek Analytical Laboratories, Inc., in Bothell, Washington.

The sampling during July 2004 was an annual sampling event; therefore, additional modifications to the sampling list were made. Table 2-1 shows the wells sampled in July 2004 and the respective analyses. Many of the wells that are not routinely sampled (i.e., 01MW-06, 01MW-15,) were added to see if conditions had changed since the wells were removed from the sampling program. PCP analysis was added to some wells to ensure that the extent of PCP-impacted groundwater was defined.

3. GROUNDWATER LEVEL DATA

Field activities conducted at the TOC properties included the quarterly collection of water level measurements. This section describes the collection of July 2004 water level measurements and summarizes groundwater flow directions beneath 2737 and 2750 West Commodore Way.

Measurements for depth to water were made using an electronic measuring tape with markings every 0.01 foot. All water levels were measured on a single day. Measurements were subtracted from surveyed measuring point elevations to produce the water level elevations. Where present, the thickness and specific gravity (0.8) of free phase product fuel on the water table was considered when calculating the elevation of the water table.

3.1 2737 WEST COMMODORE WAY

Water level measurements were collected from 28 wells at 2737 West Commodore Way on July 12, 2004. Table 3-1 provides the well construction information, and Table 3-2 shows the groundwater elevations in feet above mean sea level (msl). Table 3-3 shows the groundwater elevations and fuel thickness for the last four quarters. In general, the water levels have decreased slightly relative to April 2004, possibly due to seasonal variation. The groundwater elevations during the four quarter period are generally consistent showing a slight seasonal increase in January and April. Figure 3-2 shows the locations of the wells at 2737 West Commodore Way and the water table elevation (potentiometric space). The hydrograph shown in Figure 3-1 demonstrates the general consistency of the groundwater elevations. Groundwater flows to the north toward the Ship Canal. The groundwater flow direction north of the Lower Tank Yard appears to be bifurcated, possibly by the fiber-grained material in the vicinity of Wells 01MW-16 and 01MW-10. The groundwater gradient at the site differs in the tank yards relative to the rest of the site. The gradient across the tank yards (Wells 01MW-17 to 01MW-23) is approximately 0.006 feet per foot and steepens towards the north wall of the Lower Tank Yard. The unpaved surface of the tank yards allows for greater infiltration, resulting in higher groundwater elevations and mounding. The gradient outside the tank yards (Well 01MW-01 to Well MW-09) is approximately 0.028 feet per foot.

3.2 2750 WEST COMMODORE WAY

Water level measurements were collected from seven wells at 2750 West Commodore Way on July 12, 2004. In general, the water levels at 2750 West Commodore Way have decreased slightly, relative to April 2004, possibly due to seasonal variation. The wells on the east side of the property (Wells 02MW-04, 02MW-05, and 02MW-06) show a slight increase in the elevation of the potentiometric surface. The slight increases in these wells are not consistent with historical data or with trends seen in other wells on the property. The groundwater elevations over the four quarter period are generally consistent and show an increase in water elevations in January. Figure 3-3 shows the groundwater elevation trends, including the seasonal increase in April 2004. Figure 3-4 shows the locations of the wells and potentiometric surface at 2750 West Commodore Way. Groundwater flows to the north toward the Ship Canal. The groundwater gradient from Wells 02MW-05 to Well 02MW-02 is approximately 0.010 feet per foot toward the north based on the potentiometric surface map.

4. ANALYTICAL RESULTS

The MTCA Method A Cleanup Levels for groundwater are intended to provide conservative cleanup levels for drinking water beneficial uses at sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. Because the groundwater beneath the TOC sites is not used as a source of drinking water or for municipal supply, comparison of groundwater concentrations to the MTCA Method A Cleanup Levels is not technically appropriate. The primary point of exposure to groundwater beneath the sites is through the discharge of groundwater to the nearby Ship Canal, a freshwater body on the north side of 2750 West Commodore Way. Based on this exposure scenario (no groundwater use but discharge to a water body), groundwater concentrations were compared to the National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT™) values. These values provide screening levels for acute and chronic exposures to both freshwater and saltwater.

The SQuiRT™ values are non-promulgated values developed by the Coastal Protection and Restoration Division of NOAA to protect aquatic habitats that may be affected by hazardous waste sites. They are applicable for use at these TOC sites based on the site-specific groundwater use. Because the SQuiRT™ values are non-promulgated values, concentrations above the SQuiRT™ values do not indicate a regulatory exceedance. It is important to remember that between the various wells and the point of exposure, various chemical, physical, and biological processes occur that are likely to reduce the contaminant concentrations. Therefore, a concentration in a well is most likely not the same concentration at the point of exposure. If SQuiRT™ values were not available for a particular analyte, then the MTCA Method A default values were used.

Table 4-1 presents the groundwater parameters measured during sampling. The turbidity sensor on the water quality meter was not functioning properly during the July 2004 sampling event; therefore, suspect values are not reported in Table 4-1. Tables 4-2 and 4-3 show analytical results for the groundwater samples collected in July 2004 at 2737 and 2750 West Commodore Way, respectively. The footnotes at the bottom of each table identify the applicable action levels.

Appendix A contains the laboratory data packages for the samples collected. The data packages are presented in their entirety to allow the reader to evaluate the data relative to the quality control data associated with the environmental samples.

4.1 QUARTERLY GROUNDWATER SAMPLING AT 2737 WEST COMMODORE WAY

The following analytes were detected above the applicable action levels (Table 4-2):

- PCP was detected above the NOAA SQuiRT™ value (15 micrograms per liter [µg/L]) in Wells 01MW-22, 01MW-23, 01MW-26, and 01MW-27 at concentrations ranging from 40.5 (01MW-26) to 350 µg/L (01MW-23).
- Diesel range hydrocarbons were detected above the MTCA Method A Cleanup Level (0.5 milligrams per liter [mg/L]) in Wells 01MW-03, 01MW-09, 01MW-18, 01MW-19, 01MW-22, 01MW-23, 01MW-24, 01MW-28, and 01MW-29 at concentrations ranging from 0.540 mg/L (01MW-23) to 19.2 mg/L (01MW-09).
- Lube Oil range hydrocarbons were detected above the MTCA Method A Cleanup Level in Well 01MW-03 at a concentration of 0.938 mg/L.
- Gasoline range hydrocarbons were detected above the MTCA Method A Cleanup Level (800 µg/L with benzene present) in Wells 01MW-02, 01MW-03, 01MW-04, 01MW-09, 01MW-12, 01MW-18, 01MW-19, 01MW-21, 01MW-22, 01MW-23, 01MW-24, 01MW-27, 01MW-28, and 01MW-29. The concentrations in these wells ranged from 986 µg/L (Well 01MW-21) to 19,900 µg/L (Well 01MW-19).
- Benzene was detected above the NOAA SQuiRT™ value (5,300 µg/L) in Wells 01MW-24, 01MW-27, and 01MW-29 at concentrations of 6,750 µg/L, 6,220 µg/L, and 5,410 µg/L, respectively.
- Total xylenes were detected above the MTCA Method A Cleanup Level (1,000 µg/L) in Wells 01MW-18, 01MW-19, and 01MW-28 at concentrations of 1,360 µg/L, 3,190 µg/L, and 1,250 µg/L (1,230 µg/L in the duplicate sample), respectively.

4.2 QUARTERLY GROUNDWATER SAMPLING AT 2750 WEST COMMODORE WAY

The following analyte was detected above the applicable action level (Table 4-3):

- Gasoline was detected above the MTCA Method A Cleanup Level (800 µg/L with benzene present) in Well 01MW-04 at a concentration of 4,800 µg/L (4,800 µg/L in the duplicate sample).

5. CONCLUSIONS AND RECOMMENDATIONS

The following subsections describe the extent of impacted groundwater beneath the two properties and annual trends, if any. Figures 5-1 through 5-3 show concentration contour maps for diesel, gasoline, and benzene, respectively.

5.1 2737 WEST COMMODORE WAY

The following discussion summarizes the annual data for each analyte monitored. Table 5-1 shows the data collected from July 2001 through July 2004 at 2737 West Commodore Way.

PCP

PCP concentrations exceeded the NOAA SQuiRT™ level in 4 of the 15 wells sampled in July 2004. The concentrations of PCP detected in July 2004 were similar to those detected in previous quarters. Well 01MW-01 is the only well routinely sampled for PCP, due to its proximity to the former fuel line from the former PCP/Diesel Mixing Area. PCP is consistently below the NOAA SQuiRT™ value in this well. Other wells were sampled for PCP in July during the annual event. The concentration (40.5 μg/L) in Well 01MW-26 is higher than the previous year by an order of magnitude, while the concentration in 01MW-27 is consistent. This may indicate a change in conditions west of the Lower Tank Yard. The concentrations detected in the wells in the Lower Tank Yard (01MW-21, 01MW-22, and 01MW-23) were similar to previous results.

The PCP-impacted groundwater plume appears to be centered around the Lower Tank Yard and the Former PCP/Diesel Mixing Area.

Diesel Range Hydrocarbon

Diesel range hydrocarbon concentrations exceeded the MTCA Method A Cleanup Level in 9 of the 24 wells sampled in July 2004. The concentrations in July 2004 were similar to those measured in April 2004 with a few exceptions. In general, the data from wells with concentrations above the reporting limit do not indicate any discernable trends with the exception of 01MW-28.

The diesel plume appears to be centralized beneath the Former Manifold Area (01MW-23, 01MW-24, and 01MW-25) and the Former PCP/Diesel Mixing Area (01MW-22) in the Lower Tank Yard. The diesel plume is interpreted to extend towards the north due to the

presence of free phase product in Wells 01MW-10 and 01MW-16 north of the Loading Rack.

The analytical data indicate that diesel concentrations are present above the MTCA Method A Cleanup Level in Wells 01MW-03, 01MW-18, 01MW-19, and 01MW-09. A review of the chromatograms for the samples relative to the standards supplied by the laboratory indicate that gasoline is present in all of the wells. However, diesel is present only in 01MW-09. The plume north of the Office Building on Figure 5-1 (diesel-impacted groundwater) is based on the analytical results and may be more representative of gasoline-impacted groundwater.

In addition, the chromatograms for Wells 01MW-28 and 01MW-29 indicate that diesel range hydrocarbons are primarily present. The elevated gasoline range hydrocarbon concentrations may be due to the high concentration of diesel and/or co-eluting peaks.

Lube Oil Range Hydrocarbons

Lube oil range hydrocarbon concentrations exceeded the MTCA Method A Cleanup Level in 1 of 24 (01MW-03) wells sampled in July 2004. This well is sampled quarterly with no detections above the method reporting limit during the previous quarter. The detection in July 2004 is not consistent with the previous data.

Gasoline Range Hydrocarbons

Gasoline range hydrocarbon concentrations exceeded the MTCA Method A Cleanup Level for gasoline with benzene present in 14 of the 24 wells sampled in July 2004. The concentrations in July 2004 were similar to those measured in April 2004, with a few exceptions, and were also consistent with the previous quarters through the four quarter period. The concentration of gasoline in 01MW-02 and 01MW-09 were an order of magnitude lower than April 2004. The change in 01MW-02 is not consistent with historical data. The change in 01MW-09 may be due to the passive skimmer installed in the well and other nearby wells. The concentration of gasoline in other wells is fairly consistent.

The gasoline plume appears to be centralized beneath the Former Manifold Area (01MW-24 and 01MW-25) and the Former PCP/Diesel Mixing Area (01MW-21 and 01MW-22) in the Lower Tank Yard. The gasoline plume is interpreted to extend towards the north due to the presence of free phase product in Wells 01MW-10 and 01MW-16 north of the Loading Rack.

Gasoline concentrations exceed the MTCA Method A Cleanup Level in several wells in front of the Office Building. It is not clear whether the gasoline-impacted groundwater in front of the Office Building is associated with a separate source (possibly the former or current UST), or associated with the source near the Lower Tank Yard.

Benzene

Benzene was detected above the NOAA SQuiRT™ level (5,300 µg/L) in 3 of the 24 wells sampled in July 2004. In general, the concentrations of benzene are consistent with historical detections.

Toluene

Toluene was not detected above the NOAA SQuiRT™ value in any of the wells, nor has it since quarterly sampling began in July 2001.

Ethylbenzene

Ethylbenzene was not detected above the NOAA SQuiRT™ value in any of the wells, nor has it since quarterly sampling began in July 2001.

Xylene

Total xylenes (m, p, and o-isomers combined) were detected above the MTCA Method A Cleanup Level in 3 of the 24 wells sampled in July 2004. The concentrations detected in Wells 01MW-18, 01MW-19, and 01MW-28 are consistent with the results from the previous quarter (August 2003).

5.2 2750 WEST COMMODORE WAY

The following discussion summarizes the annual data for each analyte monitored. Table 5-2 shows the data collected from July 2001 through July 2004 at 2750 West Commodore Way.

Diesel Range Hydrocarbons

Diesel range hydrocarbons have not been detected above the method reporting limit in any wells from October 2003 to July 2004.

Lube Oil Range Hydrocarbons

Lube oil range hydrocarbons were not detected above the method reporting limit in any of the wells from October 2003 through July 2004.

Gasoline Range Hydrocarbons

Gasoline range hydrocarbon concentrations exceeded the MTCA Method A Cleanup Level for gasoline with benzene present in one of the seven wells (Well 02MW-04). The concentrations in Well 02MW-04 were consistent for all four quarters with the exception of April where the concentrations increased one order of magnitude (12,200 μg/L). In July the concentrations were decreased (4,800 μg/L).

Benzene

Benzene was detected in two of the seven wells sampled (Wells 02MW-03 and 02MW-04). None of the concentrations detected were above the NOAA SQuiRT™ value and the data are relatively consistent from quarter to quarter.

Toluene

Toluene was detected in one of the seven wells sampled (Well 02MW-04). None of the concentrations were above the NOAA SQuiRT™ value.

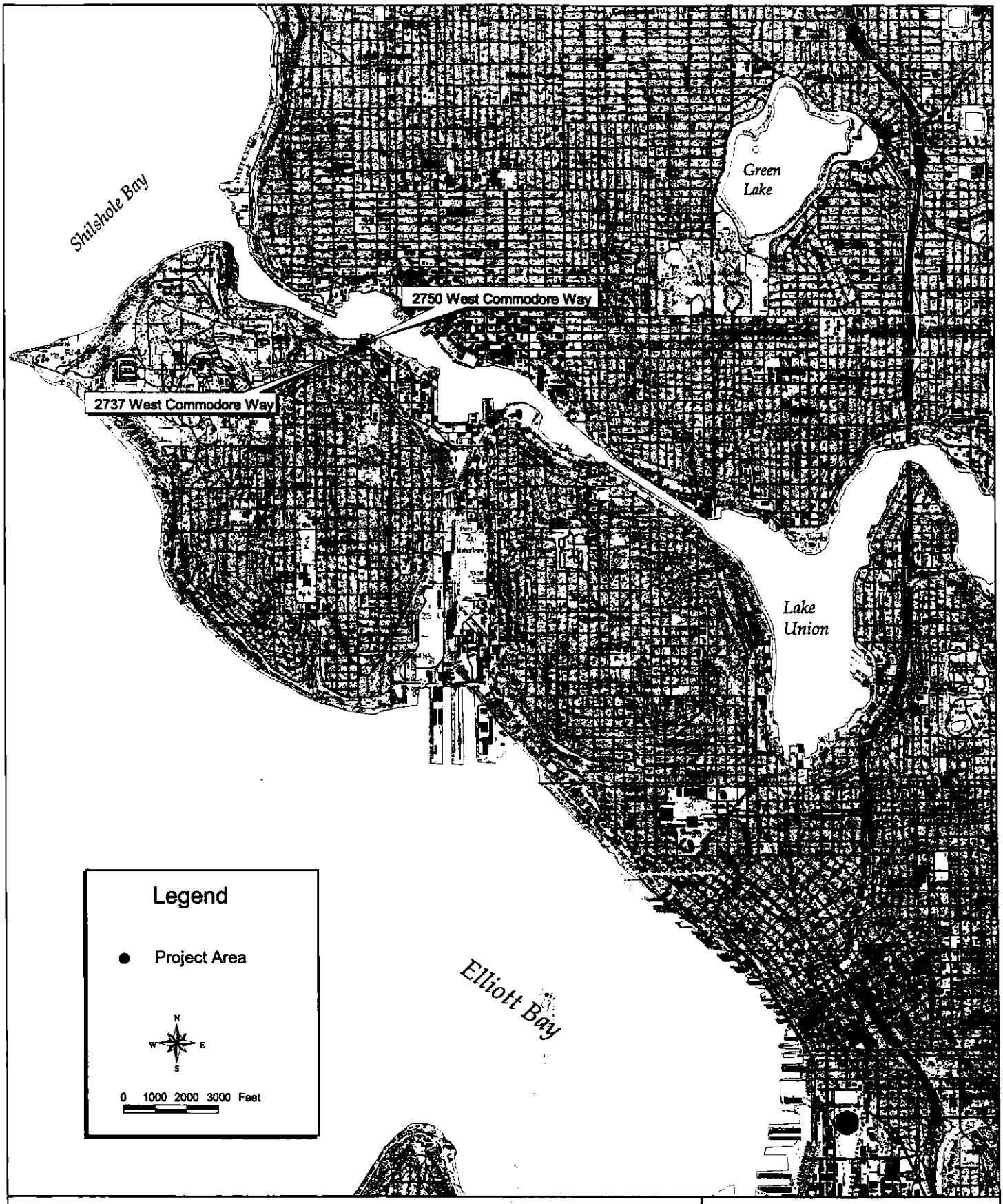
Ethylbenzene

Ethylbenzene was consistently detected above the method reporting limit in Well 02MW-04. The concentrations have been relatively consistent since July 2001.

Xylene

Xylene was detected in Wells 02MW-01, 02MW-03, 02MW-04, and 02MW-07. None of the concentrations were above the MTCA Method A Cleanup Level. The detections in Wells 02MW-01 and 02MW-03 were limited to October 2003 and the detections in Wells 02MW-04 and 02MW-07 were consistent.

FIGURES



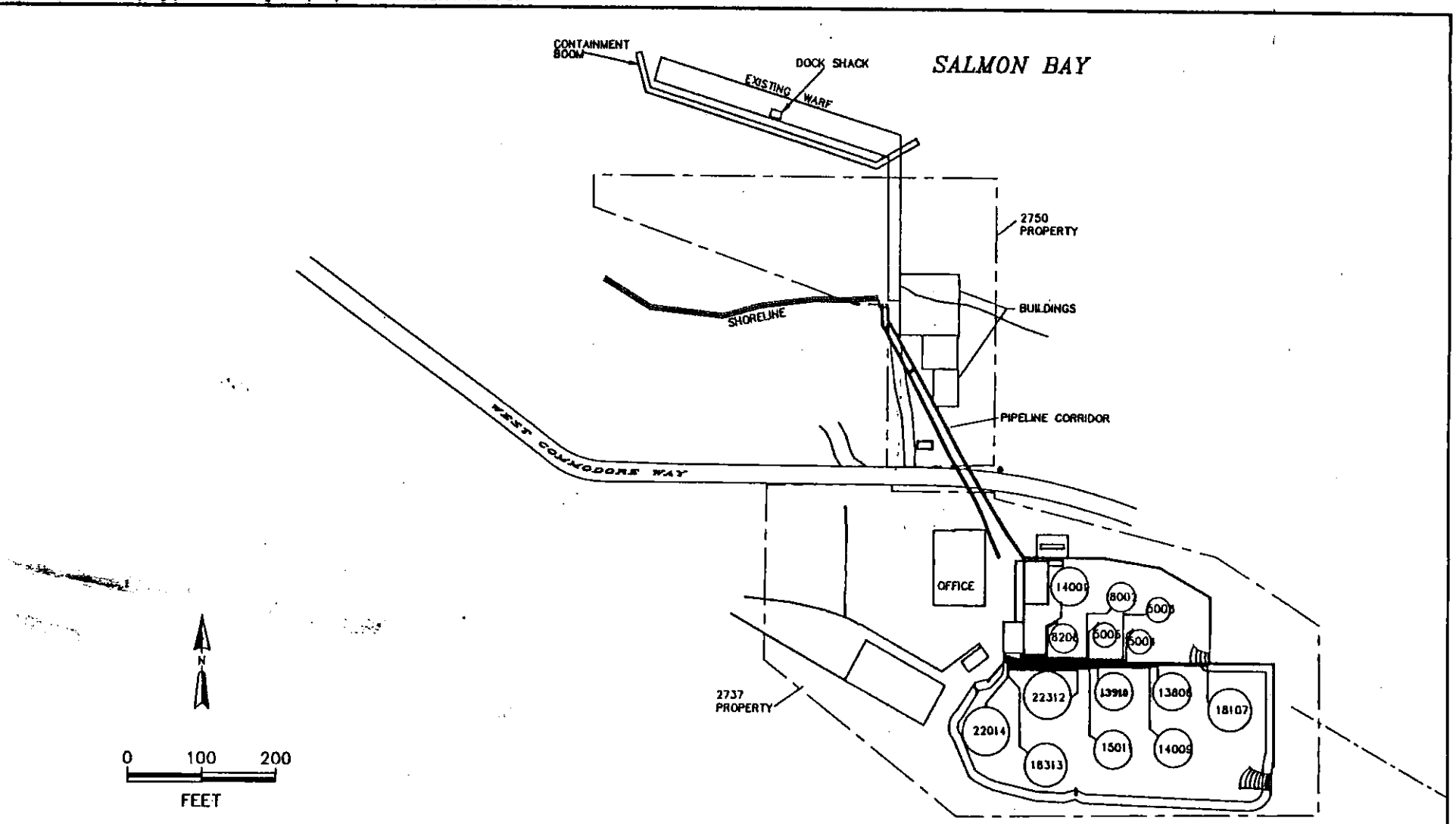
Time Oil Company
Quarterly Groundwater Sampling

Figure 1-1

Locations of 2737 and 2750 West Commodore Way

c:\projects\time_oil\vic_map_2001.apr December 2001

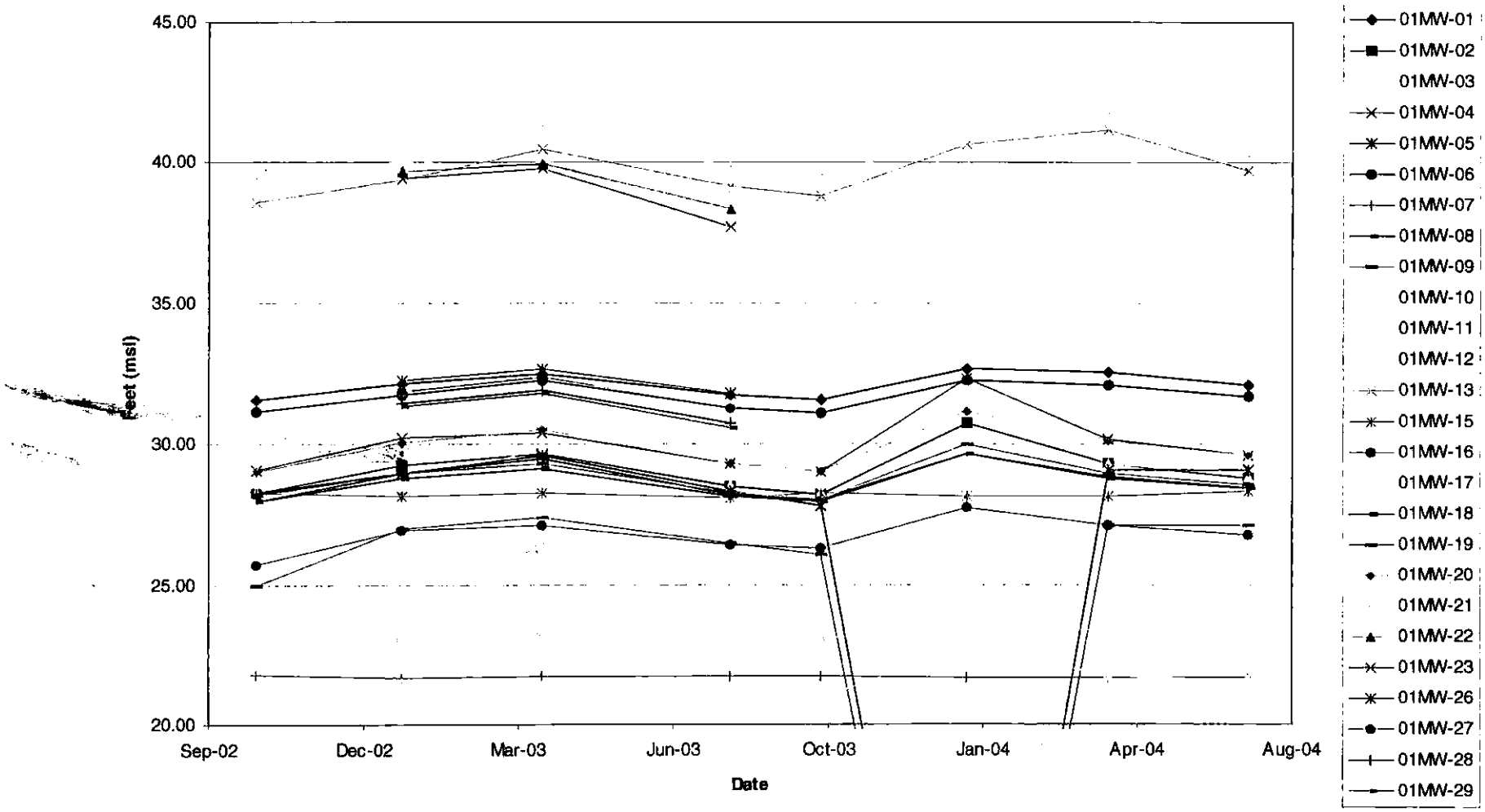
I:\Projects\23063312\dwg\ETIOFG07.dwg 03/18/2003 09:12:16 AM PST

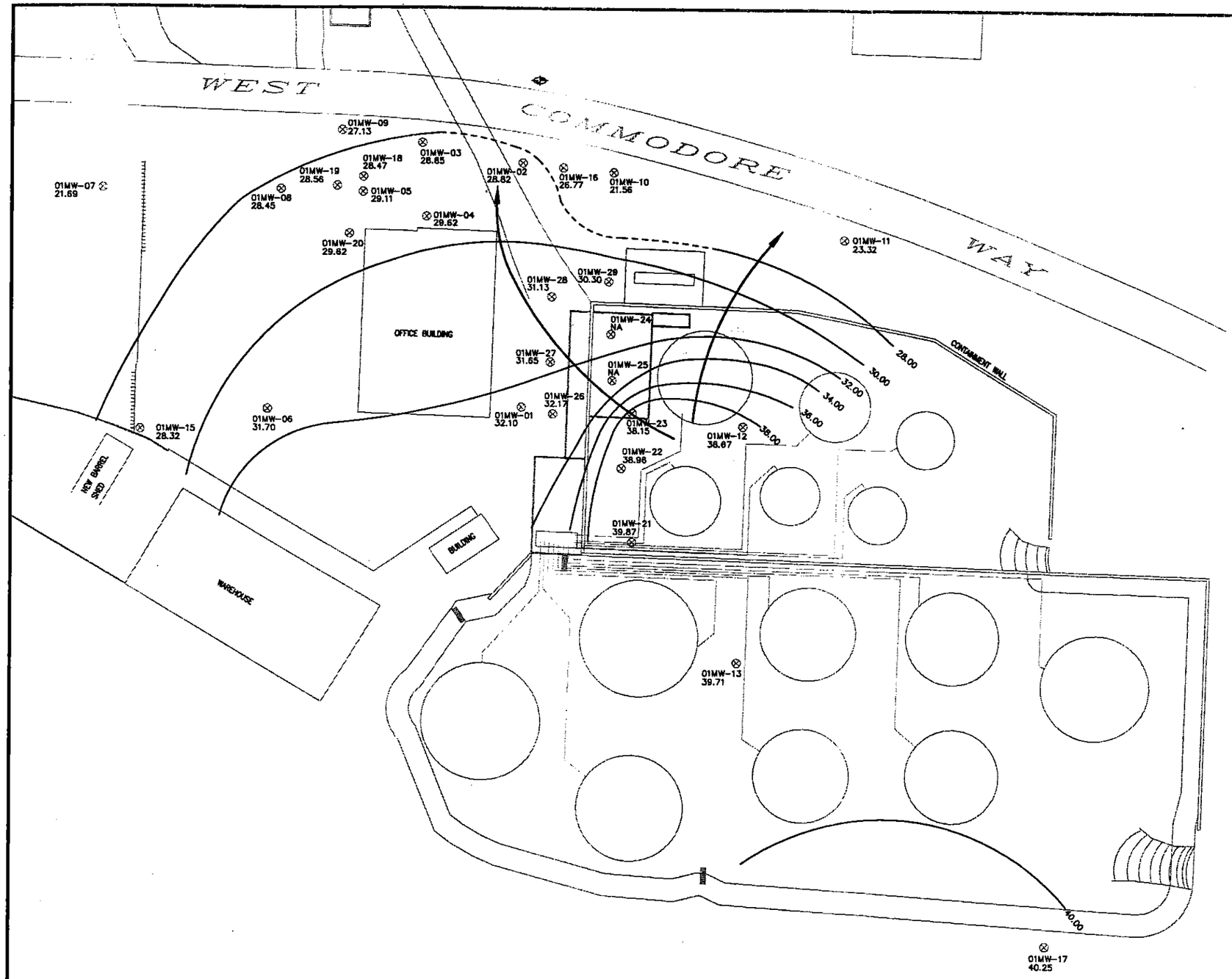


TETRA TECH FW, INC.

Figure 1-2
Layout of 2737 and 2750
West Commodore Way

Figure 3-1. Hydrograph for Monitoring Wells at 2737 West Commodore Way





LEGEND

- ⊗ 01MW-13 31.29 — MONITORING WELL WITH GROUNDWATER ELEVATION (FEET MSL)
- EQUIPOTENTIAL CONTOUR (DASHED WHERE INFERRED)
- SURVEY MONUMENT
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES

1. CONTOUR INTERVAL IS 2.00 FEET.
2. GROUNDWATER ELEVATIONS IN WELLS 01MW-10 AND 01MW-16 ARE INTERPRETED TO BE UNREPRESENTATIVE OF SHALLOW AQUIFER CONDITIONS DUE TO THICK LAYER OF FINE GRAINED MATERIAL.

N

GRAPHIC SCALE

0 30 60

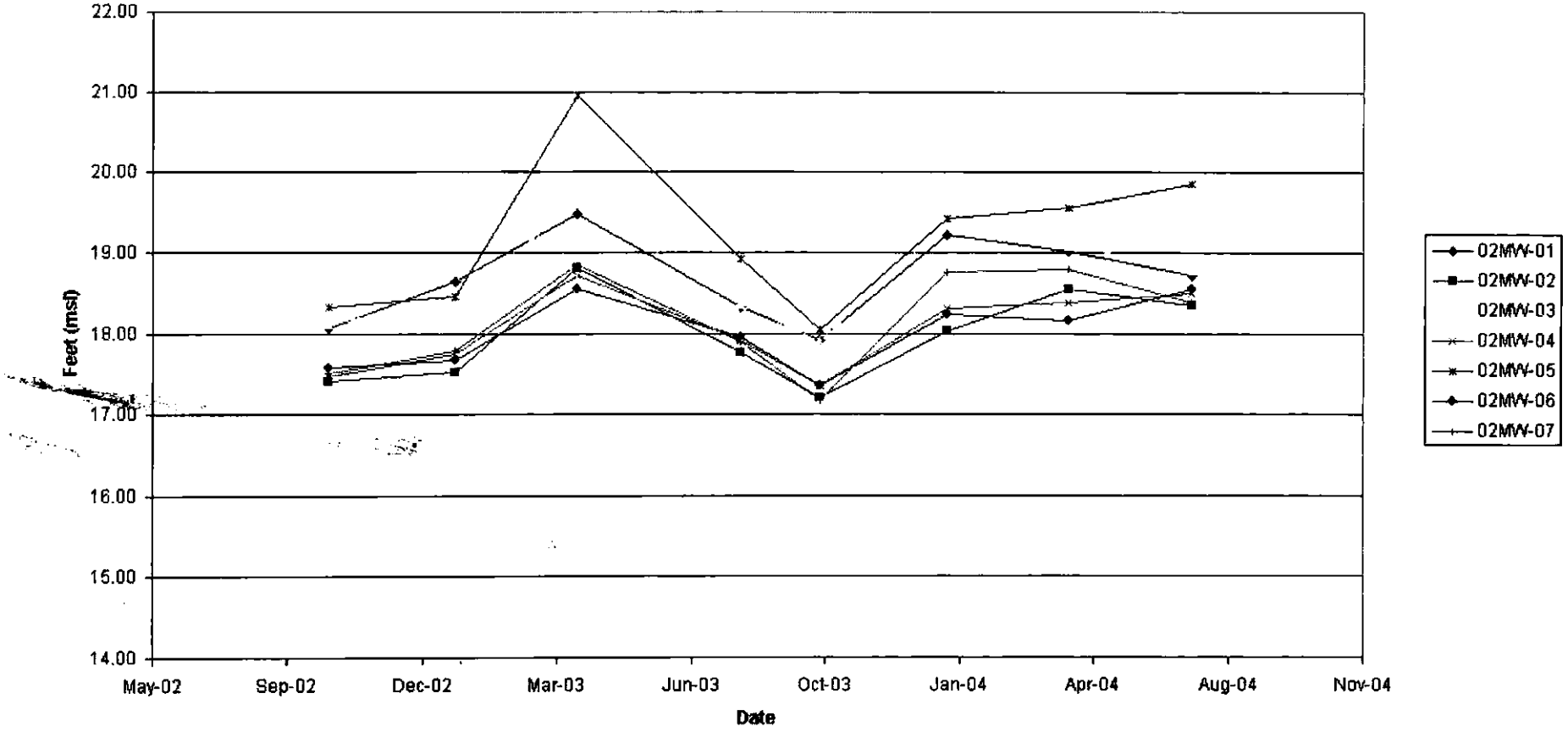
SCALE IN FEET

TETRA TECH FW, INC.

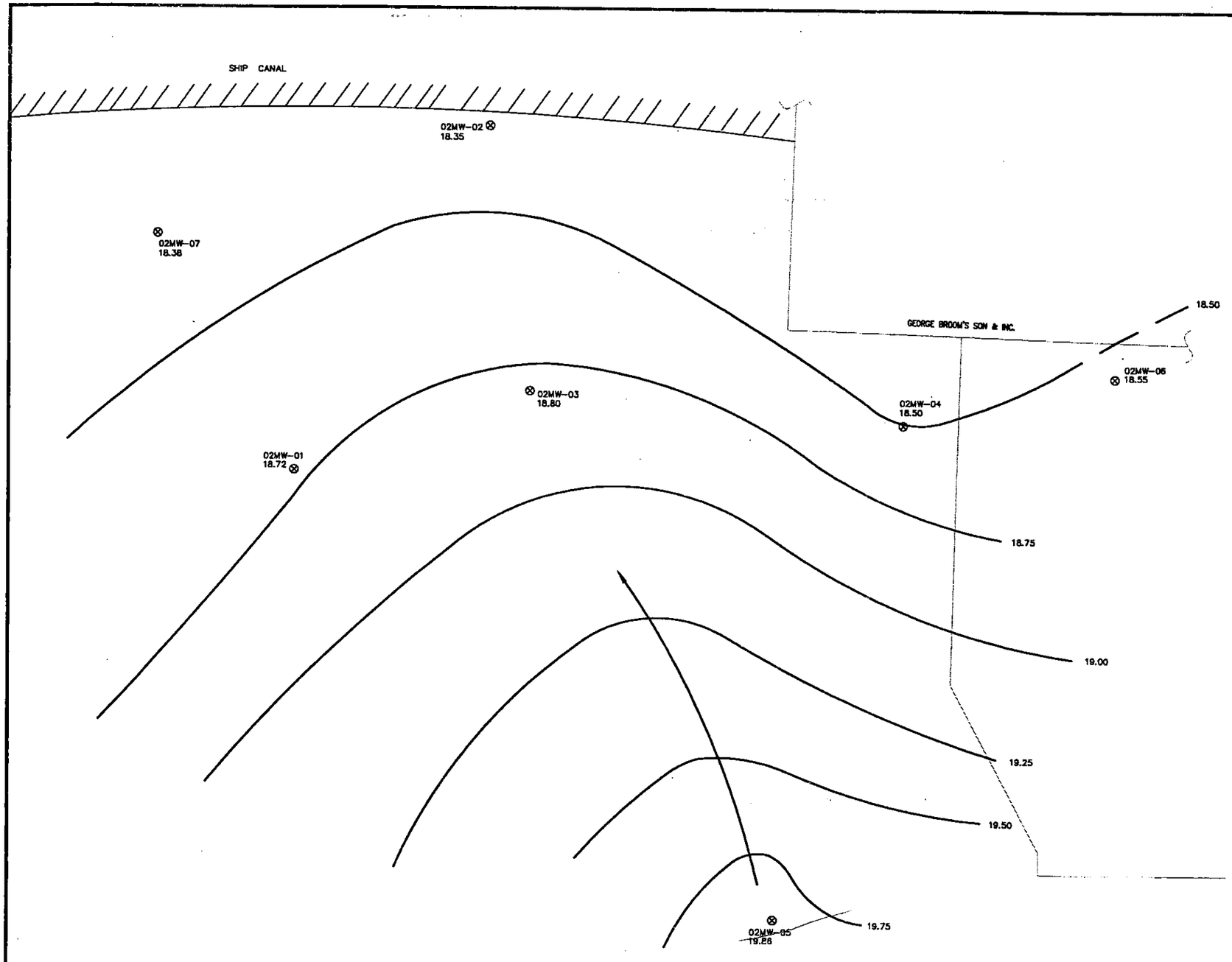
Figure 3-2
Location of Wells and Potentiometric Surface
at 2737 West Commodore Way,
July 12, 2004

I:\Projects\2306331\2\dwg\July 2004 - Quarter\ETIDFG3-1.dwg 8/24/2004 9:28:07 AM PST

Figure 3-3. Hydrograph for Monitoring Wells at 2750 West Commodore Way







LEGEND

02MW-05 19.43 — MONITORING WELL WITH GROUNDWATER ELEVATION (FEET MSL)

19.00 — EQUIPOTENTIAL CONTOUR (FEET MSL) (DASHED WHERE INFERRED)

APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES

1. CONTOUR INTERVAL IS 0.25 FEET.

N

GRAPHIC SCALE

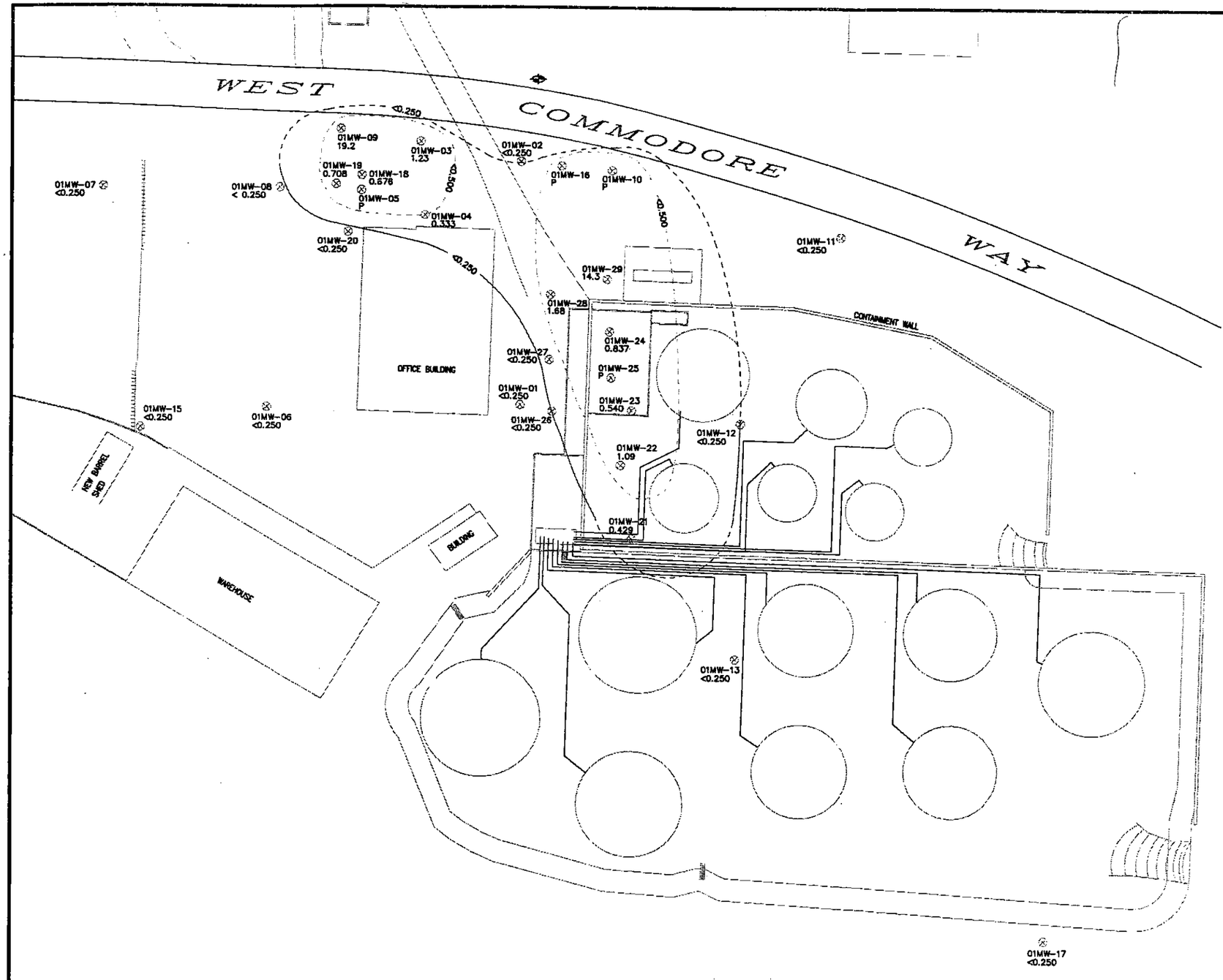
0 10 20

SCALE IN FEET
HORIZONTAL SCALE

TETRA TECH FW, INC.

Figure 3-4
Location of Wells
and Potentiometric Surface at
2750 West Commodore Way,
July 12, 2004

I:\PROJECTS\23063312\DWG\JULY 2004 - QUARTER\ETIOFG3-4_7-04.DWG
PLOT/UPDATE: SEP 02 2004 14:06:30



LEGEND

- 01MW-13 <0.250 — MONITORING WELL WITH CONCENTRATION (mg/L)
- MTCA METHOD A CLEANUP LEVEL (0.500 mg/L) (DASHED WHERE INFERRED)
- CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- SURVEY MONUMENT
- P — PRODUCT

NOTES

1. CONCENTRATION CONTOURS ARE BASED ON ANALYTICAL RESULTS. PLEASE SEE TEXT FOR EXPLANATION OF RESULTS AND POTENTIAL EFFECTS OF OVERLAPPING AND CO-ELUTING PEAKS.

N

GRAPHIC SCALE

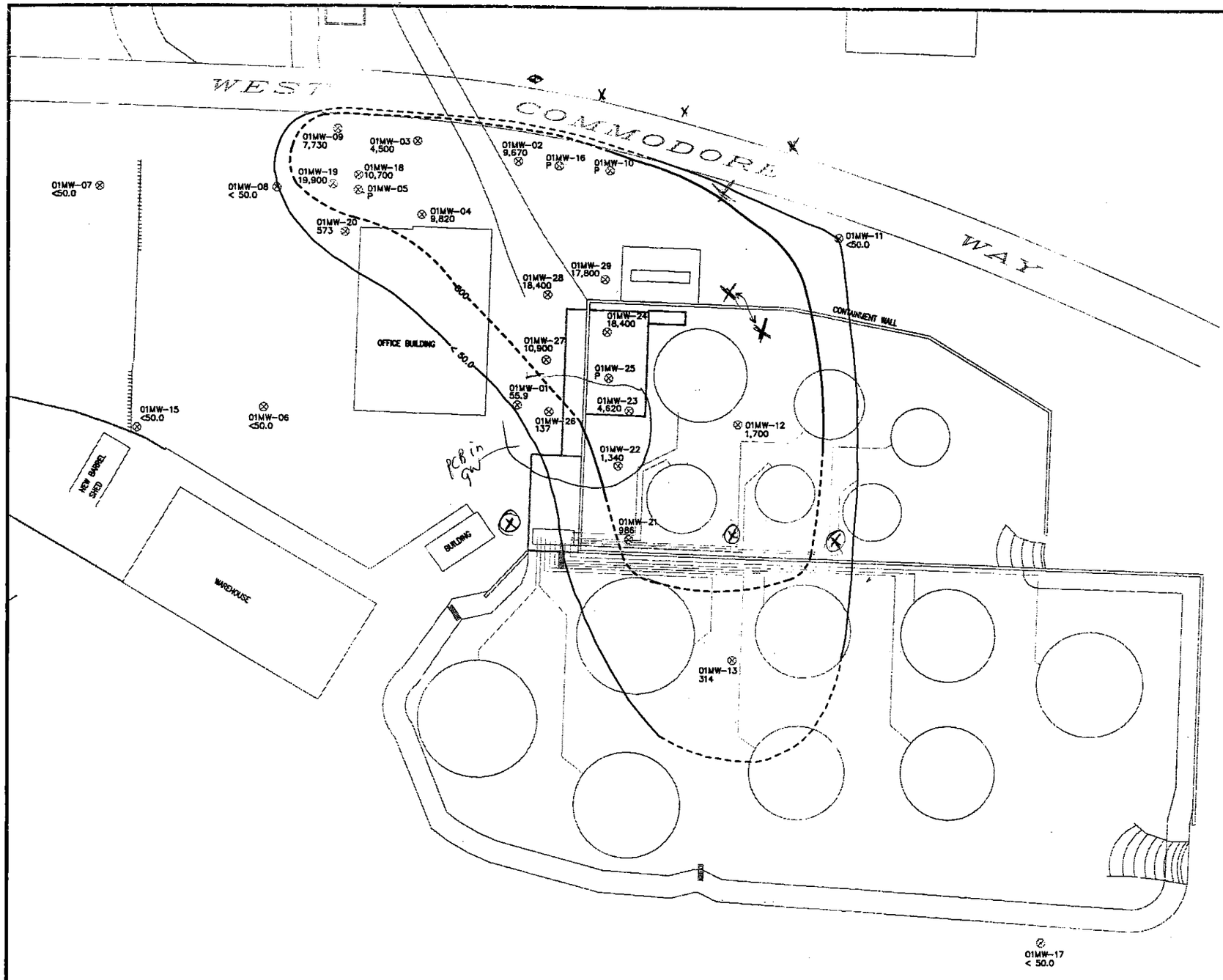
0 30 60

SCALE IN FEET

TETRA TECH FW, INC.

Figure 5-1
Diesel-Impacted Groundwater at
2737 West Commodore Way,
July 2004

I:\Projects\2306331\2\dwg\July 2004 - Quarter\ETIDFGS-1.dwg 8/24/2004 9:26:24 AM PST



LEGEND

- ⊗ 01MW-13 167 — MONITORING WELL WITH CONCENTRATION (µg/L)
- MTCA METHOD A CLEANUP LEVEL FOR GASOLINE WITH BENZENE PRESENT (800 µg/L) (DASHED WHERE INFERRED)
- CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- SURVEY MONUMENT
- P — PRODUCT

NOTES

1. CONCENTRATION CONTOURS ARE BASED ON ANALYTICAL RESULTS. PLEASE SEE TEXT FOR EXPLANATION OF RESULTS AND POTENTIAL EFFECTS OF OVERLAPPING AND CO-ELUTING PEAKS.

N

GRAPHIC SCALE

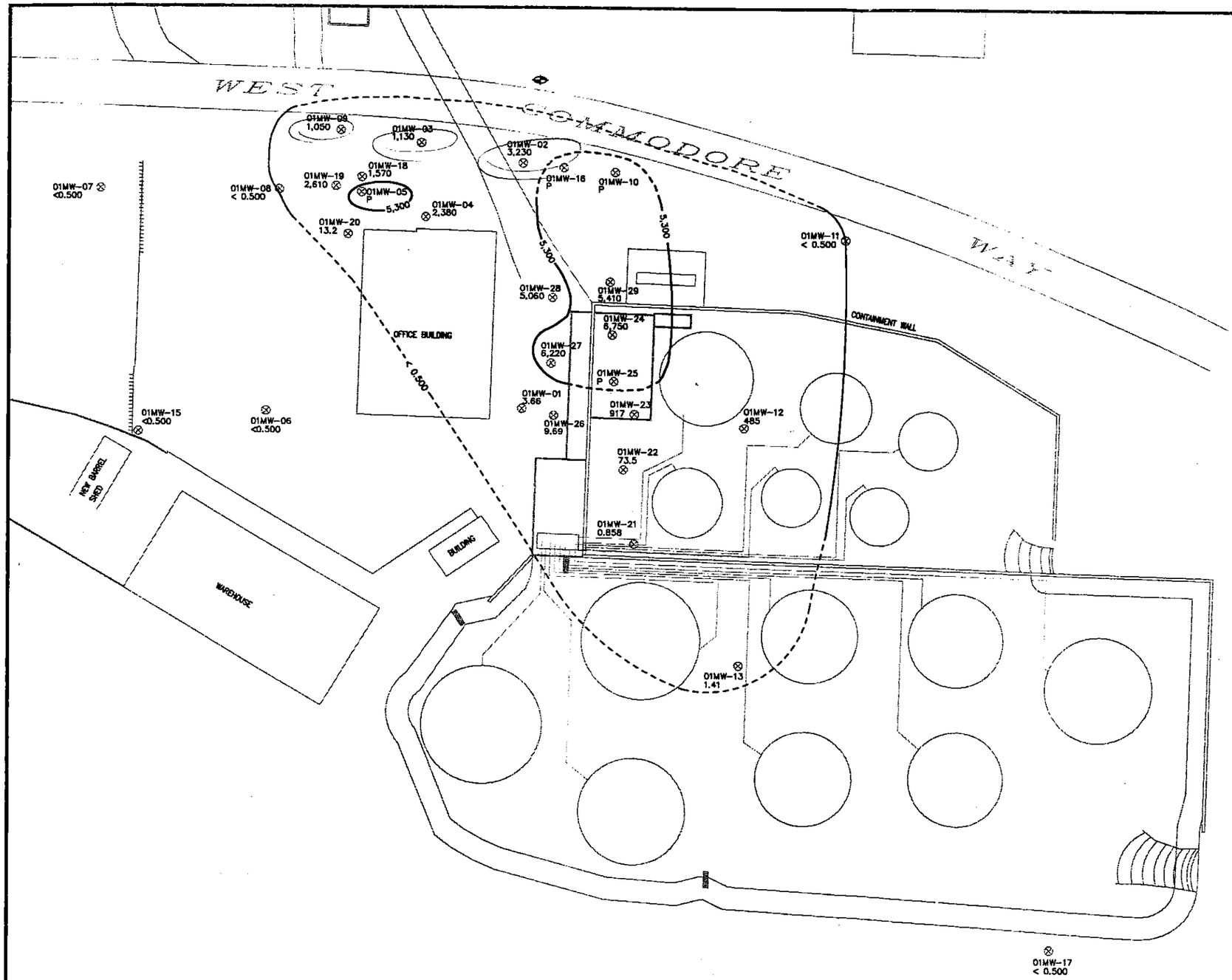
0 30 60

SCALE IN FEET

TETRA TECH FW, INC.

Figure 5-2
Gasoline-Impacted Groundwater at
2737 West Commodore Way,
July 2004

I:\Projects\2306331\dwg\July 2004 - Quarter\ETIDFG5-2.dwg 8/24/2004 9:19:40 AM PST



LEGEND

- 01MW-13 0.775 — MONITORING WELL WITH CONCENTRATION (µg/L)
- NOAA SQuiRT VALUE (5,300 µg/L) (DASHED WHERE INFERRED)
- CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- SURVEY MONUMENT
- P — PRODUCT

N

GRAPHIC SCALE

0 30 60

SCALE IN FEET

TETRA TECH FW, INC.

Figure 5-3
Benzene-Impacted Groundwater at
2737 West Commodore Way,
July 2004

I:\Projects\2306312\dwg\July 2004 - Quarter\ETIOFG5-3.dwg 8/24/2004 9:13:30 AM PST

TABLES



Table 2-1. July 2004 Sampling Matrix

Well	NWTPH-Gx/BTEX	NWTPH-Dx	PCP	Sample Type
		2737 West Commodore Way		
01MW-01	1	1	1	Environmental
01MW-02	1	1	na	Environmental
01MW-03	1	1	na	Environmental
01MW-04	1	1	na	Environmental
01MW-05	Sample not collected due to presence of free-phase product			
01MW-06	1	1	1	Environmental
01MW-07	1	1	na	Environmental
01MW-08	1	1	na	Environmental
01MW-09	1	1	1	Environmental
01MW-10	Sampled not collected due to insufficient groundwater			
01MW-11	1	1	na	Environmental
01MW-12	1	1	na	Environmental
01MW-13	1	1	na	Environmental
01MW-15	1	1	1	Environmental
01MW-16	Sampled not collected due to insufficient groundwater			
01MW-17	1	1	na	Environmental
01MW-18	1	1	1	Environmental
01MW-19	1	1	1	Environmental
01MW-20	1	1	1	Environmental
01MW-21	1	1	1	Environmental
01MW-22	1	1	1	Environmental
01MW-23	1	1	1	Environmental
01MW-24	1	1	1	Environmental
01MW-25	Sample not collected due to presence of free-phase product			
01MW-26	1	1	1	Environmental
01MW-27	1	1	1	Environmental
01MW-28	1	1	1	Environmental
01MW-28	1	1	1	Field Duplicate
01MW-29	1	1	1	Environmental
		2750 West Commodore Way		
02MW-01	1	1	na	Environmental
02MW-02	1	1	na	Environmental
02MW-03	1	1	na	Environmental
02MW-04	1	1	na	Environmental
02MW-04	1	1	na	Field Duplicate
02MW-05	1	1	na	Environmental
02MW-06	1	1	na	Environmental
02MW-07	1	1	na	Environmental

Abbreviations and Acronyms:
BTEX – benzene, toluene, ethylbenzene, xylene
Dx – diesel range hydrocarbons
Gx – gasoline range hydrocarbons
na – not included in analytical suite
NWTPH – northwest total petroleum hydrocarbon
PCP – pentachlorophenol

Table 3-1. Well Construction Details at West Commodore Way Properties

Well	Coordinate (WA State Plane) Northing (Feet)	Coordinate (WA State Plane) Easting (Feet)	Top of Casing Elevation (Feet msl)	Ground Elevation (Feet msl)	Total Depth of Boring (Feet bgs)	Total Depth of Well (Feet bgs)	Depth of Screen Interval (Feet bgs)	Elevation of Screen Interval (Feet msl)
2737 West Commodore Way								
01MW-01	245454.603	1256198.248	46.48	46.76	25.00	25.25	10 – 25	36.76 – 21.76
01MW-02	245585.027	1256198.518	44.78	45.15	25.00	24.91	10 – 25	35.15 – 20.15
01MW-03	245597.585	1256160.493	44.35	44.75	25.20	25.15	10 – 25	34.75 – 19.75
01MW-04	245563.117	1256163.148	45.08	45.56	25.00	24.90	10 – 25	35.56 – 20.56
01MW-05	245569.311	1256114.025	45.40	45.77	25.00	24.88	10 – 25	35.77 – 20.77
01MW-06	245452.677	1256064.638	47.74	48.23	25.00	25.10	10 – 25	38.23 – 23.23
01MW-07	245570.711	1255975.885	45.17	45.53	30.00	28.17	15 – 30	30.53 – 15.53
01MW-08	245570.471	1256070.985	45.21	45.63	25.00	24.93	10 – 25	35.63 – 20.63
01MW-09	245602.062	1256103.039	43.91	44.37	25.00	24.70	10 – 25	34.37 – 19.37
01MW-10	245580.377	1256246.968	45.02	45.35	25.00	24.90	10 – 25	35.35 – 20.35
01MW-11	245545.081	1256368.920	46.10	46.45	30.00	29.90	15 – 30	31.45 – 16.45
01MW-12	245444.877	1256316.069	45.84	46.29	20.00	20.00	5 – 20	40.84 – 25.84
01MW-13	245317.347	1256313.287	46.36	46.81	20.00	19.88	15 – 20	31.81 – 26.81
01MW-15	245441.314	1255996.388	50.89	50.89	30.12	30.00	10 – 30	40.89 – 20.89
01MW-16	245582.687	1256220.015	44.95	44.95	22.50	20.00	10 – 20	34.95 – 24.95
01MW-17	245166.941	1256477.520	59.42	59.42	30.00	30.00	15 – 30	44.42 – 29.42
01MW-18	245577.28	1256114.23	45.18	45.68	26.50	25.00	5 – 20	40.68 – 25.68
01MW-19	245572.45	1256100.62	45.35	45.85	31.50	25.00	5 – 20	40.85 – 25.78
01MW-20	245546.99	1256107.08	46.27	46.77	26.50	25.00	5 – 20	41.77 – 26.77
01MW-21	245382.3	1256257.4	46.21	46.52	23.50	22.92	5 – 22	41.21 – 23.79
01MW-22	245422.2	1256251.7	46.11	46.47	25.00	24.70	5 – 24	41.11 – 21.92
01MW-23	245451.9	1256257.4	45.81	46.11	20.50	19.45	5 – 19	40.81 – 26.86
01MW-24	245494.0	1256245.7	na	44.59	21.00	19.40	5 – 19	39.59 – 25.69
01MW-25	245469.4	1256246.5	na	44.61	20.50	17.32	5 – 16	39.61 – 28.29
01MW-26	245451.1	1256215.0	46.24	46.71	20.50	19.85	5 – 19	41.24 – 27.39
01MW-27	245479.0	1256213.5	46.33	46.70	21.50	19.65	5 – 19	41.33 – 27.68
01MW-28	245513.8	1256214.2	45.54	46.30	25.50	24.61	5 – 24	40.54 – 21.93
01MW-29	245522.2	1256244.6	45.57	45.92	20.50	19.75	5 – 19	40.57 – 26.82
2750 West Commodore Way								
02MW-01	245789.704	1255985.066	24.19	24.72	20.00	19.60	10 – 20	15.22 – 5.22
02MW-02	245848.029	1256019.016	20.06	20.57	10.00	9.90	5 – 10	16.07 – 11.07
02MW-03	245801.020	1256026.193	27.86	28.41	20.00	19.75	10 – 20	18.91 – 8.91
02MW-04	245795.225	1256092.088	27.17	27.59	20.00	20.05	10 – 20	18.09 – 8.09
02MW-05	245706.854	1256069.207	36.59	37.05	35.00	33.85	20 –35	17.55 – 2.55
02MW-06	245803.277	1256129.549	26.54	27.00	20.00	19.97	10 – 20	17.50 – 7.50
02MW-07	245828.584	1255960.724	20.85	21.39	12.00	12.20	2 – 12	19.89 – 9.89

Abbreviations and Acronyms:
bgs – below ground surface
msl – mean sea level
na – no data available
WA – Washington

Table 3-2. Water Levels Measured at West Commodore Way Properties on July 12, 2004

Well	Top of Casing Elevation (Feet msl)	Ground Elevation (Feet msl)	Total Depth of Well (Feet bgs)	Depth to Product (Feet bgs)	Depth to Water (Feet bgs)	Product Thickness (Feet)	Water Elevation (Feet msl)
2737 West Commodore Way							
01MW-01	46.48	46.76	25.25	np	14.38	0.00	32.10
01MW-02	44.78	45.15	24.91	np	15.96	0.00	28.82
01MW-03	44.35	44.75	25.15	np	15.50	0.00	28.85
01MW-04	45.08	45.56	24.90	np	15.46	0.00	29.62
01MW-05[1/]	45.40	45.77	24.88	15.47	19.57	4.10	29.11
01MW-06	47.74	48.23	25.10	np	16.04	0.00	31.70
01MW-07	45.17	45.53	28.17	np	23.48	0.00	21.69
01MW-08	45.21	45.63	24.93	np	16.76	0.00	28.45
01MW-09[1/]	43.91	44.37	24.70	na	16.78	na	27.13
01MW-10	45.02	45.35	24.90	23.32	24.03	0.71	21.56
01MW-11	46.10	46.45	29.90	np	22.78	0.00	23.32
01MW-12	45.84	46.29	20.00	np	7.17	0.00	38.67
01MW-13	46.36	46.81	19.88	np	6.65	0.00	39.71
01MW-15	50.89	50.89	30.00	np	22.57	0.00	28.32
01MW-16	44.95	44.95	20.00	17.93	19.20	1.27	26.77
01MW-17	59.42	59.42	30.00	np	19.17	0.00	40.25
01MW-18	45.18	45.68	25.00	np	16.71	0.00	28.47
01MW-19	45.35	45.85	25.00	np	16.79	0.00	28.56
01MW-20	46.27	46.77	25.00	np	16.65	0.00	29.62
01MW-21	46.21	46.52	25.00	np	6.34	0.00	39.87
01MW-22	46.11	46.47	25.00	7.15	7.17	0.02	38.96
01MW-23[1/]	45.81	46.11	25.00	7.64	7.74	0.10	38.15
01MW-24	na	44.59	25.00	7.85	8.15	0.30	na
01MW-25	na	44.61	25.00	6.83	9.24	2.41	na
01MW-26	46.24	46.71	25.00	np	14.07	0.00	32.17
01MW-27	46.33	46.7	25.00	np	14.68	0.00	31.65
01MW-28	45.54	46.3	25.00	14.13	15.51	1.38	31.13
01MW-29[1/]	45.57	45.92	25.00	15.26	15.32	0.06	30.30
2750 West Commodore Way							
02MW-01	24.19	24.72	19.60	np	5.47	0.00	18.72
02MW-02	20.06	20.57	9.90	np	1.71	0.00	18.35
02MW-03	27.86	28.41	19.75	np	9.06	0.00	18.80
02MW-04	27.17	27.59	20.05	np	8.67	0.00	18.50
02MW-05	36.59	37.05	33.85	np	16.73	0.00	19.86
02MW-06	26.54	27.00	19.97	np	7.99	0.00	18.55
02MW-07	20.85	21.39	12.20	np	2.47	0.00	18.38

Abbreviations and Acronyms:

bgs – below ground surface
msl – mean sea level
na – water level was not determined due to presence of product
np – no product detected

Notes:

[1/] Water elevation may be influenced by passive product skimmer installed in the well.

Table 3-3. Cumulative Groundwater Elevations, October 2003 – July 2004

Well	October 2003		January 2004		April 2004		July 2004	
	Fuel Thickness (Feet)	Water Elevation (Feet msl)	Fuel Thickness (Feet)	Water Elevation (Feet msl)	Fuel Thickness (Feet)	Water Elevation (Feet msl)	Fuel Thickness (Feet)	Water Elevation (Feet msl)
2737 West Commodore Way								
01MW-01	0.00	31.56	0.00	32.69	0.00	32.55	0.00	32.10
01MW-02	0.00	28.23	0.00	30.78	0.00	29.29	0.00	28.82
01MW-03	0.00	28.32	0.00	31.27	0.00	29.32	0.00	28.85
01MW-04	0.00	29.04	0.00	32.30	0.00	30.16	0.00	29.62
01MW-05[1/]	1.90	27.79	na	na	4.10	29.11	4.10	29.11
01MW-06	0.00	31.11	0.00	32.24	0.00	32.08	0.00	31.70
01MW-07	0.00	21.72	0.00	21.67	0.00	21.68	0.00	21.69
01MW-08	0.00	27.97	0.00	29.66	0.00	28.81	0.00	28.45
01MW-09[1/]	na	26.09	na	na	0.00	27.13	na	27.13
01MW-10	0.49	20.91	1.65	22.84	0.90	21.76	0.71	21.56
01MW-11	0.00	23.07	0.00	23.50	0.00	23.38	0.00	23.32
01MW-12	0.00	37.33	0.00	40.69	0.00	40.32	0.00	38.67
01MW-13	0.00	38.78	0.00	40.64	0.00	41.18	0.00	39.71
01MW-15	0.00	28.28	0.00	28.16	0.00	28.16	0.00	28.32
01MW-16	1.36	26.30	2.43	27.73	2.24	27.10	1.27	26.77
01MW-17	0.00	39.55	0.00	41.02	0.00	41.78	0.00	40.25
01MW-18	0.00	28.03	0.00	29.69	0.00	28.88	0.00	28.47
01MW-19	0.00	28.07	0.00	30.02	0.00	28.97	0.00	28.56
01MW-20	0.00	29.05	0.00	31.19	0.00	30.13	0.00	29.62
01MW-21	0.00	38.52	0.00	39.70	0.00	39.99	0.00	39.87
01MW-22	0.08	37.74	0.20	39.41	0.50	40.13	0.02	38.96
01MW-23[1/]	na	na	na	na	0.05	40.04	0.10	38.15
01MW-24	0.11	na	0.39	na	0.15	na	0.30	na
01MW-25	na	na	na	na	na	na	2.41	na
01MW-26	0.00	31.54	0.00	32.73	0.00	32.03	0.00	32.17
01MW-27	0.00	30.96	0.00	32.43	0.00	32.70	0.00	31.65
01MW-28	0.29	30.66	0.93	32.20	1.08	31.62	1.38	31.13
01MW-29[1/]	0.01	29.57	na	na	0.03	31.29	0.06	30.30
2750 West Commodore Way								
02MW-01	0.00	17.91	0.00	19.22	0.00	19.01	0.00	18.72
02MW-02	0.00	17.21	0.00	18.03	0.00	18.55	0.00	18.35
02MW-03	0.00	17.90	0.00	19.37	0.00	19.10	0.00	18.80
02MW-04	0.00	17.35	0.00	18.31	0.00	18.39	0.00	18.50
02MW-05	0.00	18.05	0.00	19.43	0.00	19.55	0.00	19.86
02MW-06	0.00	17.35	0.00	18.23	0.00	18.15	0.00	18.55
02MW-07	0.00	17.17	0.00	18.75	0.00	18.79	0.00	18.38

Abbreviations and Acronyms:
msl – mean sea level
na – water level was not determined due to presence of product

Notes:
[1/] Water elevation may be influenced by passive product skimmer installed in the well.

Table 4-1. Well Sampling Parameters, July 2004

Well	pH	ORP (mv)	Temperature (Celsius)	Dissolved O_2 (mg/L)	Conductivity (mS/cm)	Turbidity (NTU)
2737 West Commodore Way						
01MW-01	6.79	-13.6	15.24	0.10	443	na
01MW-02	6.74	-124.5	15.91	1.07	570	na
01MW-03	6.61	-95.6	15.52	0.84	297	na
01MW-04	6.37	-54.7	15.66	0.44	291	na
01MW-06	7.22	-119.6	15.19	0.12	785	na
01MW-07	6.79	-62.1	16.02	0.38	703	4.1
01MW-08	7.01	-109.8	16.01	0.65	757	0.2
01MW-09	6.80	-121.3	16.58	0.93	407	13.3
01MW-11	7.12	-145.2	14.91	1.66	552	na
01MW-12	6.57	-72.4	14.99	0.01	701	na
01MW-13	6.61	-39.9	15.13	na	619	1.1
01MW-15	7.12	-118.9	13.59	0.16	630	na
01MW-17	7.28	261.5	13.87	na	761	2.2
01MW-18	6.59	-105	17.32	1.01	534	na
01MW-19	6.67	-124.6	17.09	0.71	481	0.3
01MW-20	6.53	-70.8	16.83	0.19	232	7.4
01MW-21	6.57	-102.4	14.44	0.02	437	na
01MW-22	6.76	-55.4	13.67	0.01	369	na
01MW-23	6.63	-133.6	14.72	0.04	512	na
01MW-24	6.56	-83.8	15.72	0.01	659	na
01MW-26	6.78	-73.6	14.26	0.08	465	na
01MW-27	6.72	-99.8	14.56	0.07	663	na
01MW-28	6.73	-119.9	15.53	0.02	656	3.0
01MW-29	6.66	-93.5	15.02	0.01	874	83.2
2750 West Commodore Way						
02MW-01	6.42	-45.6	14.48	0.81	482	17.6
02MW-02	6.59	-79.8	16.08	0.31	475	0.0
02MW-03	6.47	-17.0	14.19	1.41	792	na
02MW-04	6.58	-57.6	14.64	1.80	640	na
02MW-05	6.47	-103.0	14.96	1.22	662	1.8
02MW-06	6.45	-153.6	12.96	1.03	361	na
02MW-07	6.52	-84.4	18	0.29	468	3.6

Abbreviations and Acronyms:
mg/L – milligrams per liter
mS/cm – millisiemens per centimeter
mv – millivolts
na – value not recorded due to meter malfunction
NTU – nephelometric turbidity unit

Table 4-2. Groundwater Results from 2737 West Commodore Way, July 2004

Sample	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)
Action Level	15[1/]	0.5[2/]	0.5[2/]	800[3/]	1,000[4/]	5,300[5/]	17,500[5/]	32,000[5/]	1,000[2/]
01MW-01	8.94	< 0.250	< 0.500	55.9		3.66	0.766	< 0.500	1.80
01MW-02	na	< 0.250	< 0.500	***9,670***		3,230	97.0	146	441
01MW-03	na	***1.23***	***0.938***	***4,500***		1,130	60.8	41.4	82.5
01MW-04	na	0.333	< 0.500	***9,820***		2,380	570	236	828
01MW-06	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-07	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-08	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-09	< 0.500	***19.2***	< 0.500	***7,730***		1,050	48.0	232	942
01MW-11	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-12	na	< 0.250	< 0.500	***1,700***		485	5.90	11.3	15.8
01MW-13	na	< 0.250	< 0.500	314		1.41	< 0.500	< 0.500	2.54
01MW-15	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-17	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-18	< 0.500	***0.676***	< 0.500	***10,700***		1,570	124	283	***1,360***
01MW-19	1.32	***0.708***	< 0.500	***19,900***		2,610	945	522	***3,190***
01MW-20	< 0.500	< 0.250	< 0.500	573		13.2	3.86	21.9	29.5
01MW-21	3.51	0.429	< 0.500	***986***		0.858	< 0.500	10.6	1.32
01MW-22	***191***	***1.09***	< 0.500	***1,340***		73.5	0.943	4.71	10.2
01MW-23	***350***	***0.540***	< 0.500	***4,620***		917	10.0	61.4	139
01MW-24	< 0.500	***0.837***	< 0.500	***18,400***		***6,750***	35.0	261	816
01MW-26	***40.5***	< 0.250	< 0.500	137		9.69	0.706	3.56	4.92
01MW-27	***50.7***	< 0.250	< 0.500	***10,900***		***6,220***	43.9	70.4	50.0
01MW-28A	2.44	***1.44***	< 0.500	***17,900***		5,060	1,910	343	***1,230***
01MW-28B	2.28	***1.68***	< 0.500	***18,400***		5,030	1,810	355	***1,250***
RPD	*7%*	*15%*	*nc*	*3%*		*1%*	*5%*	*3%*	*2%*
01MW-29	9.11	***14.3***	< 0.500	***17,800***		***5,410***	167	256	718

Abbreviations and acronyms:
mg/L – milligram per liter
µg/L – microgram per liter
MTCA – Model Toxics Control Act
NOAA – National Oceanic and Atmospheric Administration
na – no analysis requested
nc – not calculated
RPD – relative percent difference
SQuiRT™ – Screening Quick Reference Table
< symbol indicates result is less than reporting limit (in parenths)

Notes:
Results above action levels in bold and italics
[1/]NOAA SQuiRT™ value for freshwater continuous concentration
[2/]MTCA Method A
[3/] MTCA Method A gasoline range with benzene present
[4/] MTCA Method A gasoline range without benzene present
[5/] NOAA SQuiRT™ value for freshwater maximum concentration

Table 4-3. Groundwater Results from 2750 West Commodore Way, July 2004

Sample	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
Action Level	0.5[2/]	0.5[2/]	800[3/]	1,000[4/]	5,300[5/]	17,500[5/]	32,000[5/]	1,000[2/]
02MW-01	< 0.250	< 0.500	< 50.0		< 0.791	< 0.500	< 0.500	< 1.00
02MW-02	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
02MW-03	< 0.250	< 0.500	< 50.0		< 0.718	< 0.500	< 0.500	< 1.00
02MW-04A	< 0.250	< 0.500	***4,800***		35.9	54.5	308	584
02MW-04B	< 0.250	< 0.500	***4,800***		34.2	54.5	305	570
RPD	*nc*	*nc*	*0%*		*5%*	*0%*	*1%*	*2%*
02MW-05	< 0.250	< 0.500	209		< 0.500	< 0.500	< 0.500	< 1.00
02MW-06	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
02MW-07	< 0.250	< 0.500	131		< 0.500	< 0.500	< 0.500	1.52

Abbreviations and acronyms:
mg/L – milligram per liter
µg/L – microgram per liter
MTCA – Model Toxics Control Act
NOAA – National Oceanic and Atmospheric Administration
nc – not calculated
RPD – relative percent difference
SQuiRT™ – Screening Quick Reference Table
< symbol indicates result is less than reporting limit (in parenths)

Notes:
Results above action levels in bold and italics
[1/]NOAA SQuiRT™ value for freshwater continuous concentration
[2/]MTCA Method A
[3/] MTCA Method A gasoline range with benzene present
[4/] MTCA Method A gasoline range without benzene present
[5/] NOAA SQuiRT™ value for freshwater maximum concentration

Table 5-1. Cumulative Groundwater Results, July 2001 – July 2004, 2737 West Commodore Way

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	MTBE (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
Action Level		15[1]	0.5[2]	0.5[2]	800[3] | 1,000[4]	5,300[5]	17,500[5]	32,000[5]	1,000[2]	20[2]	15[2]	15[2]
01MW-01	Jul-01	3.94	*1.11*	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	na
01MW-01	Oct-01	3.55	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-01	Jan-02	2.02	< 0.250	< 0.500	51.5	< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-01	Apr-02	2.84	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-01	Jul-02	6.84	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-01A	Oct-02	6.37	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-01B	Oct-02	7.13	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-01A	Jan-03	7.33	< 0.250	< 0.500	< 50.0	< 1.00	< 1.00	< 1.00	< 3.00	< 5.00	na	na
01MW-01B	Jan-03	6.06	< 0.250	< 0.500	< 50.0	< 1.00	< 1.00	< 1.00	< 3.00	< 5.00	na	na
01MW-01A	Apr-03	5.57	0.429	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-01B	Apr-03	8.04	0.454	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-01	Aug-03	6.06	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-01	Jan-04	11.2	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-01A	Apr-04	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-01B	Apr-04	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-01	Jul-04	8.94	< 0.250	< 0.500	55.9	3.66	0.766	< 0.500	1.80	na	na	na
01MW-02	Jul-01	na	*5.01*	<1.50	*14,800*	*6,900*	162	262	*1,110*	na	< 1.00	na
01MW-02	Oct-01	< 0.500	0.264	< 0.500	*10,100*	4,290	71.2	159	741	na	< 1.00	< 1.00
01MW-02	Jan-02	< 0.500	0.330	< 0.500	*13,000*	3,280	645	373	*1,610*	na	< 1.00	< 1.00
01MW-02	Apr-02	< 0.500	0.479	< 0.500	*27,500*	*11,200*	658	340	*1,390*	na	< 1.00	< 1.00
01MW-02A	Jul-02	< 0.500	0.377	< 0.500	*17,500*	*7,060*	250	230	970	na	< 1.00	< 1.00
01MW-02B	Jul-02	< 0.500	0.294	< 0.500	*17,600*	*6,380*	230	212	892	na	< 1.00	< 1.00
01MW-02	Oct-02	na	0.412	< 0.500	*10,700*	2,780	888	303	*1,580*	na	na	na
01MW-02	Jan-03	na	*0.502*	< 0.500	*31,100*	*9,860*	988	278	*1,570*	< 500	na	na
01MW-02	Apr-03	na	*0.817*	< 0.500	*11,600*	4,630	218	229	561	na	na	na
01MW-02	Aug-03	na	*1.62*	< 0.500	*14,800*	*5,540*	133	200	713	na	na	na
01MW-02	Jan-04	na	< 0.250	< 0.500	*9,820*	3,900	295	312	*1,030*	na	na	na
01MW-02	Jan-04	na	< 0.250	< 0.500	*10,500*	3,950	307	300	*1,050*	na	na	na
01MW-02	Apr-04	na	0.428	< 0.500	*21,800*	*8,680*	213	310	857	na	na	na
01MW-02	Jul-04	na	< 0.250	< 0.500	*9,670*	3,230	97.0	146	441	na	na	na

Table 5-1. Cumulative Groundwater Results, July 2001 – July 2004, 2737 West Commodore Way (continued)

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	MTBE (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
Action Level		15[1]	0.5[2]	0.5[2]	800[3] 1,000[4]	5,300[5]	17,500[5]	32,000[5]	1,000[2]	20[2]	15[2]	15[2]
01MW-03	Jul-01	na	*2.84*	<1.50	*24,500*	*11,900*	238	414	515	na	< 1.00	na
01MW-03A	Oct-01	< 0.500	0.491	< 0.500	*18,500*	*11,700*	82.1	237	138	na	< 1.00	< 1.00
01MW-03B	Oct-01	2.24	0.379	< 0.500	*9,200*	4,330	39.9	114	66.3	na	< 1.00	< 1.00
01MW-03A	Jan-02	< 0.500	0.443	< 0.500	*1,070*	98.8	4.56	7.94	9.53	na	< 1.00	< 1.00
01MW-03B	Jan-02	< 0.500	0.440	< 0.500	*1,070*	98.3	4.45	8.28	9.36	na	< 1.00	< 1.00
01MW-03A	Apr-02	< 0.500	0.427	< 0.500	753	50.8	3.68	9.85	9.23	na	< 1.00	< 1.00
01MW-03B	Apr-02	< 0.500	0.463	< 0.500	751	62.7	4.65	12.2	11.1	na	1.17	< 1.00
01MW-03	Jul-02	< 0.500	*0.512*	< 0.500	*21,000*	*8,990*	416	324	588	na	< 1.00	< 1.00
01MW-03	Oct-02	na	*0.897*	< 0.500	*18,000*	*8,350*	97.5	244	671	na	na	na
01MW-03	Jan-03	na	< 0.250	< 0.500	618	170	< 5.00	< 5.00	< 15.0	< 25.0	na	na
01MW-03	Apr-03	na	*0.879*	< 0.500	*1,070*	135	7.12	< 2.50	12.7	na	na	na
01MW-03	Aug-03	na	*2.09*	< 0.500	*31,500*	*13,900*	232	355	449	na	na	na
01MW-03	Jan-04	na	0.404	< 0.500	*1,040*	302	10.1	7.09	17.3	na	na	na
01MW-03	Apr-04	na	*0.508*	< 0.500	*1,060*	83.5	4.64	2.56	12.1	na	na	na
01MW-03	Jul-04	na	*1.23*	*0.938*	*4,500*	1,130	60.8	41.4	82.5	na	na	na
01MW-04	Jul-01	na	*1.79*	<1.50	*6,460*	1,210	204	134	*1,470*	na	< 1.00	na
01MW-04	Oct-01	< 0.500	0.398	< 0.500	*4,020*	68.1	82.3	261	*1,130*	na	< 1.00	< 1.00
01MW-04	Jan-02	< 0.500	< 0.250	< 0.500	*5,920*	< 25.0	123	486	*2,030*	na	< 1.00	< 1.00
01MW-04	Apr-02	< 0.500	< 0.250	< 0.500	*840*	< 1.25	10.7	76	342	na	< 1.00	< 1.00
01MW-04	Jul-02	< 0.500	< 0.250	< 0.500	*17,300*	4,130	1,360	309	*1,470*	na	< 1.00	< 1.00
01MW-04	Oct-02	na	na	na	na	na	na	na	na	na	na	na
01MW-04	Aug-03	< 0.500	*1.90*	< 0.500	*1,840*	1,190	155	51.7	141	na	< 1.00	< 1.00
01MW-04	Jul-04	na	0.333	< 0.500	*9,820*	2,380	570	236	828	na	< 1.00	< 1.00
01MW-06	Jul-01	2.17	*0.718*	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	na
01MW-06	Oct-01	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-06	Jan-02	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-06	Apr-02	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-06	Jul-02	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00

Table 5-1. Cumulative Groundwater Results, July 2001 – July 2004, 2737 West Commodore Way (continued)

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	MTBE (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
Action Level		15[1/]	0.5[2/]	0.5[2/]	800[3/]	1,000[4/]	5,300[5/]	17,500[5/]	32,000[5/]	1,000[2/]	20[2/]	15[2/]	15[2/]
01MW-06	Oct-02	na	na	na	na		na	na	na	na	na	na	na
01MW-06	Aug-03	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-06	Jul-04	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-07	Jul-01	na	*1.45*	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	na
01MW-07	Oct-01	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	1.11	< 1.00
01MW-07	Jan-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-07	Apr-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-07	Jul-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-07	Oct-02	na	na	na	na		na	na	na	na	na	na	na
01MW-07	Aug-03	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-07	Jul-04	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-08	Jul-01	na	*0.662*	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	na
01MW-08	Oct-01	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-08	Jan-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-08	Apr-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-08	Jul-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-08	Oct-02	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-08	Jan-03	na	< 0.250	< 0.500	< 50.0		< 1.00	< 1.00	< 1.00	< 3.00	< 5.00	na	na
01MW-08	Apr-03	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-08	Aug-03	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-08	Jan-04	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-08	Apr-04	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-08	Jul-04	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-09	Jul-01	na	*5.72*	< 0.500	*1,830*		213	114	48.1	230	na	< 1.00	< 1.00
01MW-09	Oct-01	< 0.500	0.336	< 0.500	*6,940*		1,030	422	247	*1,250*	na	1.16	< 1.00
01MW-09	Jan-02	< 0.500	< 0.250	< 0.500	480		67.2	32.4	17.6	81.1	na	1.01	3.58
01MW-09	Apr-02	< 0.500	< 0.250	< 0.500	*860*		134	37	25.0	106	na	1.16	< 1.00

Table 5-1. Cumulative Groundwater Results, July 2001 – July 2004, 2737 West Commodore Way (continued)

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	MTBE (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
Action Level		15[1]	0.5[2]	0.5[2]	800[3]	1,000[4]	5,300[5]	17,500[5]	32,000[5]	1,000[2]	20[2]	15[2]	15[2]
01MW-09	Jul-02	No Sample Collected Due to Product											
01MW-09	Oct-02	No Sample Collected Due to Product											
01MW-09	Apr-03	na	*1.13*	< 0.500	*8,370*		1,140	690	221	*1,070*	na	na	na
01MW-09	Aug-03	na	*8.63*	< 0.500	*11,400*		1,370	335	314	*1,500*	na	na	na
01MW-09	Jan-04	na	0.451	< 0.500	*937*		340	10.4	12.2	47.6	na	na	na
01MW-09	Apr-04	na	*3.92*	< 0.500	*16,200*		3,310	183	573	*2,580*	na	na	na
01MW-09	Jul-04	< 0.500	*19.2*	< 0.500	*7,730*		1,050	48.0	232	942	na	na	na
01MW-11	Jul-01	na	*1.53*	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	na
01MW-11	Oct-01	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-11	Jan-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-11	Apr-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-11	Jul-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-11	Oct-02	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-11	Jan-03	na	< 0.250	< 0.500	< 50.0		< 1.00	< 1.00	< 1.00	< 3.00	< 5.00	na	na
01MW-11	Apr-03	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-11	Aug-03	na	0.294	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-11	Jan-04	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-11	Apr-04	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-11	Jul-04	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-12	Jul-01	na	*6.55*	<1.50	*1,350*		482	8.84	14.0	26.4	na	< 1.00	na
01MW-12	Oct-01	1.68	*0.731*	< 0.500	*1,300*		385	9.22	14.0	24.8	na	< 1.00	< 1.00
01MW-12	Jan-02	< 0.500	< 0.250	< 0.500	*1,130*		360	8.11	11.7	22.1	na	< 1.00	< 1.00
01MW-12	Apr-02	< 0.500	< 0.250	< 0.500	*1,600*		545	7.37	11.9	21.7	na	< 1.00	< 1.00
01MW-12	Jul-02	< 0.500	< 0.250	< 0.500	*1,720*		671	9.65	15.8	24.9	na	< 1.00	< 1.00
01MW-12	Oct-02	na	< 0.250	< 0.500	*1,710*		619	7.70	9.31	18.0	na	na	na
01MW-12	Jan-03	na	< 0.250	< 0.500	*1,410*		295	< 10.0	11.8	< 30.0	< 50.0	na	na
01MW-12	Apr-03	na	*4.22*	< 0.500	*1,480*		417	5.89	10.3	17.1	na	na	na
01MW-12	Aug-03	na	*4.09*	< 0.500	*1,430*		583	6.68	11.7	17.4	na	na	na

Table 5-1. Cumulative Groundwater Results, July 2001 – July 2004, 2737 West Commodore Way (continued)

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	MTBE (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
Action Level		15[1]	0.5[2]	0.5[2]	800[3]	1,000[4]	5,300[5]	17,500[5]	32,000[5]	1,000[2]	20[2]	15[2]	15[2]
01MW-12	Jan-04	na	< 0.250	< 0.500	*1,130*		336	6.10	12.0	17.2	na	na	na
01MW-12	Apr-04	na	0.471	< 0.500	*1,330*		441	6.24	9.62	14.6	na	na	na
01MW-12	Jul-04	na	< 0.250	< 0.500	*1,700*		485	5.90	11.3	15.8	na	na	na
01MW-13	Jul-01	na	*3.90*	<1.50	221		1.26	< 0.500	< 0.500	2.31	na	< 1.00	na
01MW-13	Oct-01	2.73	*1.29*	< 0.500	207		1.28	< 0.500	< 0.500	2.06	na	< 1.00	< 1.00
01MW-13	Jan-02	< 0.500	< 0.250	< 0.500	160		< 0.500	< 0.500	< 0.500	1.62	na	< 1.00	< 1.00
01MW-13	Apr-02	< 0.500	< 0.250	< 0.500	204		0.978	< 0.500	0.533	2.00	na	< 1.00	< 1.00
01MW-13	Jul-02	< 0.500	< 0.250	< 0.500	304		1.19	< 0.500	< 0.500	2.86	na	< 1.00	< 1.00
01MW-13	Oct-02	na	< 0.250	< 0.500	149		< 0.500	< 0.500	< 0.500	1.55	na	na	na
01MW-13	Jan-03	na	< 0.250	< 0.500	246		< 1.00	< 1.00	< 1.00	< 3.00	< 5.00	na	na
01MW-13	Apr-03	na	*0.688*	< 0.500	199		0.771	< 0.500	< 0.500	1.95	na	na	na
01MW-13	Aug-03	na	*2.60*	< 0.500	137		0.520	< 0.500	< 0.500	1.77	na	na	na
01MW-13	Jan-04	na	< 0.250	< 0.500	167		0.775	< 0.500	< 0.500	1.85	na	na	na
01MW-13	Apr-04	na	0.257	< 0.500	325		2.23	0.730	2.14	3.28	na	na	na
01MW-13	Jul-04	na	< 0.250	< 0.500	314		1.41	< 0.500	< 0.500	2.54	na	na	na
01MW-15	Jul-01	1.66	0.484	<0.500	< 50.0		< 0.500	< 0.500	< 0.500	<1.00	na	< 1.00	na
01MW-15	Oct-01	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-15	Jan-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-15	Apr-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-15	Jul-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-15	Oct-02	na	na	na	na		na	na	na	na	na	na	na
01MW-15	Aug-03	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-15	Jul-04	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-16A	Jul-01	2.54	*11.1*	<2.50	*11,000*		3,910	123	261	891	na	< 1.00	na
01MW-16B	Jul-01	2.09	*9.62*	<2.50	*9,390*		3,700	122	209	745	na	< 1.00	< 1.00
01MW-16	Oct-01	< 0.500	0.448	< 0.500	*11,500*		3,670	113	274	984	na	< 1.00	< 1.00
01MW-16	Jan-02	< 0.500	*0.674*	< 0.500	*13,400*		*5,300*	116	250	906	na	< 1.00	< 1.00

Table 5-1. Cumulative Groundwater Results, July 2001 – July 2004, 2737 West Commodore Way (continued)

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	MTBE (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
Action Level		15[1]	0.5[2]	0.5[2]	800[3]	1,000[4]	5,300[5]	17,500[5]	32,000[5]	1,000[2]	20[2]	15[2]	15[2]
01MW-16	Apr-02	No Sample Collected Due to Product											
01MW-16	Jul-02	No Sample Collected Due to Product											
01MW-16	Oct-02	No Sample Collected Due to Product											
01MW-16	Apr-03	< 1,010	*3.83*	< 0.926	*13,300*		4,100	75.5	227	754	na	na	na
01MW-16	Jul-04	No Sample Collected Due to Product											
01MW-17	Jul-01	<0.500	*0.884*	<0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	na
01MW-17	Oct-01	1.65	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-17	Jan-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-17	Apr-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-17	Jul-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	< 1.00	< 1.00
01MW-17	Oct-02	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-17	Jan-03	na	< 0.250	< 0.500	< 50.0		< 1.00	< 1.00	< 1.00	< 3.00	< 5.00	na	na
01MW-17	Apr-03	na	0.273	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-17	Aug-03	na	0.327	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-17	Jan-04	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-17	Apr-04	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-17	Jul-04	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	na	na
01MW-18	Aug-03	< 0.500	*1.12*	< 0.500	*7,160*		1,410	276	272	*1,010*	na	na	na
01MW-18	Jul-04	< 0.500	*0.676*	< 0.500	*10,700*		1,570	124	283	*1,360*	na	na	na
01MW-19	Jul-02	< 0.500	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00	na	2.88	< 1.00
01MW-19	Aug-03	< 0.500	*1.46*	< 0.500	*15,800*		3,070	1,390	562	*3,160*	na	na	na
01MW-19	Jul-04	1.32	*0.708*	< 0.500	*19,900*		2,610	945	522	*3,190*	na	na	na
01MW-20	Jul-02	< 0.500	< 0.250	< 0.500	*16,700*		1,640	1,390	468	*2,840*	na	3.45	< 1.00
01MW-20	Aug-03	< 0.500	< 0.250	< 0.500	132		4.74	1.08	6.67	6.85	na	na	na
01MW-20	Jul-04	< 0.500	< 0.250	< 0.500	573		13.2	3.86	21.9	29.5	na	na	na

Table 5-1. Cumulative Groundwater Results, July 2001 – July 2004, 2737 West Commodore Way (continued)

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	MTBE (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
Action Level		15[1]	0.5[2]	0.5[2]	800[3] 1,000[4]	5,300[5]	17,500[5]	32,000[5]	1,000[2]	20[2]	15[2]	15[2]
01MW-21	Jan-03	*24.2*	*1.64*	< 0.500	743	< 1.00	< 1.00	7.26	10.3	< 5.00	na	na
01MW-21	Apr-03	*26.8*	*4.47*	< 0.500	*930*	1.03	< 0.500	22.1	1.66	na	na	na
01MW-21	Aug-03	*30.4*	*3.21*	< 0.500	592	0.828	< 0.500	11.1	1.34	na	na	na
01MW-21	Jul-04	3.51	0.429	< 0.500	*986*	0.858	< 0.500	10.6	1.32	na	na	na
01MW-22	Jan-03	*400*	*1.57*	< 0.500	294	11	< 1.00	< 1.00	< 3.00	< 5.00	na	na
01MW-22	Aug-03	*160*	*5.08*	*1.32*	*892*	73.2	1.77	8.44	12	na	na	na
01MW-22	Jul-04	*191*	*1.09*	< 0.500	*1,340*	73.5	0.943	4.71	10.2	na	na	na
01MW-23	Apr-03	*198*[6]	na	na	na	na	na	na	na	na	na	na
01MW-23	Jul-04	*350*	*0.540*	< 0.500	*4,620*	917	10.0	61.4	139	na	na	na
01MW-24	Jan-03	*222*	*6.13*	< 0.500	*19,800*	*5,400*	< 50.0	211	827	< 5.00	na	na
01MW-24	Jul-04	< 0.500	*0.837*	< 0.500	*18,400*	*6,750*	35.0	261	816	na	na	na
01MW-25	Apr-03	< 75.0[6]	na	na	na	na	na	na	na	na	na	na
01MW-25	Aug-03	*181*	*13.0*	*1.67*	*15,700*	*6,670*	< 50.0	278	738	na	na	na
01MW-25	Jul-04	No Sample Collected Due to Product										
01MW-26	Jan-03	*33.2*	*1.38*	< 0.500	*4,180*	352	87.4	45.3	413	< 5.00	na	na
01MW-26	Apr-03	4.08	*0.967*	< 0.500	228	35.1	11.5	5.54	20.2	na	na	na
01MW-26	Aug-03	2.34	*1.40*	< 0.500	119	5.70	1.17	3.39	6.12	na	na	na
01MW-26	Jul-04	*40.5*	< 0.250	< 0.500	137	9.69	0.706	3.56	4.92	na	na	na
01MW-27	Jan-03	*46.4*	0.330	< 0.500	*11,300*	4,230	211	68.0	158	< 5.00	na	na
01MW-27	Apr-03	*56.9*	*1.98*	< 0.500	*15,500*	*6,090*	227	88.1	197	na	na	na
01MW-27	Aug-03	*79.4*	*3.17*	< 0.500	*14,800*	*6,180*	53.0	73.5	< 100	na	na	na
01MW-27	Jul-04	*50.7*	< 0.250	< 0.500	*10,900*	*6,220*	43.9	70.4	50.0	na	na	na

Table 5-1. Cumulative Groundwater Results, July 2001 – July 2004, 2737 West Commodore Way (continued)

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)	MTBE (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
Action Level		15[1]	0.5[2]	0.5[2]	800[3]	1,000[4]	5,300[5]	17,500[5]	32,000[5]	1,000[2]	20[2]	15[2]	15[2]
01MW-28	Apr-03	***24.6***	***5.02***	< 0.500	***28,400***		***6,390***	2,870	401	***2,250***	na	na	na
01MW-28A	Aug-03	***21.7***	***4.63***	< 0.500	***199,000***		3,670	1,410	448	***1,520***	na	na	na
01MW-28B	Aug-03	***22.0***	***4.12***	< 0.500	***210,000***		3,580	1,380	478	***1,680***	na	na	na
01MW-28A	Jul-04	2.44	***1.44***	< 0.500	***17,900***		***5,060***	1,910	343	***1,230***	na	na	na
01MW-28B	Jul-04	2.28	***1.68***	< 0.500	***18,400***		***5,030***	1,810	355	***1,250***	na	na	na
01MW-29	Apr-03	< 50	***9.51***	***0.689***	***18,600***		***6,160***	171	285	632	na	na	na
01MW-29	Jul-04	9.11	***14.3***	< 0.500	***17,800***		***5,410***	167	256	718	na	na	na

Abbreviations and acronyms:
mg/L – milligram per liter
µg/L – microgram per liter
MTCA – Model Toxics Control Act
NOAA – National Oceanic and Atmospheric Administration
na – no analysis requested
SQuiRT™ – Screening Quick Reference Table
< symbol indicates result is less than reporting limit (in parenths)

Notes:
Results above action levels in bold and italics
[1]NOAA SQuiRT™ value for freshwater continuous concentration
[2]MTCA Method A
[3] MTCA Method A gasoline range with benzene present
[4] MTCA Method A gasoline range without benzene present
[5] NOAA SQuiRT™ value for freshwater maximum concentration

Table 5-2. Cumulative Groundwater Results, July 2001 – July 2004, 2750 West Commodore Way

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
Action Level		15[1]	0.5[2]	0.5[2]	800[3] 1,000[4]	5,300[5]	17,500[5]	32,000[5]	1,000[2]	15[2]	15[2]
02MW-01	Jul-01	na	*0.500*	< 0.500	119	44.4	0.662	< 0.500	1.15	< 1.00	na
02MW-01	Oct-01	< 0.500	< 0.250	< 0.500	235	81.3	1.41	< 0.500	2.84	< 1.00	< 1.00
02MW-01	Jan-02	< 0.500	< 0.250	< 0.500	< 50.0	4.67	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-01	Apr-02	< 0.500	< 0.250	< 0.500	< 50.0	4.24	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-01	Jul-02	< 0.500	< 0.250	< 0.500	182	67.5	1.20	< 0.500	2.39	< 1.00	< 1.00
02MW-01	Oct-02	na	< 0.250	< 0.500	327	82.0	2.37	< 0.500	7.62	na	na
02MW-01	Jan-03	na	< 0.250	< 0.500	134	28.9	< 1.00	< 1.00	< 3.00	na	na
02MW-01	Apr-03	na	< 0.250	< 0.500	5.55	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-01	Aug-03	na	< 0.250	< 0.500	158	37.8	0.869	< 0.500	< 1.00	na	na
02MW-01	Oct-03	na	< 0.250	< 0.500	201	64.4	2.41	< 0.500	6.92	na	na
02MW-01	Jan-04	na	< 0.250	< 0.500	< 50.0	1.32	< 0.500	< 0.500	< 1.00	na	na
02MW-01	Apr-04	na	< 0.250	< 0.500	< 50.0	2.54	< 0.500	< 0.500	< 1.00	na	na
02MW-01	Jul-04	na	< 0.250	< 0.500	< 50.0	7.91	< 0.500	< 0.500	< 1.00	na	na
02MW-02	Jul-01	na	*0.679*	< 0.500	< 50	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	na
02MW-02	Oct-01	2.21	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-02	Jan-02	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-02	Apr-02	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-02	Jul-02	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-02	Oct-02	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-02	Jan-03	na	< 0.250	< 0.500	< 50.0	< 1.00	< 1.00	< 1.00	< 3.00	na	na
02MW-02	Apr-03	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-02	Aug-03	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-02	Oct-03	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-02	Jan-04	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-02	Apr-04	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-02	Jul-04	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-03	Jul-01	na	*0.619*	< 0.500	90.4	38.6	0.664	< 0.500	< 1.00	< 1.00	na
02MW-03	Oct-01	< 0.500	< 0.250	< 0.500	109	46.6	1.16	< 0.500	< 1.00	< 1.00	< 1.00
02MW-03	Jan-02	< 0.500	< 0.250	< 0.500	< 50.0	7.84	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-03	Apr-02	< 0.500	< 0.250	< 0.500	< 50.0	7.21	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-03	Jul-02	< 0.500	< 0.250	< 0.500	143	63.4	2.17	< 0.500	< 1.00	< 1.00	< 1.00
02MW-03	Oct-02	na	< 0.250	< 0.500	122	37.0	0.572	< 0.500	1.70	na	na
02MW-03	Jan-03	na	< 0.250	< 0.500	56.7	17.7	< 1.00	< 1.00	< 3.00	na	na
02MW-03	Apr-03	na	< 0.250	< 0.500	10.5	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-03	Aug-03	na	< 0.250	< 0.500	< 50.0	3.42	< 0.500	< 0.500	< 1.00	na	na
02MW-03	Oct-03	na	< 0.250	< 0.500	261	123	1.59	< 0.500	2.72	na	na
02MW-03	Jan-04	na	< 0.250	< 0.500	< 50.0	0.787	< 0.500	< 0.500	< 1.00	na	na
02MW-03	Apr-04	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-03	Jul-04	na	< 0.250	< 0.500	< 50.0	0.718	< 0.500	< 0.500	< 1.00	na	na
02MW-04	Jul-01	na	*1.41*	< 0.500	*4,270*	23.9	231	165	484	4.68	na
02MW-04A	Oct-01	< 0.500	< 0.250	< 0.500	*4,070*	21.4	262	285	594	6.50	6.06
02MW-04B	Oct-01	< 0.500	< 0.250	< 0.500	*3,890*	21.7	257	291	590	6.68	4.01
02MW-04A	Jan-02	< 0.500	< 0.250	< 0.500	*4,070*	21.4	262	285	594	4.35	3.24
02MW-04B	Jan-02	< 0.500	< 0.250	< 0.500	*3,890*	21.7	257	291	590	5.27	< 1.00
02MW-04A	Apr-02	< 0.500	< 0.250	< 0.500	*3,280*	19.1	172	255	525	5.34	2.88
02MW-04B	Apr-02	< 0.500	< 0.250	< 0.500	*3,440*	21.0	193	288	591	4.86	3.42
02MW-04A	Jul-02	< 0.500	< 0.250	< 0.500	*4,640*	23.8	165	330	558	5.54	3.68

Table 5-2. Cumulative Groundwater Results, July 2001 – July 2004, 2750 West Commodore Way (continued)

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
Action Level		15[1]	0.5[2]	0.5[2]	800[3] 1,000[4]	5,300[5]	17,500[5]	32,000[5]	1,000[2]	15[2]	15[2]
02MW-04B	Jul-02	< 0.500	< 0.250	< 0.500	*4,770*	21.3	178	362	612	5.32	2.91
02MW-04A	Oct-02	na	< 0.250	< 0.500	*3,200*	24.6	47.5	284	225	na	na
02MW-04B	Oct-02	na	< 0.250	< 0.500	*3,020*	24.6	45.9	288	226	na	na
02MW-04A	Jan-03	na	< 0.250	< 0.500	*4,720*	16.4	162	304	502	na	na
02MW-04B	Jan-03	na	< 0.250	< 0.500	*4,720*	15.0	170	294	542	na	na
02MW-04A	Apr-03	na	*0.555*	< 0.500	*7,130*	24.6	796	363	735	na	na
02MW-04B	Apr-03	na	0.462	< 0.500	*6,640*	21.7	187	351	710	na	na
02MW-04A	Aug-03	na	0.483	< 0.500	*4,610*	32.6	92.7	333	605	na	na
02MW-04B	Aug-03	na	0.416	< 0.500	*4,170*	29.0	81.3	299	526	na	na
02MW-04A	Oct-03	na	< 0.250	< 0.500	*2,720*	31.7	29.0	333	162	na	na
02MW-04B	Oct-03	na	< 0.250	< 0.500	*2,580*	33.6	28.6	316	163	na	na
02MW-04A	Jan-04	na	< 0.250	< 0.500	*4,190*	27.0	115	276	572	na	na
02MW-04B	Jan-04	na	< 0.250	< 0.500	*3,640*	23.9	105	253	522	na	na
02MW-04A	Apr-04	na	< 0.250	< 0.500	*12,200*	30.6	286	878	*2,030*	na	na
02MW-04B	Apr-04	na	< 0.250	< 0.500	*10,700*	17.5	265	741	*1,880*	na	na
02MW-04A	Jul-04	na	< 0.250	< 0.500	*4,800*	35.9	54.5	308	584	na	na
02MW-04B	Jul-04	na	< 0.250	< 0.500	*4,800*	34.2	54.5	305	570	na	na
02MW-05	Jul-01	na	*0.997*	< 0.500	51.8	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	na
02MW-05	Oct-01	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-05	Jan-02	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-05	Apr-02	< 0.500	< 0.250	< 0.500	295	1.20	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-05	Jul-02	< 0.500	< 0.250	< 0.500	102	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-05	Oct-02	na	< 0.250	< 0.500	61.6	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-05	Jan-03	na	< 0.250	< 0.500	191	< 1.00	< 1.00	1.42	< 3.00	na	na
02MW-05	Apr-03	na	0.280	< 0.500	608	1.71	< 0.500	19.1	< 1.00	na	na
02MW-05	Aug-03	na	0.271	< 0.500	63.8	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-05	Oct-03	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-05	Jan-04	na	< 0.250	< 0.500	326	< 0.500	< 0.500	1.03	< 1.00	na	na
02MW-05	Apr-04	na	< 0.250	< 0.500	364	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-05	Jul-04	na	< 0.250	< 0.500	209	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW06A	Jul-01	na	*0.923*	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	na
02MW06B	Jul-01	na	*0.897*	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	na
02MW-06	Oct-01	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-06	Jan-02	0.991	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-06	Apr-02	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-06	Jul-02	< 0.500	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-06	Oct-02	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-06	Jan-03	na	< 0.250	< 0.500	< 50.0	< 1.00	< 1.00	< 1.00	< 3.00	na	na
02MW-06	Apr-03	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-06	Aug-03	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-06	Oct-03	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-06	Jan-04	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-06	Apr-04	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-06	Jul-04	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na

Table 5-2. Cumulative Groundwater Results, July 2001 – July 2004, 2750 West Commodore Way (continued)

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)
Action Level		15[1/]	0.5[2/]	0.5[2/]	800[3/] | 1,000[4/]	5,300[5/]	17,500[5/]	32,000[5/]	1,000[2/]	15[2/]	15[2/]
02MW-07	Jul-01	na	0.417	< 0.500	244	< 0.500	< 0.500	< 0.500	2.79	< 1.00	na
02MW-07	Oct-01	2.15	< 0.250	< 0.500	69.7	< 0.500	< 0.500	< 0.500	< 1.00	< 1.00	< 1.00
02MW-07	Jan-02	1.64	< 0.250	< 0.500	92.5	< 0.500	< 0.500	< 0.500	1.47	< 1.00	< 1.00
02MW-07	Apr-02	< 0.500	< 0.250	< 0.500	251	< 0.500	< 0.500	0.655	6.96	< 1.00	< 1.00
02MW-07	Jul-02	< 0.500	< 0.250	< 0.500	242	< 0.500	< 0.500	< 0.500	2.71	< 1.00	< 1.00
02MW-07	Oct-02	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-07	Jan-03	na	< 0.250	< 0.500	146	< 1.00	< 1.00	< 1.00	< 3.00	na	na
02MW-07	Apr-03	na	< 0.250	< 0.500	177	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-07	Aug-03	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-07	Oct-03	na	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00	na	na
02MW-07	Jan-04	na	< 0.250	< 0.500	182	< 0.500	< 0.500	< 0.500	2.09	na	na
02MW-07	Apr-04	na	< 0.250	< 0.500	143	< 0.500	< 0.500	< 0.500	1.38	na	na
02MW-07	Jul-04	na	< 0.250	< 0.500	131	< 0.500	< 0.500	< 0.500	1.52	na	na

Abbreviations and acronyms:
mg/L – milligram per liter
µg/L – microgram per liter
MTCA – Model Toxics Control Act
NOAA – National Oceanic and Atmospheric Administration
na – no analysis requested
RPD – relative percent difference
SQuiRT™ – Screening Quick Reference Table
< symbol indicates result is less than reporting limit (in parenths)

Notes:
Results above action levels in bold and italics
[1/]NOAA SQuiRT™ value for freshwater continuous concentration
[2/]MTCA Method A
[3/] MTCA Method A gasoline range with benzene present
[4/] MTCA Method A gasoline range without benzene present
[5/] NOAA SQuiRT™ value for freshwater maximum concentration

APPENDIX A

LABORATORY DATA PACKAGES

www.ncalabs.com

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425.420.9200 fax 425.420.9210
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Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588
Anchorage 2000 W. International Airport Road, Suite A10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

27 July 2004

Bryan Graham
'etra Tech FW, Inc. - Bothell
12100 NE 195th St
Bothell, WA/USA 98011

RE: Time Oil-West Commodore Way

Enclosed are the results of analyses for samples received by the laboratory on 07/14/04 16:24. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Amar Gill
Project Manager

www.ncalabs.com

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	07/27/04 13:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01MW-07	B4G0357-01	Water	07/14/04 08:15	07/14/04 16:24
01MW-TB1	B4G0357-02	Water	07/14/04 08:00	07/14/04 16:24
02MW-02	B4G0357-03	Water	07/14/04 08:50	07/14/04 16:24
02MW-07	B4G0357-04	Water	07/14/04 09:10	07/14/04 16:24
02MW-01	B4G0357-05	Water	07/14/04 09:20	07/14/04 16:24
02MW-03	B4G0357-06	Water	07/14/04 09:35	07/14/04 16:24
02MW-05	B4G0357-07	Water	07/14/04 09:50	07/14/04 16:24
02MW-04A	B4G0357-08	Water	07/14/04 10:10	07/14/04 16:24
02MW-04B	B4G0357-09	Water	07/14/04 10:20	07/14/04 16:24
02MW-06	B4G0357-10	Water	07/14/04 10:30	07/14/04 16:24

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	07/27/04 13:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-07 (B4G0357-01) Water Sampled: 07/14/04 08:15 Received: 07/14/04 16:24									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G20003	07/20/04	07/20/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*101 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*94.2 %*	*68-140*			"	"	"	"	
01MW-TB1 (B4G0357-02) Water Sampled: 07/14/04 08:00 Received: 07/14/04 16:24									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G20003	07/20/04	07/20/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*98.5 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*90.2 %*	*68-140*			"	"	"	"	
02MW-02 (B4G0357-03) Water Sampled: 07/14/04 08:50 Received: 07/14/04 16:24									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G20003	07/20/04	07/20/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*100 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*91.0 %*	*68-140*			"	"	"	"	

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	07/27/04 13:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
02MW-07 (B4G0357-04) Water Sampled: 07/14/04 09:10 Received: 07/14/04 16:24									
Gasoline Range Hydrocarbons	**131**	50.0	ug/l	1	4G20003	07/20/04	07/20/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	**1.52**	1.00	"	"	"	"	"	"	1-06
Surrogate: 4-BFB (FID)	*106 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*91.2 %*	*68-140*			"	"	"	"	
02MW-01 (B4G0357-05) Water Sampled: 07/14/04 09:20 Received: 07/14/04 16:24									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G20003	07/20/04	07/20/04	NWTPH-Gx/8021B	
Benzene	**7.91**	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*100 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*90.2 %*	*68-140*			"	"	"	"	
02MW-03 (B4G0357-06) Water Sampled: 07/14/04 09:35 Received: 07/14/04 16:24									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G20003	07/20/04	07/20/04	NWTPH-Gx/8021B	
Benzene	**0.718**	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*98.8 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*91.5 %*	*68-140*			"	"	"	"	

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	07/27/04 13:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
02MW-05 (B4G0357-07) Water Sampled: 07/14/04 09:50 Received: 07/14/04 16:24									
Gasoline Range Hydrocarbons	**209**	50.0	ug/l	1	4G20003	07/20/04	07/20/04	NWTPH-Gx/8021B	G-02
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*95.2 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*92.1 %*	*68-140*			"	"	"	"	
02MW-04A (B4G0357-08) Water Sampled: 07/14/04 10:10 Received: 07/14/04 16:24									
Gasoline Range Hydrocarbons	**4800**	500	ug/l	10	4G20003	07/20/04	07/21/04	NWTPH-Gx/8021B	
Benzene	**35.9**	5.00	"	"	"	"	"	"	
Toluene	**54.5**	5.00	"	"	"	"	"	"	
Ethylbenzene	**308**	5.00	"	"	"	"	"	"	
Xylenes (total)	**584**	10.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*107 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*96.2 %*	*68-140*			"	"	"	"	
02MW-04B (B4G0357-09) Water Sampled: 07/14/04 10:20 Received: 07/14/04 16:24									
Gasoline Range Hydrocarbons	**4800**	250	ug/l	5	4G20003	07/20/04	07/20/04	NWTPH-Gx/8021B	
Benzene	**34.2**	2.50	"	"	"	"	"	"	
Toluene	**54.5**	2.50	"	"	"	"	"	"	
Ethylbenzene	**305**	2.50	"	"	"	"	"	"	
Xylenes (total)	**570**	5.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*124 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*99.2 %*	*68-140*			"	"	"	"	

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	07/27/04 13:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
2MW-06 (B4G0357-10) Water Sampled: 07/14/04 10:30 Received: 07/14/04 16:24									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G20003	07/20/04	07/20/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*98.8 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*91.5 %*	*68-140*			"	"	"	"	

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	07/27/04 13:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G20003: Prepared 07/20/04 Using EPA 5030B (P/T)										
Blank (4G20003-BLK1)										
Gasoline Range Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Surrogate: 4-BFB (FID)	*46.4*		"	*48.0*		*96.7*	*58-144*			
Surrogate: 4-BFB (PID)	*43.4*		"	*48.0*		*90.4*	*68-140*			
LCS (4G20003-BS1)										
Gasoline Range Hydrocarbons	515	50.0	ug/l	502		103	80-120			
Benzene	6.75	0.500	"	6.21		109	80-120			
Toluene	35.3	0.500	"	34.9		101	80-120			
Ethylbenzene	8.74	0.500	"	8.38		104	80-120			
Xylenes (total)	42.9	1.00	"	40.6		106	80-120			
Surrogate: 4-BFB (FID)	*50.5*		"	*48.0*		*105*	*58-144*			
Surrogate: 4-BFB (PID)	*42.8*		"	*48.0*		*89.2*	*68-140*			
LCS Dup (4G20003-BSD1)										
Gasoline Range Hydrocarbons	479	50.0	ug/l	502		95.4	80-120	7.24	25	
Benzene	6.55	0.500	"	6.21		105	80-120	3.01	25	
Toluene	34.2	0.500	"	34.9		98.0	80-120	3.17	25	
Ethylbenzene	8.40	0.500	"	8.38		100	80-120	3.97	25	
Xylenes (total)	40.8	1.00	"	40.6		100	80-120	5.02	25	
Surrogate: 4-BFB (FID)	*47.6*		"	*48.0*		*99.2*	*58-144*			
Surrogate: 4-BFB (PID)	*43.0*		"	*48.0*		*89.6*	*68-140*			
Matrix Spike (4G20003-MS1)					**Source: B4G0357-01**					
Gasoline Range Hydrocarbons	518	50.0	ug/l	502	44.6	94.3	58-129			
Benzene	7.28	0.500	"	6.21	ND	117	46-130			
Toluene	34.5	0.500	"	34.9	0.133	98.5	60-124			
Ethylbenzene	8.64	0.500	"	8.38	ND	103	56-141			
Xylenes (total)	41.9	1.00	"	40.6	ND	103	66-132			
Surrogate: 4-BFB (FID)	*50.8*		"	*48.0*		*106*	*58-144*			
Surrogate: 4-BFB (PID)	*43.4*		"	*48.0*		*90.4*	*68-140*			

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	07/27/04 13:09

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G20003: Prepared 07/20/04 Using EPA 5030B (P/T)										
Matrix Spike Dup (4G20003-MSD1)					**Source: B4G0357-01**					
Gasoline Range Hydrocarbons	494	50.0	ug/l	502	44.6	89.5	58-129	4.74	25	
Benzene	6.86	0.500	"	6.21	ND	110	46-130	5.94	40	
Toluene	32.9	0.500	"	34.9	0.133	93.9	60-124	4.75	40	
Ethylbenzene	8.08	0.500	"	8.38	ND	96.4	56-141	6.70	40	
Xylenes (total)	39.6	1.00	"	40.6	ND	97.5	66-132	5.64	40	
Surrogate: 4-BFB (FID)	*52.6*		"	*48.0*		*110*	*58-144*			
Surrogate: 4-BFB (PID)	*43.7*		"	*48.0*		*91.0*	*68-140*			

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12100 NE 195th St	Project Number: 2306	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	07/27/04 13:09

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G17007: Prepared 07/17/04 Using EPA 3510C										
Blank (4G17007-BLK1)										
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	*0.272*		"	*0.270*		*101*	*50-150*			
Surrogate: Octacosane	*0.179*		"	*0.195*		*91.8*	*50-150*			
LCS (4G17007-BS1)										
Diesel Range Hydrocarbons	1.47	0.250	mg/l	2.00		73.5	45-105			
Surrogate: 2-FBP	*0.266*		"	*0.270*		*98.5*	*50-150*			
LCS Dup (4G17007-BSD1)										
Diesel Range Hydrocarbons	1.62	0.250	mg/l	2.00		81.0	45-105	9.71	50	
Surrogate: 2-FBP	*0.264*		"	*0.270*		*97.8*	*50-150*			
Batch 4G23014: Prepared 07/23/04 Using EPA 3520C										
Blank (4G23014-BLK1)										
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	*0.203*		"	*0.270*		*75.2*	*50-150*			
Surrogate: Octacosane	*0.161*		"	*0.195*		*82.6*	*50-150*			
LCS (4G23014-BS1)										
Diesel Range Hydrocarbons	1.30	0.250	mg/l	2.00		65.0	45-105			
Surrogate: 2-FBP	*0.218*		"	*0.270*		*80.7*	*50-150*			
LCS Dup (4G23014-BSD1)										
Diesel Range Hydrocarbons	0.998	0.250	mg/l	2.00		49.9	45-105	26.3	50	
Surrogate: 2-FBP	*0.150*		"	*0.270*		*55.6*	*50-150*			

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	07/27/04 13:09

Notes and Definitions

G-02	The chromatogram for this sample does not resemble a typical gasoline pattern. Please refer to the sample chromatogram.
I-06	The analyte concentration may be artificially elevated due to coeluting compounds or components.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

North Creek Analytical - Bothell

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Amar Gill, Project Manager

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20332 Empire Ave Suite F-1, Bend, OR 99701-5711 541-383-9310 FAX 382-7588
3209 Denali St, Anchorage, AK 99503-4030 907-334-9200 FAX 334-9210

CHAIN OF CUSTODY REPORT

Work Order #: BAG0357

CLIENT: Time Oil Company
REPORT TO: Scott Sloan (cc BGraham@tlfwi)
ADDRESS: 2737 W Commodore Way, Seattle WA 98199
PHONE: 206 286 6457 FAX:

INVOICE TO: Same as left
P.O. NUMBER:

PROJECT NAME: Quarterly Groundwater Monitoring July04
PROJECT NUMBER: 2306
SAMPLED BY: E TOBEY & R. Weingarz

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [X] STD. [7] [5] [4] [3] [2] [1] [<1]
Petroleum Hydrocarbon Analyses: [X] STD. [4] [3] [2] [1] [<1]
[OTHER] Specify:
* Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE: HCl	PRESERVATIVE: HCl	REQUESTED ANALYSES: NWTPH Gx/BTEX	REQUESTED ANALYSES: NWTPH Dx	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	NCA WO ID
1 01MW-07	07/14/04 0815			X	X	W	5	-	01
2 01MW-TB1	07/14/04 0800			X		W	3	-	02
3 02MW-02	07/14/04 0850			X	X	W	5	-	03
4 02MW-07	07/14/04 0910			X	X	W	5	-	04
5 02MW-01	07/14/04 0920			X	X	W	5	-	05
6 02MW-03	07/14/04 0935			X	X	W	5	-	06
7 02MW-05	07/14/04 0950			X	X	W	5	-	07
8 02MW-04A	07/14/04 1010			X	X	W	5	-	08
9 02MW-04B	07/14/04 1020			X	X	W	5	-	09
10 02MW-06	07/14/04 1030			X	X	W	5	-	10

RELEASED BY: Ellen D Tobey	PRINT NAME: Ellen Tobey	FIRM: TTFWI	DATE: 7/14/04	TIME: 1624	
RECEIVED BY: Cathy Gamble	PRINT NAME: Cathy Gamble	FIRM: NCA	DATE: 7/19/04	TIME: 1624	
RELEASED BY:	PRINT NAME:	FIRM:	DATE:	TIME:	
RECEIVED BY:	PRINT NAME:	FIRM:	DATE:	TIME:	

ADDITIONAL REMARKS: Silica gel cleanup on diesel samples
TEMP:
COC REV 1/03
PAGE 1 OF 1

w/cs

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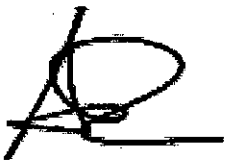
02 August 2004

Bryan Graham
Tetra Tech FW, Inc. - Bothell
12100 NE 195th St
Bothell, WA/USA 98011
RE: Time Oil-West Commodore Way

Enclosed are the results of analyses for samples received by the laboratory on 07/15/04 16:51. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amar Gill
Project Manager

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01MW-TB2	B4G0407-01	Water	07/15/04 07:30	07/15/04 16:51
01MW-02	B4G0407-02	Water	07/15/04 07:50	07/15/04 16:51
01MW-03	B4G0407-03	Water	07/15/04 08:10	07/15/04 16:51
01MW-09	B4G0407-04	Water	07/15/04 08:35	07/15/04 16:51
01MW-08	B4G0407-05	Water	07/15/04 09:05	07/15/04 16:51
01MW-19	B4G0407-06	Water	07/15/04 09:25	07/15/04 16:51
01MW-18	B4G0407-07	Water	07/15/04 09:50	07/15/04 16:51
01MW-04	B4G0407-08	Water	07/15/04 10:10	07/15/04 16:51

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-TB2 (B4G0407-01) Water Sampled: 07/15/04 07:30 Received: 07/15/04 16:51									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G20005	07/21/04	07/21/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*96.7 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*89.8 %*	*68-140*			"	"	"	"	
01MW-02 (B4G0407-02) Water Sampled: 07/15/04 07:50 Received: 07/15/04 16:51									
Gasoline Range Hydrocarbons	**9670**	2500	ug/l	50	4G20005	07/21/04	07/21/04	NWTPH-Gx/8021B	
Benzene	**3230**	25.0	"	"	"	"	"	"	
Toluene	**97.0**	25.0	"	"	"	"	"	"	
Ethylbenzene	**146**	25.0	"	"	"	"	"	"	
Xylenes (total)	**441**	50.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*100 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*92.3 %*	*68-140*			"	"	"	"	
01MW-03 (B4G0407-03) Water Sampled: 07/15/04 08:10 Received: 07/15/04 16:51									
Gasoline Range Hydrocarbons	**4500**	1000	ug/l	20	4G20005	07/21/04	07/21/04	NWTPH-Gx/8021B	
Benzene	**1130**	10.0	"	"	"	"	"	"	
Toluene	**60.8**	10.0	"	"	"	"	"	"	
Ethylbenzene	**41.4**	10.0	"	"	"	"	"	"	
Xylenes (total)	**82.5**	20.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*102 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*91.2 %*	*68-140*			"	"	"	"	

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
1MW-09 (B4G0407-04) Water Sampled: 07/15/04 08:35 Received: 07/15/04 16:51									
Gasoline Range Hydrocarbons	**7730**	2500	ug/l	50	4G20005	07/21/04	07/21/04	NWTPH-Gx/8021B	
Benzene	**1050**	25.0	"	"	"	"	"	"	
oluene	**48.0**	25.0	"	"	"	"	"	"	
thylbenzene	**232**	25.0	"	"	"	"	"	"	
Xylenes (total)	**942**	50.0	"	"	"	"	"	"	
urrogate: 4-BFB (FID)	*97.9 %*	*58-144*			"	"	"	"	
urrogate: 4-BFB (PID)	*91.7 %*	*68-140*			"	"	"	"	
01MW-08 (B4G0407-05) Water Sampled: 07/15/04 09:05 Received: 07/15/04 16:51									
asoline Range Hydrocarbons	ND	50.0	ug/l	1	4G20005	07/21/04	07/21/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
thylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*93.3 %*	*58-144*			"	"	"	"	
urrogate: 4-BFB (PID)	*90.6 %*	*68-140*			"	"	"	"	
01MW-19 (B4G0407-06) Water Sampled: 07/15/04 09:25 Received: 07/15/04 16:51									
Gasoline Range Hydrocarbons	**19900**	5000	ug/l	100	4G20005	07/21/04	07/21/04	NWTPH-Gx/8021B	
enzene	**2610**	50.0	"	"	"	"	"	"	
oluene	**945**	50.0	"	"	"	"	"	"	
Ethylbenzene	**522**	50.0	"	"	"	"	"	"	
ylenes (total)	**3190**	100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*99.6 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*92.7 %*	*68-140*			"	"	"	"	

North Creek Analytical - Bothell

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12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-18 (B4G0407-07) Water Sampled: 07/15/04 09:50 Received: 07/15/04 16:51									
Gasoline Range Hydrocarbons	**10700**	2500	ug/l	50	4G20005	07/21/04	07/21/04	NWTPH-Gx/8021B	
Benzene	**1570**	25.0	"	"	"	"	"	"	
Toluene	**124**	25.0	"	"	"	"	"	"	
Ethylbenzene	**283**	25.0	"	"	"	"	"	"	
Xylenes (total)	**1360**	50.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*102 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*92.9 %*	*68-140*			"	"	"	"	
01MW-04 (B4G0407-08) Water Sampled: 07/15/04 10:10 Received: 07/15/04 16:51									
Gasoline Range Hydrocarbons	**9820**	5000	ug/l	100	4G20005	07/21/04	07/21/04	NWTPH-Gx/8021B	
Benzene	**2380**	50.0	"	"	"	"	"	"	
Toluene	**570**	50.0	"	"	"	"	"	"	
Ethylbenzene	**236**	50.0	"	"	"	"	"	"	
Xylenes (total)	**828**	100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*96.0 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*90.6 %*	*68-140*			"	"	"	"	

North Creek Analytical - Bothell

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Amar Gill, Project Manager

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-02 (B4G0407-02) Water Sampled: 07/15/04 07:50 Received: 07/15/04 16:51									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*111 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*95.3 %*	*50-150*			"	"	"	"	
01MW-03 (B4G0407-03) Water Sampled: 07/15/04 08:10 Received: 07/15/04 16:51									
Diesel Range Hydrocarbons	**1.23**	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	D-08
Lube Oil Range Hydrocarbons	**0.938**	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*105 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*93.5 %*	*50-150*			"	"	"	"	
01MW-09 (B4G0407-04) Water Sampled: 07/15/04 08:35 Received: 07/15/04 16:51									
Diesel Range Hydrocarbons	**19.2**	2.50	mg/l	10	4G20014	07/20/04	07/22/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	1	"	"	07/21/04	"	
Surrogate: 2-FBP	*98.1 %*	*50-150*			"	"	*07/22/04*	"	
Surrogate: Octacosane	*106 %*	*50-150*			"	"	*07/21/04*	"	
01MW-08 (B4G0407-05) Water Sampled: 07/15/04 09:05 Received: 07/15/04 16:51									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*108 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*98.9 %*	*50-150*			"	"	"	"	
01MW-19 (B4G0407-06) Water Sampled: 07/15/04 09:25 Received: 07/15/04 16:51									
Diesel Range Hydrocarbons	**0.708**	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	D-08
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*110 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*96.2 %*	*50-150*			"	"	"	"	

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-18 (B4G0407-07) Water Sampled: 07/15/04 09:50 Received: 07/15/04 16:51									
Diesel Range Hydrocarbons	**0.676**	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	D-08
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*114 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*104 %*	*50-150*			"	"	"	"	
01MW-04 (B4G0407-08) Water Sampled: 07/15/04 10:10 Received: 07/15/04 16:51									
Diesel Range Hydrocarbons	**0.333**	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	D-08
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*114 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*95.2 %*	*50-150*			"	"	"	"	

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

Pentachlorophenol by GC/MS with Selected Ion Monitoring
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
)1MW-09 (B4G0407-04) Water Sampled: 07/15/04 08:35 Received: 07/15/04 16:51									
Pentachlorophenol	ND	0.500	ug/l	1	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*78.2 %*	*22-162*			"	"	"	"	
)1MW-19 (B4G0407-06) Water Sampled: 07/15/04 09:25 Received: 07/15/04 16:51									
Pentachlorophenol	**1.32**	0.500	ug/l	1	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*91.6 %*	*22-162*			"	"	"	"	
)1MW-18 (B4G0407-07) Water Sampled: 07/15/04 09:50 Received: 07/15/04 16:51									
Pentachlorophenol	ND	0.500	ug/l	1	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*87.6 %*	*22-162*			"	"	"	"	

North Creek Analytical - Bothell

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Amar Gill, Project Manager

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G20005: Prepared 07/21/04 Using EPA 5030B (P/T)										
Blank (4G20005-BLK1)										
Gasoline Range Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Surrogate: 4-BFB (FID)	*46.6*		"	*48.0*		*97.1*	*58-144*			
Surrogate: 4-BFB (PID)	*42.8*		"	*48.0*		*89.2*	*68-140*			
LCS (4G20005-BS1)										
Gasoline Range Hydrocarbons	464	50.0	ug/l	502		92.4	80-120			
Benzene	5.97	0.500	"	6.21		96.1	80-120			
Toluene	31.2	0.500	"	34.9		89.4	80-120			
Ethylbenzene	7.71	0.500	"	8.38		92.0	80-120			
Xylenes (total)	37.9	1.00	"	40.6		93.3	80-120			
Surrogate: 4-BFB (FID)	*51.5*		"	*48.0*		*107*	*58-144*			
Surrogate: 4-BFB (PID)	*43.5*		"	*48.0*		*90.6*	*68-140*			
LCS Dup (4G20005-BSD1)										
Gasoline Range Hydrocarbons	495	50.0	ug/l	502		98.6	80-120	6.47	25	
Benzene	6.51	0.500	"	6.21		105	80-120	8.65	25	
Toluene	34.0	0.500	"	34.9		97.4	80-120	8.59	25	
Ethylbenzene	8.41	0.500	"	8.38		100	80-120	8.68	25	
Xylenes (total)	41.1	1.00	"	40.6		101	80-120	8.10	25	
Surrogate: 4-BFB (FID)	*52.7*		"	*48.0*		*110*	*58-144*			
Surrogate: 4-BFB (PID)	*43.2*		"	*48.0*		*90.0*	*68-140*			
Matrix Spike (4G20005-MS1)					**Source: B4G0374-08**					
Gasoline Range Hydrocarbons	515	50.0	ug/l	502	27.1	97.2	58-129			
Benzene	6.53	0.500	"	6.21	ND	105	46-130			
Toluene	33.9	0.500	"	34.9	ND	97.1	60-124			
Ethylbenzene	8.34	0.500	"	8.38	ND	99.5	56-141			
Xylenes (total)	41.0	1.00	"	40.6	ND	101	66-132			
Surrogate: 4-BFB (FID)	*52.7*		"	*48.0*		*110*	*58-144*			
Surrogate: 4-BFB (PID)	*43.8*		"	*48.0*		*91.2*	*68-140*			

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G20005: Prepared 07/21/04 Using EPA 5030B (P/T)										
Matrix Spike Dup (4G20005-MSD1)					**Source: B4G0374-08**					
Gasoline Range Hydrocarbons	488	50.0	ug/l	502	27.1	91.8	58-129	5.38	25	
Benzene	6.69	0.500	"	6.21	ND	108	46-130	2.42	40	
Toluene	35.0	0.500	"	34.9	ND	100	60-124	3.19	40	
Ethylbenzene	8.56	0.500	"	8.38	ND	102	56-141	2.60	40	
Xylenes (total)	42.1	1.00	"	40.6	ND	104	66-132	2.65	40	
Surrogate: 4-BFB (FID)	*49.0*		"	*48.0*		*102*	*58-144*			
Surrogate: 4-BFB (PID)	*43.7*		"	*48.0*		*91.0*	*68-140*			

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G20014: Prepared 07/20/04 Using EPA 3520C										
Blank (4G20014-BLK1)										
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	*0.226*		"	*0.270*		*83.7*	*50-150*			
Surrogate: Octacosane	*0.187*		"	*0.195*		*95.9*	*50-150*			
LCS (4G20014-BS1)										
Diesel Range Hydrocarbons	1.26	0.250	mg/l	2.00		63.0	45-105			
Surrogate: 2-FBP	*0.181*		"	*0.270*		*67.0*	*50-150*			
LCS Dup (4G20014-BSD1)										
Diesel Range Hydrocarbons	1.64	0.250	mg/l	2.00		82.0	45-105	26.2	50	
Surrogate: 2-FBP	*0.308*		"	*0.270*		*114*	*50-150*			

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

Pentachlorophenol by GC/MS with Selected Ion Monitoring - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G22015: Prepared 07/22/04 Using EPA 3520C										
Blank (4G22015-BLK1)										
Pentachlorophenol	ND	0.500	ug/l							
Surrogate: 2,4,6-TBP	*37.0*		"	*50.0*		*74.0*	*22-162*			
LCS (4G22015-BS1)										
Pentachlorophenol	9.48	0.500	ug/l	20.0		47.4	20-128			
Surrogate: 2,4,6-TBP	*37.9*		"	*50.0*		*75.8*	*22-162*			
LCS Dup (4G22015-BSD1)										
Pentachlorophenol	14.0	0.500	ug/l	20.0		70.0	20-128	38.5	50	
Surrogate: 2,4,6-TBP	*42.4*		"	*50.0*		*84.8*	*22-162*			

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/02/04 13:31

Notes and Definitions

D-08	Results in the diesel organics range are primarily due to overlap from a gasoline range product.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

North Creek Analytical - Bothell

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CHAIN OF CUSTODY REPORT

Work Order #: B407407

CLIENT: Time Oil Company
REPORT TO: Scott Sloan (cc B Graham @TTFWI
ADDRESS: 2737 W. Commodore Way
Seattle WA 98199
PHONE: 206 286 6457 FAX:

INVOICE TO: Same as left
P.O. NUMBER:

PROJECT NAME: Quarterly Groundwater Monitoring July 04
PROJECT NUMBER: 2306.3312.0012.0004
SAMPLED BY: ETobey RWEINGARZ

TURNAROUND REQUEST
in Business Days *
Organic & Inorganic Analyses: [10] [7] [5] [4] [3] [2] [1] [<1] — STD.
Petroleum Hydrocarbon Analyses: [5] [4] [3] [2] [1] [<1] — STD.
[OTHER] Specify:
* Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE: HCl	HCl	—	REQUESTED ANALYSES: NWTPH-Gx/BTEX	NWTPH-Dx	PCP EPA 8270 SIM	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	NCA WO ID
1 01MW-TB2	7/15/04 0730				X			W	1	-	01
2 01MW-02	7/15/04 0750				X	X		W	5	-	02
3 01MW-03	7/15/04 0810				X	X		W	5	-	03
4 01MW-09	7/15/04 0835				X	X	X	W	7	-	04
5 01MW-08	7/15/04 0905				X	X		W	5	-	05
6 01MW-19	7/15/04 0925				X	X	X	W	7	-	06
7 01MW-18	7/15/04 0950				X	X	X	W	7	-	07
8 01MW-04	7/15/04 1010				X	X		W	5	-	08
9											
10											

RELEASED BY: Ellen Tobey — DATE: 7/15/04
PRINT NAME: Ellen Tobey — FIRM: TTFWI — TIME: 1651

RECEIVED BY: Tom Blankinship — DATE: 7/15/04
PRINT NAME: — FIRM: NCA — TIME: 1651

RELEASED BY: — DATE:
PRINT NAME: — FIRM: — TIME:

RECEIVED BY: — DATE:
PRINT NAME: — FIRM: — TIME:

ADDITIONAL REMARKS: Silica Gel Clean up on Diesel Samples — 3 coolers — TEMP: 3.2°C

COC REV 1/03

PAGE 1 OF 1

w/cs

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)3 August 2004

3ryan Graham
Tetra Tech FW, Inc. - Bothell
,2100 NE 195th St
3othell, WA/USA 98011

RE: Time Oil-West Commodore Way

:nclosed are the results of analyses for samples received by the laboratory on 07/16/04 15:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Amar Gill
Project Manager

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01MW-TB03	B4G0420-01	Water	07/16/04 07:40	07/16/04 15:20
01MW-11	B4G0420-02	Water	07/16/04 07:50	07/16/04 15:20
01MW-06	B4G0420-03	Water	07/16/04 08:15	07/16/04 15:20
01MW-26	B4G0420-04	Water	07/16/04 08:45	07/16/04 15:20
01MW-27	B4G0420-05	Water	07/16/04 09:10	07/16/04 15:20
01MW-01	B4G0420-06	Water	07/16/04 09:40	07/16/04 15:20
01MW-15	B4G0420-07	Water	07/16/04 10:05	07/16/04 15:20
01MW-20	B4G0420-08	Water	07/16/04 10:40	07/16/04 15:20

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-TB03 (B4G0420-01) Water Sampled: 07/16/04 07:40 Received: 07/16/04 15:20									
Benzene	ND	0.500	ug/l	1	4G21008	07/21/04	07/22/04	NWTPH-Gx/8021B	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (PID)	*100 %*	*68-140*			"	"	"	"	
01MW-TB03 (B4G0420-01RE1) Water Sampled: 07/16/04 07:40 Received: 07/16/04 15:20									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G22070	07/22/04	07/23/04	NWTPH-Gx/8021B	
Surrogate: 4-BFB (FID)	*86.5 %*	*58-144*			"	"	"	"	
01MW-11 (B4G0420-02) Water Sampled: 07/16/04 07:50 Received: 07/16/04 15:20									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G21008	07/21/04	07/21/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*107 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*101 %*	*68-140*			"	"	"	"	
01MW-06 (B4G0420-03) Water Sampled: 07/16/04 08:15 Received: 07/16/04 15:20									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G21008	07/21/04	07/21/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*97.3 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*102 %*	*68-140*			"	"	"	"	

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
1MW-26 (B4G0420-04) Water Sampled: 07/16/04 08:45 Received: 07/16/04 15:20									
Gasoline Range Hydrocarbons	**137**	50.0	ug/l	1	4G21008	07/21/04	07/21/04	NWTPH-Gx/8021B	
Benzene	**9.69**	0.500	"	"	"	"	"	"	
Toluene	**0.706**	0.500	"	"	"	"	"	"	
Ethylbenzene	**3.56**	0.500	"	"	"	"	"	"	
Xylenes (total)	**4.92**	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*97.3 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*95.0 %*	*68-140*			"	"	"	"	
01MW-27 (B4G0420-05) Water Sampled: 07/16/04 09:10 Received: 07/16/04 15:20									
Gasoline Range Hydrocarbons	**10900**	500	ug/l	10	4G21008	07/21/04	07/21/04	NWTPH-Gx/8021B	
Benzene	**6220**	50.0	"	100	"	"	07/22/04	"	
Toluene	**43.9**	5.00	"	10	"	"	07/21/04	"	
Ethylbenzene	**70.4**	5.00	"	"	"	"	"	"	
Xylenes (total)	**50.0**	10.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*96.9 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*100 %*	*68-140*			"	"	"	"	
01MW-01 (B4G0420-06) Water Sampled: 07/16/04 09:40 Received: 07/16/04 15:20									
Benzene	**3.66**	0.500	ug/l	1	4G21008	07/21/04	07/22/04	NWTPH-Gx/8021B	
Toluene	**0.766**	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	**1.80**	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (PID)	*98.8 %*	*68-140*			"	"	"	"	
01MW-01 (B4G0420-06RE1) Water Sampled: 07/16/04 09:40 Received: 07/16/04 15:20									
Gasoline Range Hydrocarbons	**55.9**	50.0	ug/l	1	4G22070	07/22/04	07/23/04	NWTPH-Gx/8021B	
Surrogate: 4-BFB (FID)	*80.2 %*	*58-144*			"	"	"	"	

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-15 (B4G0420-07) Water Sampled: 07/16/04 10:05 Received: 07/16/04 15:20									
Benzene	ND	0.500	ug/l	1	4G21008	07/21/04	07/22/04	NWTPH-Gx/8021B	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (PID)	*102 %*	*68-140*			"	"	"	"	
01MW-15 (B4G0420-07RE1) Water Sampled: 07/16/04 10:05 Received: 07/16/04 15:20									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G22070	07/22/04	07/23/04	NWTPH-Gx/8021B	
Surrogate: 4-BFB (FID)	*80.4 %*	*58-144*			"	"	"	"	
01MW-20 (B4G0420-08) Water Sampled: 07/16/04 10:40 Received: 07/16/04 15:20									
Benzene	**13.2**	0.500	ug/l	1	4G21008	07/21/04	07/22/04	NWTPH-Gx/8021B	
Toluene	**3.86**	0.500	"	"	"	"	"	"	
Ethylbenzene	**21.9**	0.500	"	"	"	"	"	"	
Xylenes (total)	**29.5**	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (PID)	*107 %*	*68-140*			"	"	"	"	
01MW-20 (B4G0420-08RE1) Water Sampled: 07/16/04 10:40 Received: 07/16/04 15:20									
Gasoline Range Hydrocarbons	**573**	50.0	ug/l	1	4G22070	07/22/04	07/23/04	NWTPH-Gx/8021B	
Surrogate: 4-BFB (FID)	*110 %*	*58-144*			"	"	"	"	

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
1MW-11 (B4G0420-02) Water Sampled: 07/16/04 07:50 Received: 07/16/04 15:20									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
urrogate: 2-FBP	*107 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*101 %*	*50-150*			"	"	"	"	
1MW-06 (B4G0420-03) Water Sampled: 07/16/04 08:15 Received: 07/16/04 15:20									
)iesel Range Hydrocarbons	ND	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
urrogate: 2-FBP	*96.5 %*	*50-150*			"	"	"	"	
urrogate: Octacosane	*84.0 %*	*50-150*			"	"	"	"	
01MW-26 (B4G0420-04) Water Sampled: 07/16/04 08:45 Received: 07/16/04 15:20									
)iesel Range Hydrocarbons	ND	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	
ube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*100 %*	*50-150*			"	"	"	"	
urrogate: Octacosane	*97.9 %*	*50-150*			"	"	"	"	
1MW-27 (B4G0420-05) Water Sampled: 07/16/04 09:10 Received: 07/16/04 15:20									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	
ube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
urrogate: 2-FBP	*100 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*83.3 %*	*50-150*			"	"	"	"	
1MW-01 (B4G0420-06) Water Sampled: 07/16/04 09:40 Received: 07/16/04 15:20									
)iesel Range Hydrocarbons	ND	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
urrogate: 2-FBP	*93.2 %*	*50-150*			"	"	"	"	
urrogate: Octacosane	*87.4 %*	*50-150*			"	"	"	"	

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-15 (B4G0420-07) Water Sampled: 07/16/04 10:05 Received: 07/16/04 15:20									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*83.7 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*76.3 %*	*50-150*			"	"	"	"	
01MW-20 (B4G0420-08) Water Sampled: 07/16/04 10:40 Received: 07/16/04 15:20									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4G20014	07/20/04	07/21/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*93.8 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*88.7 %*	*50-150*			"	"	"	"	

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Pentachlorophenol by GC/MS with Selected Ion Monitoring
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-06 (B4G0420-03) Water Sampled: 07/16/04 08:15 Received: 07/16/04 15:20									
Pentachlorophenol	ND	0.500	ug/l	1	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*91.1 %*	*22-162*			"	"	"	"	
01MW-26 (B4G0420-04) Water Sampled: 07/16/04 08:45 Received: 07/16/04 15:20									
Pentachlorophenol	**40.5**	0.500	ug/l	1	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*94.0 %*	*22-162*			"	"	"	"	
01MW-27 (B4G0420-05) Water Sampled: 07/16/04 09:10 Received: 07/16/04 15:20									
Pentachlorophenol	**50.7**	0.500	ug/l	1	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*95.8 %*	*22-162*			"	"	"	"	
01MW-01 (B4G0420-06) Water Sampled: 07/16/04 09:40 Received: 07/16/04 15:20									
Pentachlorophenol	**8.94**	0.500	ug/l	1	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*93.2 %*	*22-162*			"	"	"	"	
01MW-15 (B4G0420-07) Water Sampled: 07/16/04 10:05 Received: 07/16/04 15:20									
Pentachlorophenol	ND	0.500	ug/l	1	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*85.5 %*	*22-162*			"	"	"	"	
01MW-20 (B4G0420-08) Water Sampled: 07/16/04 10:40 Received: 07/16/04 15:20									
Pentachlorophenol	ND	0.500	ug/l	1	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*81.5 %*	*22-162*			"	"	"	"	

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G21008: Prepared 07/21/04 Using EPA 5030B (P/T)										
Blank (4G21008-BLK1)										
Gasoline Range Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Surrogate: 4-BFB (FID)	*42.7*		"	*48.0*		*89.0*	*58-144*			
Surrogate: 4-BFB (PID)	*48.7*		"	*48.0*		*101*	*68-140*			
LCS (4G21008-BS1)										
Gasoline Range Hydrocarbons	490	50.0	ug/l	500		98.0	80-120			
Benzene	6.17	0.500	"	6.20		99.5	80-120			
Toluene	32.9	0.500	"	34.8		94.5	80-120			
Ethylbenzene	8.08	0.500	"	8.35		96.8	80-120			
Xylenes (total)	39.3	1.00	"	40.5		97.0	80-120			
Surrogate: 4-BFB (FID)	*52.4*		"	*48.0*		*109*	*58-144*			
Surrogate: 4-BFB (PID)	*48.5*		"	*48.0*		*101*	*68-140*			
LCS Dup (4G21008-BSD1)										
Gasoline Range Hydrocarbons	507	50.0	ug/l	500		101	80-120	3.41	25	
Benzene	6.19	0.500	"	6.20		99.8	80-120	0.324	25	
Toluene	32.7	0.500	"	34.8		94.0	80-120	0.610	25	
Ethylbenzene	8.20	0.500	"	8.35		98.2	80-120	1.47	25	
Xylenes (total)	40.0	1.00	"	40.5		98.8	80-120	1.77	25	
Surrogate: 4-BFB (FID)	*54.7*		"	*48.0*		*114*	*58-144*			
Surrogate: 4-BFB (PID)	*47.8*		"	*48.0*		*99.6*	*68-140*			
Matrix Spike (4G21008-MS1)					**Source: B4G0428-01**					
Gasoline Range Hydrocarbons	513	50.0	ug/l	500	19.7	98.7	58-129			
Benzene	5.25	0.500	"	6.20	ND	84.7	46-130			
Toluene	28.9	0.500	"	34.8	0.111	82.7	60-124			
Ethylbenzene	6.93	0.500	"	8.35	ND	83.0	56-141			
Xylenes (total)	33.3	1.00	"	40.5	ND	82.2	66-132			
Surrogate: 4-BFB (FID)	*47.2*		"	*48.0*		*98.3*	*58-144*			
Surrogate: 4-BFB (PID)	*35.2*		"	*48.0*		*73.3*	*68-140*			

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G21008: Prepared 07/21/04 Using EPA 5030B (P/T)										
Matrix Spike Dup (4G21008-MSD1)					**Source: B4G0428-01**					
Gasoline Range Hydrocarbons	469	50.0	ug/l	500	19.7	89.9	58-129	8.96	25	
Benzene	5.22	0.500	"	6.20	ND	84.2	46-130	0.573	40	
Toluene	29.3	0.500	"	34.8	0.111	83.9	60-124	1.37	40	
Ethylbenzene	6.81	0.500	"	8.35	ND	81.6	56-141	1.75	40	
Xylenes (total)	33.2	1.00	"	40.5	ND	82.0	66-132	0.301	40	
Surrogate: 4-BFB (FID)	*44.6*		"	*48.0*		*92.9*	*58-144*			
Surrogate: 4-BFB (PID)	*35.3*		"	*48.0*		*73.5*	*68-140*			
Batch 4G22070: Prepared 07/22/04 Using EPA 5030B (P/T)										
Blank (4G22070-BLK1)										
Gasoline Range Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Surrogate: 4-BFB (FID)	*37.3*		"	*48.0*		*77.7*	*58-144*			
Surrogate: 4-BFB (PID)	*39.3*		"	*48.0*		*81.9*	*68-140*			
LCS (4G22070-BS1)										
Gasoline Range Hydrocarbons	588	50.0	ug/l	502		117	80-120			
Benzene	5.31	0.500	"	6.21		85.5	80-120			
Toluene	29.1	0.500	"	34.9		83.4	80-120			
Ethylbenzene	6.92	0.500	"	8.38		82.6	80-120			
Xylenes (total)	33.7	1.00	"	40.6		83.0	80-120			
Surrogate: 4-BFB (FID)	*47.7*		"	*48.0*		*99.4*	*58-144*			
Surrogate: 4-BFB (PID)	*34.1*		"	*48.0*		*71.0*	*68-140*			

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G22070: Prepared 07/22/04 Using EPA 5030B (P/T)										
LCS Dup (4G22070-BSD1)										
Gasoline Range Hydrocarbons	563	50.0	ug/l	502		112	80-120	4.34	25	
Benzene	5.52	0.500	"	6.21		88.9	80-120	3.88	25	
Toluene	30.5	0.500	"	34.9		87.4	80-120	4.70	25	
Ethylbenzene	7.25	0.500	"	8.38		86.5	80-120	4.66	25	
Xylenes (total)	35.1	1.00	"	40.6		86.5	80-120	4.07	25	
Surrogate: 4-BFB (FID)	*44.5*		"	*48.0*		*92.7*	*58-144*			
Surrogate: 4-BFB (PID)	*34.4*		"	*48.0*		*71.7*	*68-140*			
Matrix Spike (4G22070-MS1)					**Source: B4G0433-13**					
Gasoline Range Hydrocarbons	464	50.0	ug/l	502	17.0	89.0	58-129			
Benzene	5.56	0.500	"	6.21	ND	89.5	46-130			
Toluene	31.0	0.500	"	34.9	0.536	87.3	60-124			
Ethylbenzene	7.23	0.500	"	8.38	ND	86.3	56-141			
Xylenes (total)	35.3	1.00	"	40.6	ND	86.9	66-132			
Surrogate: 4-BFB (FID)	*39.0*		"	*48.0*		*81.2*	*58-144*			
Surrogate: 4-BFB (PID)	*34.5*		"	*48.0*		*71.9*	*68-140*			
Matrix Spike Dup (4G22070-MSD1)					**Source: B4G0433-13**					
Gasoline Range Hydrocarbons	485	50.0	ug/l	502	17.0	93.2	58-129	4.43	25	
Benzene	5.20	0.500	"	6.21	ND	83.7	46-130	6.69	40	
Toluene	29.2	0.500	"	34.9	0.536	82.1	60-124	5.98	40	
Ethylbenzene	6.80	0.500	"	8.38	ND	81.1	56-141	6.13	40	
Xylenes (total)	33.2	1.00	"	40.6	ND	81.8	66-132	6.13	40	
Surrogate: 4-BFB (FID)	*49.0*		"	*48.0*		*102*	*58-144*			
Surrogate: 4-BFB (PID)	*36.0*		"	*48.0*		*75.0*	*68-140*			

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G20014: Prepared 07/20/04 Using EPA 3520C										
Blank (4G20014-BLK1)										
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	*0.226*		"	*0.270*		*83.7*	*50-150*			
Surrogate: Octacosane	*0.187*		"	*0.195*		*95.9*	*50-150*			
LCS (4G20014-BS1)										
Diesel Range Hydrocarbons	1.26	0.250	mg/l	2.00		63.0	45-105			
Surrogate: 2-FBP	*0.181*		"	*0.270*		*67.0*	*50-150*			
LCS Dup (4G20014-BSD1)										
Diesel Range Hydrocarbons	1.64	0.250	mg/l	2.00		82.0	45-105	26.2	50	
Surrogate: 2-FBP	*0.308*		"	*0.270*		*114*	*50-150*			

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Pentachlorophenol by GC/MS with Selected Ion Monitoring - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G22015: Prepared 07/22/04 Using EPA 3520C										
Blank (4G22015-BLK1)										
Pentachlorophenol	ND	0.500	ug/l							
Surrogate: 2,4,6-TBP	*37.0*		"	*50.0*		*74.0*	*22-162*			
LCS (4G22015-BS1)										
Pentachlorophenol	9.48	0.500	ug/l	20.0		47.4	20-128			
Surrogate: 2,4,6-TBP	*37.9*		"	*50.0*		*75.8*	*22-162*			
LCS Dup (4G22015-BSD1)										
Pentachlorophenol	14.0	0.500	ug/l	20.0		70.0	20-128	38.5	50	
Surrogate: 2,4,6-TBP	*42.4*		"	*50.0*		*84.8*	*22-162*			

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/03/04 09:42

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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CHAIN OF CUSTODY REPORT

Work Order #: BAG0420

CLIENT: Time Oil Company

REPORT TO: Scott Sloan (cc BGraham @ TTFWI)
ADDRESS: 2737 W. Commodore Way
Seattle WA 98199
PHONE: 206 286 6457 FAX:

INVOICE TO: Same as Left

P.O. NUMBER:

PROJECT NAME: Quarterly Groundwater Monitoring July04
PROJECT NUMBER: 2306.3312.0012.0004
SAMPLED BY: E Tobey RWEINGARZ

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [10] STD. [7] [5] [4] [3] [2] [1] [<1]
Petroleum Hydrocarbon Analyses: [5] STD. [4] [3] [2] [1] [<1]
[OTHER] Specify:

* Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE: HCl	HCl	-	REQUESTED ANALYSES: NWTPH Gx/BTEX	NWTPH Dx	PCP EPA 8270 SIM	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	NCA WO ID
1 OIMW-TB03	7/16/04 0740				X			W	1	-	01
2 OIMW-11	7/16/04 0750				X	X		W	5	-	02
3 OIMW-16	7/16/04 0815				X	X	X	W	7	-	03
4 OIMW-26	7/16/04 0845				X	X	X	W	7	-	04
5 OIMW-27	7/16/04 0910				X	X	X	W	7	-	05
6 OIMW-01	7/16/04 0940				X	X	X	W	7	-	06
7 OIMW-15	7/16/04 1005				X	X	X	W	7	-	07
8 OIMW-20	7/16/04 1040				X	X	X	W	7	-	08
9											
10											

Samples were not @2-6° upon receipt!

RELEASED BY: Ellen D Tobey	DATE: 7/16/04	RECEIVED BY: Tom Blankinship	DATE: 7/16/04
PRINT NAME: Ellen D Tobey	FIRM: TTFWI	TIME: 1520	PRINT NAME: Blankinship	FIRM: NCA	TIME: 1520
RELEASED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME:	FIRM:	TIME:

ADDITIONAL REMARKS: Silica Gel Clean up on Diesel Samples (3 coolers)

TEMP: 8.5 w/cs

COC REV 1/03

PAGE 1 OF 1

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17 August 2004

Bryan Graham
Tetra Tech FW, Inc. - Bothell
12100 NE 195th St
Bothell, WA/USA 98011
RE: Time Oil-West Commodore Way

Enclosed are the results of analyses for samples received by the laboratory on 07/19/04 16:34. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Amar Gill
Project Manager



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CASE NARRATIVE for B4G0467

Client: Tetra Tech FW, Inc.
Project Manager: Bryan Graham
Project Name: Time Oil West Commodore Way
Project Number: 2306.3312.0012.0004

1.0 DESCRIPTION OF CASE

Four (4) water samples were submitted for the analysis of:

- Gasoline Hydrocarbons and BTEX by NWTPH-G and 8021B
- Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
- Pentachlorophenol by GC/MS with Selective Ion Monitoring

2.0 COMMENTS ON SAMPLE RECEIPT

The sample was received 19th July 2004 at a temperature of 5.3°C and logged in 20th July 2004.

3.0 PREPARATION AND ANALYSIS

Gasoline Hydrocarbons and BTEX by NWTPH-G and 8021B
No additional anomalies or discrepancies were associated with this analysis other than those already qualified in the data.

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
The samples were initially extracted into analytical batch, 4G21010. During preparation a portion of the Blank Spike Duplicate (BSD) extract was lost. Upon analysis low spike and surrogate recoveries were observed in the BSD along with a high Relative Percent Difference (RPD) from the batch Blank Spike (BS). Since the BSD was the only indicator for batch extraction precision re-extraction was recommended.
The samples were re-extracted within method established hold times in analytical batch 4G27027. Both surrogates in the analytical batch Blank were below the method established control limits. The Relative Percent Difference (RPD) for the Diesel Range Hydrocarbon spikes was above the method established control limit. The project sample surrogates were within control limits but due to the other analytical batch specific issues the samples were re-extracted. The samples were re-extracted into analytical batch 4H03067 outside the method established hold time. All batch

Amar Gill
Project Manager
North Creek Analytical

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CASE NARRATIVE for B4G0467

QC surrogate and spike recoveries were within control limits in analytical batch 4H03067. Both the original and re-extracted sample results were reported for client review. No additional anomalies or discrepancies were associated with this analysis other than those already qualified in the data.

Pentachlorophenol by GC/MS with Selective Ion Monitoring

No additional anomalies or discrepancies were associated with this analysis other than those already qualified in the data.

Amar Gill
Project Manager
North Creek Analytical

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01MW-TB04	B4G0467-01	Water	07/19/04 08:00	07/19/04 16:34
01MW-29	B4G0467-02	Water	07/19/04 08:35	07/19/04 16:34
01MW-28A	B4G0467-03	Water	07/19/04 08:55	07/19/04 16:34
01MW-28B	B4G0467-04	Water	07/19/04 09:05	07/19/04 16:34

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-TB04 (B4G0467-01) Water Sampled: 07/19/04 08:00 Received: 07/19/04 16:34									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G25003	07/25/04	07/25/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*94.2 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*97.9 %*	*68-140*			"	"	"	"	
01MW-29 (B4G0467-02) Water Sampled: 07/19/04 08:35 Received: 07/19/04 16:34									
Gasoline Range Hydrocarbons	**17800**	5000	ug/l	100	4G25003	07/25/04	07/25/04	NWTPH-Gx/8021B	
Benzene	**5410**	50.0	"	"	"	"	"	"	
Toluene	**167**	50.0	"	"	"	"	"	"	
Ethylbenzene	**256**	50.0	"	"	"	"	"	"	
Xylenes (total)	**718**	100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*100 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*99.8 %*	*68-140*			"	"	"	"	
01MW-28A (B4G0467-03) Water Sampled: 07/19/04 08:55 Received: 07/19/04 16:34									
Gasoline Range Hydrocarbons	**17900**	1000	ug/l	20	4G25003	07/25/04	07/25/04	NWTPH-Gx/8021B	
Benzene	**5060**	50.0	"	100	"	"	07/25/04	"	
Toluene	**1910**	10.0	"	20	"	"	07/25/04	"	
Ethylbenzene	**343**	10.0	"	"	"	"	"	"	
Xylenes (total)	**1230**	20.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*104 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*107 %*	*68-140*			"	"	"	"	

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-28B (B4G0467-04) Water Sampled: 07/19/04 09:05 Received: 07/19/04 16:34									
Gasoline Range Hydrocarbons	**18400**	500	ug/l	10	4G25003	07/25/04	07/25/04	NWTPH-Gx/8021B	
Benzene	**5030**	50.0	"	100	"	"	07/25/04	"	
Toluene	**1810**	50.0	"	"	"	"	"	"	
Ethylbenzene	**355**	5.00	"	10	"	"	07/25/04	"	
Xylenes (total)	**1250**	10.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*99.8 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*111 %*	*68-140*			"	"	"	"	

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-29 (B4G0467-02) Water Sampled: 07/19/04 08:35 Received: 07/19/04 16:34									X
Diesel Range Hydrocarbons	**11.1**	2.50	mg/l	10	4G21010	07/21/04	07/23/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	1	"	"	07/22/04	"	
Surrogate: 2-FBP	*%*	*50-150*			"	"	*07/23/04*	"	*S-02*
Surrogate: Octacosane	*90.8 %*	*50-150*			"	"	*07/22/04*	"	
01MW-29 (B4G0467-02RE1) Water Sampled: 07/19/04 08:35 Received: 07/19/04 16:34									X
Diesel Range Hydrocarbons	**14.3**	2.50	mg/l	10	4G27027	07/27/04	07/31/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	5.00	"	"	"	"	"	"	
Surrogate: 2-FBP	*135 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*76.4 %*	*50-150*			"	"	"	"	
01MW-29 (B4G0467-02RE2) Water Sampled: 07/19/04 08:35 Received: 07/19/04 16:34									X
Diesel Range Hydrocarbons	**11.3**	2.50	mg/l	10	4H03067	08/03/04	08/10/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	5.00	"	"	"	"	"	"	
Surrogate: 2-FBP	*92.5 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*93.5 %*	*50-150*			"	"	"	"	
01MW-28A (B4G0467-03) Water Sampled: 07/19/04 08:55 Received: 07/19/04 16:34									X
Diesel Range Hydrocarbons	**0.763**	0.250	mg/l	1	4G21010	07/21/04	07/22/04	NWTPH-Dx	A-01
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*88.6 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*91.3 %*	*50-150*			"	"	"	"	
01MW-28A (B4G0467-03RE1) Water Sampled: 07/19/04 08:55 Received: 07/19/04 16:34									X
Diesel Range Hydrocarbons	**1.43**	0.250	mg/l	1	4G27027	07/27/04	07/29/04	NWTPH-Dx	A-01
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*102 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*84.8 %*	*50-150*			"	"	"	"	

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Amar Gill, Project Manager

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-28A (B4G0467-03RE2) Water Sampled: 07/19/04 08:55 Received: 07/19/04 16:34									X
Diesel Range Hydrocarbons	**1.44**	0.250	mg/l	1	4H03067	08/03/04	08/10/04	NWTPH-Dx	A-01
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*110 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*108 %*	*50-150*			"	"	"	"	
01MW-28B (B4G0467-04) Water Sampled: 07/19/04 09:05 Received: 07/19/04 16:34									X
Diesel Range Hydrocarbons	**0.402**	0.250	mg/l	1	4G21010	07/21/04	07/22/04	NWTPH-Dx	A-01
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*58.4 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*76.1 %*	*50-150*			"	"	"	"	
01MW-28B (B4G0467-04RE1) Water Sampled: 07/19/04 09:05 Received: 07/19/04 16:34									X
Diesel Range Hydrocarbons	**1.68**	0.250	mg/l	1	4G27027	07/27/04	08/01/04	NWTPH-Dx	A-01
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*161 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*123 %*	*50-150*			"	"	"	"	
01MW-28B (B4G0467-04RE2) Water Sampled: 07/19/04 09:05 Received: 07/19/04 16:34									X
Diesel Range Hydrocarbons	**0.888**	0.250	mg/l	1	4H03067	08/03/04	08/10/04	NWTPH-Dx	A-01
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*105 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*98.4 %*	*50-150*			"	"	"	"	

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Pentachlorophenol by GC/MS with Selected Ion Monitoring
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-29 (B4G0467-02) Water Sampled: 07/19/04 08:35 Received: 07/19/04 16:34									
Pentachlorophenol	**9.11**	2.50	ug/l	5	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*94.1 %*	*22-162*			"	"	"	"	
01MW-28A (B4G0467-03) Water Sampled: 07/19/04 08:55 Received: 07/19/04 16:34									
Pentachlorophenol	**2.44**	0.500	ug/l	1	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*78.0 %*	*22-162*			"	"	"	"	
01MW-28B (B4G0467-04) Water Sampled: 07/19/04 09:05 Received: 07/19/04 16:34									
Pentachlorophenol	**2.28**	0.500	ug/l	1	4G22015	07/22/04	07/30/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*82.2 %*	*22-162*			"	"	"	"	

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G25003: Prepared 07/25/04 Using EPA 5030B (P/T)										
Blank (4G25003-BLK1)										
Gasoline Range Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Surrogate: 4-BFB (FID)	*37.5*		"	*48.0*		*78.1*	*58-144*			
Surrogate: 4-BFB (PID)	*47.4*		"	*48.0*		*98.8*	*68-140*			
LCS (4G25003-BS1)										
Gasoline Range Hydrocarbons	597	50.0	ug/l	500		119	80-120			
Benzene	6.36	0.500	"	6.20		103	80-120			
Toluene	33.3	0.500	"	34.8		95.7	80-120			
Ethylbenzene	8.43	0.500	"	8.35		101	80-120			
Xylenes (total)	39.9	1.00	"	40.5		98.5	80-120			
Surrogate: 4-BFB (FID)	*51.1*		"	*48.0*		*106*	*58-144*			
Surrogate: 4-BFB (PID)	*45.9*		"	*48.0*		*95.6*	*68-140*			
LCS Dup (4G25003-BSD1)										
Gasoline Range Hydrocarbons	567	50.0	ug/l	500		113	80-120	5.15	25	
Benzene	6.46	0.500	"	6.20		104	80-120	1.56	25	
Toluene	33.6	0.500	"	34.8		96.6	80-120	0.897	25	
Ethylbenzene	8.44	0.500	"	8.35		101	80-120	0.119	25	
Xylenes (total)	40.2	1.00	"	40.5		99.3	80-120	0.749	25	
Surrogate: 4-BFB (FID)	*52.1*		"	*48.0*		*109*	*58-144*			
Surrogate: 4-BFB (PID)	*47.1*		"	*48.0*		*98.1*	*68-140*			
Matrix Spike (4G25003-MS1)					**Source: B4G0367-03**					
Gasoline Range Hydrocarbons	512	50.0	ug/l	500	39.0	94.6	58-129			
Benzene	6.57	0.500	"	6.20	ND	106	46-130			
Toluene	33.6	0.500	"	34.8	0.262	95.8	60-124			
Ethylbenzene	8.46	0.500	"	8.35	0.167	99.3	56-141			
Xylenes (total)	40.5	1.00	"	40.5	ND	100	66-132			
Surrogate: 4-BFB (FID)	*46.8*		"	*48.0*		*97.5*	*58-144*			
Surrogate: 4-BFB (PID)	*47.3*		"	*48.0*		*98.5*	*68-140*			

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G25003: Prepared 07/25/04 Using EPA 5030B (P/T)										
Matrix Spike Dup (4G25003-MSD1)					**Source: B4G0367-03**					
Gasoline Range Hydrocarbons	510	50.0	ug/l	500	39.0	94.2	58-129	0.391	25	
Benzene	6.48	0.500	"	6.20	ND	105	46-130	1.38	40	
Toluene	33.5	0.500	"	34.8	0.262	95.5	60-124	0.298	40	
Ethylbenzene	8.37	0.500	"	8.35	0.167	98.2	56-141	1.07	40	
Xylenes (total)	39.9	1.00	"	40.5	ND	98.5	66-132	1.49	40	
Surrogate: 4-BFB (FID)	*48.9*		"	*48.0*		*102*	*58-144*			
Surrogate: 4-BFB (PID)	*46.0*		"	*48.0*		*95.8*	*68-140*			

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12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G21010: Prepared 07/21/04 Using EPA 3520C										
Blank (4G21010-BLK1)										
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	*0.228*		"	*0.270*		*84.4*	*50-150*			
Surrogate: Octacosane	*0.171*		"	*0.195*		*87.7*	*50-150*			
LCS (4G21010-BS1)										
Diesel Range Hydrocarbons	1.35	0.250	mg/l	2.00		67.5	45-105			
Surrogate: 2-FBP	*0.218*		"	*0.270*		*80.7*	*50-150*			
LCS Dup (4G21010-BSD1)										X
Diesel Range Hydrocarbons	0.554	0.250	mg/l	2.00		27.7	45-105	83.6	50	
Surrogate: 2-FBP	*0.0840*		"	*0.270*		*31.1*	*50-150*			
Batch 4G27027: Prepared 07/27/04 Using EPA 3520C										
Blank (4G27027-BLK1)										X
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	*0.0950*		"	*0.270*		*35.2*	*50-150*			
Surrogate: Octacosane	*0.0803*		"	*0.195*		*41.2*	*50-150*			
LCS (4G27027-BS1)										X
Diesel Range Hydrocarbons	1.54	0.250	mg/l	2.00		77.0	45-105			
Surrogate: 2-FBP	*0.235*		"	*0.270*		*87.0*	*50-150*			
LCS (4G27027-BS2)										X
Lube Oil Range Hydrocarbons	1.55	0.500	mg/l	2.00		77.5	50-150			
Surrogate: Octacosane	*0.153*		"	*0.195*		*78.5*	*50-150*			

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G27027: Prepared 07/27/04 Using EPA 3520C										
LCS Dup (4G27027-BSD1)										X
Diesel Range Hydrocarbons	0.923	0.250	mg/l	2.00		46.2	45-105	50.1	50	
Surrogate: 2-FBP	*0.145*		"	*0.270*		*53.7*	*50-150*			
Surrogate: Octacosane	*0.0998*		"	*0.195*		*51.2*	*50-150*			
LCS Dup (4G27027-BSD2)										X
Lube Oil Range Hydrocarbons	1.58	0.500	mg/l	2.00		79.0	60-140	1.92	40	
Surrogate: Octacosane	*0.197*		"	*0.195*		*101*	*50-150*			
Matrix Spike (4G27027-MS1)					**Source: B4G0359-05**					X
Diesel Range Hydrocarbons	1.61	0.250	mg/l	1.89	0.0439	82.9	37-126			
Surrogate: 2-FBP	*0.239*		"	*0.255*		*93.7*	*50-150*			
Matrix Spike Dup (4G27027-MSD1)					**Source: B4G0359-05**					X
Diesel Range Hydrocarbons	1.41	0.250	mg/l	1.89	0.0439	72.3	50-150	13.2	50	
Surrogate: 2-FBP	*0.198*		"	*0.255*		*77.6*	*50-150*			
Batch 4H03067: Prepared 08/03/04 Using EPA 3520C										
Blank (4H03067-BLK1)										
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	*0.264*		"	*0.270*		*97.8*	*50-150*			
Surrogate: Octacosane	*0.187*		"	*0.195*		*95.9*	*50-150*			
LCS (4H03067-BS1)										
Diesel Range Hydrocarbons	1.53	0.250	mg/l	2.00		76.5	45-105			
Surrogate: 2-FBP	*0.241*		"	*0.270*		*89.3*	*50-150*			

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4H03067: Prepared 08/03/04 Using EPA 3520C										
LCS Dup (4H03067-BSD1)										
Diesel Range Hydrocarbons	1.30	0.250	mg/l	2.00		65.0	45-105	16.3	50	
Surrogate: 2-FBP	*0.191*		"	*0.270*		*70.7*	*50-150*			

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Pentachlorophenol by GC/MS with Selected Ion Monitoring - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G22015: Prepared 07/22/04 Using EPA 3520C										
Blank (4G22015-BLK1)										
Pentachlorophenol	ND	0.500	ug/l							
Surrogate: 2,4,6-TBP	*37.0*		"	*50.0*		*74.0*	*22-162*			
LCS (4G22015-BS1)										
Pentachlorophenol	9.48	0.500	ug/l	20.0		47.4	20-128			
Surrogate: 2,4,6-TBP	*37.9*		"	*50.0*		*75.8*	*22-162*			
LCS Dup (4G22015-BSD1)										
Pentachlorophenol	14.0	0.500	ug/l	20.0		70.0	20-128	38.5	50	
Surrogate: 2,4,6-TBP	*42.4*		"	*50.0*		*84.8*	*22-162*			

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 23063312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 16:11

Notes and Definitions

A-01	There is gasoline range products contributing to the diesel result.
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.
X	See case narrative.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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3209 Denali St, Anchorage, AK 99503-4030 907-334-9200 FAX 334-9210

CHAIN OF CUSTODY REPORT

Work Order #: B4G0467

CLIENT: Time Oil

REPORT TO: ~~Scott Stern~~ Jim Sims (cc B. Graham@Hfwi)

ADDRESS: 2737 W Commodore Way

PHONE: 206 2866457 FAX:

INVOICE TO: Same as left

P.O. NUMBER:

PROJECT NAME: Quarterly Groundwater Monitoring July 04

PROJECT NUMBER: 2306.332.0012.0004

SAMPLED BY: E Tobey

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] STD. [7] [5] [4] [3] [2] [1] [<1]

Petroleum Hydrocarbon Analyses: [X] STD. [4] [3] [2] [1] [<1]

[OTHER] Specify:

* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE: HCl | HCl | -

REQUESTED ANALYSES: NWTPH-Gx/BTEX | NWTPH-Dx | PCP EPA 8270 SIM

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NWTPH-Gx/BTEX	NWTPH-Dx	PCP EPA 8270 SIM	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	NCA WO ID
1	OIMW-TB04	7/19/04 0800	X			W	1		-01
2	OIMW-29	7/19/04 0835	X	X	X	W	7		-02
3	OIMW-28A	7/19/04 0855	X	X	X	W	7		-03
4	OIMW-28B	7/19/04 0905	X	X	X	W	7		-04
5									
6									
7									
8									
9									
10									

RELEASED BY: Ellen D Tobey — PRINT NAME: Ellen D Tobey — FIRM: TTFWI — DATE: 7/19/04 — TIME: 1634

RECEIVED BY: Tom Blankinship — PRINT NAME: Blankinship — FIRM: NCA — DATE: 7/19/04 — TIME: 1634

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ADDITIONAL REMARKS: Silica Gel Clean up on Diesel Samples — 2 coolers — TEMP: 5.3°C w/cs

COC REV 1/03 — PAGE 1 OF 1

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17 August 2004

Bryan Graham
Tetra Tech FW, Inc. - Bothell
12100 NE 195th St
Bothell, WA/USA 98011

RE: Time Oil-West Commodore Way

Enclosed are the results of analyses for samples received by the laboratory on 07/20/04 15:01. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Amar Gill
Project Manager

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CASE NARRATIVE for B4G0577

Client: Tetra Tech FW, Inc.
Project Manager: Bryan Graham
Project Name: Time Oil West Commodore Way
Project Number: 2306.3312.0012.0004

1.0 DESCRIPTION OF CASE

Eight (8) water samples were submitted for the analysis of:

- Gasoline Hydrocarbons and BTEX by NWTPH-G and 8021B
- Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
- Pentachlorophenol by GC/MS with Selective Ion Monitoring

2.0 COMMENTS ON SAMPLE RECEIPT

The sample was received 20th July 2004 at a temperature of 3.1°C and logged in 22nd July 2004.

3.0 PREPARATION AND ANALYSIS

Gasoline Hydrocarbons and BTEX by NWTPH-G and 8021B
No additional anomalies or discrepancies were associated with this analysis other than those already qualified in the data.

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
The surrogate recoveries for project samples, 01MW-21 and 01MW-22 were below the method control limits in analytical batch 4G25001. Since additional sample volume was provided the samples were re-extracted and re-analyzed as part of analytical batch 4G03011. The surrogate recoveries and batch spike recoveries were all within control limits for the re-extracted project samples and quality control samples in analytical batch 4G03011. Both the original and re-extracted results were provided for project samples 01MW-21 and 01MW-22. No additional anomalies or discrepancies were associated with this analysis other than those already qualified in the data.

Pentachlorophenol by GC/MS with Selective Ion Monitoring
No additional anomalies or discrepancies were associated with this analysis other than those already qualified in the data.

Amar Gill
Project Manager
North Creek Analytical

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01MW-TB05	B4G0577-01	Water	07/20/04 07:50	07/20/04 15:01
01MW-17	B4G0577-02	Water	07/20/04 08:05	07/20/04 15:01
01MW-13	B4G0577-03	Water	07/20/04 08:25	07/20/04 15:01
01MW-12	B4G0577-04	Water	07/20/04 08:55	07/20/04 15:01
01MW-21	B4G0577-05	Water	07/20/04 09:15	07/20/04 15:01
01MW-22	B4G0577-06	Water	07/20/04 09:45	07/20/04 15:01
01MW-23	B4G0577-07	Water	07/20/04 10:16	07/20/04 15:01
01MW-24	B4G0577-08	Water	07/20/04 11:00	07/20/04 15:01

North Creek Analytical - Bothell

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Amar Gill, Project Manager

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-TB05 (B4G0577-01) Water Sampled: 07/20/04 07:50 Received: 07/20/04 15:01									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G26007	07/26/04	07/26/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*104 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*93.5 %*	*68-140*			"	"	"	"	
01MW-17 (B4G0577-02) Water Sampled: 07/20/04 08:05 Received: 07/20/04 15:01									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	4G26007	07/26/04	07/26/04	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*100 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*90.6 %*	*68-140*			"	"	"	"	
01MW-13 (B4G0577-03) Water Sampled: 07/20/04 08:25 Received: 07/20/04 15:01									
Gasoline Range Hydrocarbons	**314**	50.0	ug/l	1	4G26007	07/26/04	07/26/04	NWTPH-Gx/8021B	
Benzene	**1.41**	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	**2.54**	1.00	"	"	"	"	"	"	J-06
Surrogate: 4-BFB (FID)	*104 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*94.2 %*	*68-140*			"	"	"	"	

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-12 (B4G0577-04) Water Sampled: 07/20/04 08:55 Received: 07/20/04 15:01									
Gasoline Range Hydrocarbons	**1700**	250	ug/l	5	4G26007	07/26/04	07/26/04	NWTPH-Gx/8021B	
Benzene	**485**	2.50	"	"	"	"	"	"	
Toluene	**5.90**	2.50	"	"	"	"	"	"	
Ethylbenzene	**11.3**	2.50	"	"	"	"	"	"	
Xylenes (total)	**15.8**	5.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*108 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*94.0 %*	*68-140*			"	"	"	"	
01MW-21 (B4G0577-05) Water Sampled: 07/20/04 09:15 Received: 07/20/04 15:01									
Gasoline Range Hydrocarbons	**986**	50.0	ug/l	1	4G26007	07/26/04	07/26/04	NWTPH-Gx/8021B	G-02
Benzene	**0.858**	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	**10.6**	0.500	"	"	"	"	"	"	
Xylenes (total)	**1.32**	1.00	"	"	"	"	"	"	I-06
Surrogate: 4-BFB (FID)	*144 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*108 %*	*68-140*			"	"	"	"	
01MW-22 (B4G0577-06) Water Sampled: 07/20/04 09:45 Received: 07/20/04 15:01									
Gasoline Range Hydrocarbons	**1340**	50.0	ug/l	1	4G26007	07/26/04	07/26/04	NWTPH-Gx/8021B	G-02
Benzene	**73.5**	0.500	"	"	"	"	"	"	
Toluene	**0.943**	0.500	"	"	"	"	"	"	
Ethylbenzene	**4.71**	0.500	"	"	"	"	"	"	
Xylenes (total)	**10.2**	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*138 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*104 %*	*68-140*			"	"	"	"	

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Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-23 (B4G0577-07) Water Sampled: 07/20/04 10:16 Received: 07/20/04 15:01									
Gasoline Range Hydrocarbons	**4620**	500	ug/l	10	4G26007	07/26/04	07/26/04	NWTPH-Gx/8021B	
Benzene	**917**	5.00	"	"	"	"	"	"	
Toluene	**10.0**	5.00	"	"	"	"	"	"	
Ethylbenzene	**61.4**	5.00	"	"	"	"	"	"	
Xylenes (total)	**139**	10.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*110 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*94.8 %*	*68-140*			"	"	"	"	
01MW-24 (B4G0577-08) Water Sampled: 07/20/04 11:00 Received: 07/20/04 15:01									
Gasoline Range Hydrocarbons	**18400**	2500	ug/l	50	4G26007	07/26/04	07/26/04	NWTPH-Gx/8021B	
Benzene	**6750**	50.0	"	100	"	"	07/26/04	"	
Toluene	**35.0**	25.0	"	50	"	"	07/26/04	"	
Ethylbenzene	**261**	25.0	"	"	"	"	"	"	
Xylenes (total)	**816**	50.0	"	"	"	"	"	"	I-06
Surrogate: 4-BFB (FID)	*103 %*	*58-144*			"	"	"	"	
Surrogate: 4-BFB (PID)	*93.8 %*	*68-140*			"	"	"	"	

North Creek Analytical - Bothell

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12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-17 (B4G0577-02) Water Sampled: 07/20/04 08:05 Received: 07/20/04 15:01									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4G25001	07/25/04	07/31/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*88.6 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*84.8 %*	*50-150*			"	"	"	"	
01MW-13 (B4G0577-03) Water Sampled: 07/20/04 08:25 Received: 07/20/04 15:01									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4G25001	07/25/04	08/01/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*92.9 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*104 %*	*50-150*			"	"	"	"	
01MW-12 (B4G0577-04) Water Sampled: 07/20/04 08:55 Received: 07/20/04 15:01									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4G25001	07/25/04	07/31/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*80.4 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*90.2 %*	*50-150*			"	"	"	"	
01MW-21 (B4G0577-05) Water Sampled: 07/20/04 09:15 Received: 07/20/04 15:01									X
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4G25001	07/25/04	08/01/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*43.9 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*40.9 %*	*50-150*			"	"	"	"	
01MW-21 (B4G0577-05RE1) Water Sampled: 07/20/04 09:15 Received: 07/20/04 15:01									X
Diesel Range Hydrocarbons	**0.429**	0.250	mg/l	1	4H03011	08/03/04	08/04/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*60.8 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*66.8 %*	*50-150*			"	"	"	"	

North Creek Analytical - Bothell

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-22 (B4G0577-06) Water Sampled: 07/20/04 09:45 Received: 07/20/04 15:01									X
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4G25001	07/25/04	07/31/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*32.6 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*33.5 %*	*50-150*			"	"	"	"	
01MW-22 (B4G0577-06RE1) Water Sampled: 07/20/04 09:45 Received: 07/20/04 15:01									X
Diesel Range Hydrocarbons	**1.09**	0.250	mg/l	1	4H03011	08/03/04	08/04/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*76.5 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*78.8 %*	*50-150*			"	"	"	"	
01MW-23 (B4G0577-07) Water Sampled: 07/20/04 10:16 Received: 07/20/04 15:01									
Diesel Range Hydrocarbons	**0.540**	0.250	mg/l	1	4G25001	07/25/04	08/01/04	NWTPH-Dx	D-08
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*74.5 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*85.3 %*	*50-150*			"	"	"	"	
01MW-24 (B4G0577-08) Water Sampled: 07/20/04 11:00 Received: 07/20/04 15:01									
Diesel Range Hydrocarbons	**0.837**	0.250	mg/l	1	4G25001	07/25/04	08/01/04	NWTPH-Dx	D-08
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*85.1 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*77.2 %*	*50-150*			"	"	"	"	

North Creek Analytical - Bothell

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Amar Gill, Project Manager

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12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Pentachlorophenol by GC/MS with Selected Ion Monitoring
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01MW-21 (B4G0577-05) Water Sampled: 07/20/04 09:15 Received: 07/20/04 15:01									
Pentachlorophenol	**3.51**	0.500	ug/l	1	4G27009	07/27/04	07/31/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*71.4 %*	*22-162*			"	"	"	"	
01MW-22 (B4G0577-06) Water Sampled: 07/20/04 09:45 Received: 07/20/04 15:01									
Pentachlorophenol	**191**	2.50	ug/l	5	4G27009	07/27/04	07/31/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*93.2 %*	*22-162*			"	"	"	"	
01MW-23 (B4G0577-07) Water Sampled: 07/20/04 10:16 Received: 07/20/04 15:01									
Pentachlorophenol	**350**	2.50	ug/l	5	4G27009	07/27/04	07/31/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*88.3 %*	*22-162*			"	"	"	"	
01MW-24 (B4G0577-08) Water Sampled: 07/20/04 11:00 Received: 07/20/04 15:01									**Q-28**
Pentachlorophenol	ND	2.50	ug/l	5	4G27009	07/27/04	07/31/04	EPA 8270 Mod	
Surrogate: 2,4,6-TBP	*93.6 %*	*22-162*			"	"	"	"	

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Tetra Tech FW, Inc. - Bothell	Project: Time Oil-West Commodore Way	
12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G26007: Prepared 07/26/04 Using EPA 5030B (MeOH)										
Blank (4G26007-BLK1)										
Gasoline Range Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Surrogate: 4-BFB (FID)	*46.0*		"	*48.0*		*95.8*	*58-144*			
Surrogate: 4-BFB (PID)	*42.7*		"	*48.0*		*89.0*	*68-140*			
LCS (4G26007-BS1)										
Gasoline Range Hydrocarbons	486	50.0	ug/l	502		96.8	80-120			
Benzene	6.48	0.500	"	6.21		104	80-120			
Toluene	33.7	0.500	"	34.9		96.6	80-120			
Ethylbenzene	8.40	0.500	"	8.38		100	80-120			
Xylenes (total)	41.1	1.00	"	40.6		101	80-120			
Surrogate: 4-BFB (FID)	*49.2*		"	*48.0*		*102*	*58-144*			
Surrogate: 4-BFB (PID)	*43.0*		"	*48.0*		*89.6*	*68-140*			
LCS Dup (4G26007-BSD1)										
Gasoline Range Hydrocarbons	515	50.0	ug/l	502		103	80-120	5.79	25	
Benzene	6.62	0.500	"	6.21		107	80-120	2.14	25	
Toluene	34.4	0.500	"	34.9		98.6	80-120	2.06	25	
Ethylbenzene	8.51	0.500	"	8.38		102	80-120	1.30	25	
Xylenes (total)	41.6	1.00	"	40.6		102	80-120	1.21	25	
Surrogate: 4-BFB (FID)	*52.8*		"	*48.0*		*110*	*58-144*			
Surrogate: 4-BFB (PID)	*43.5*		"	*48.0*		*90.6*	*68-140*			
Matrix Spike (4G26007-MS1)					**Source: B4G0544-01**					
Gasoline Range Hydrocarbons	558	50.0	ug/l	502	72.3	96.8	58-129			
Benzene	6.44	0.500	"	6.21	0.189	101	46-130			
Toluene	33.4	0.500	"	34.9	0.156	95.3	60-124			
Ethylbenzene	8.18	0.500	"	8.38	ND	97.6	56-141			
Xylenes (total)	40.0	1.00	"	40.6	0.547	97.2	66-132			
Surrogate: 4-BFB (FID)	*52.3*		"	*48.0*		*109*	*58-144*			
Surrogate: 4-BFB (PID)	*43.0*		"	*48.0*		*89.6*	*68-140*			

North Creek Analytical - Bothell

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12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX by NWTPH-G and EPA 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G26007: Prepared 07/26/04 Using EPA 5030B (MeOH)										
Matrix Spike Dup (4G26007-MSD1)					**Source: B4G0544-01**					
Gasoline Range Hydrocarbons	547	50.0	ug/l	502	72.3	94.6	58-129	1.99	25	
Benzene	6.22	0.500	"	6.21	0.189	97.1	46-130	3.48	40	
Toluene	32.6	0.500	"	34.9	0.156	93.0	60-124	2.42	40	
Ethylbenzene	7.95	0.500	"	8.38	ND	94.9	56-141	2.85	40	
Xylenes (total)	38.9	1.00	"	40.6	0.547	94.5	66-132	2.79	40	
Surrogate: 4-BFB (FID)	*52.5*		"	*48.0*		*109*	*58-144*			
Surrogate: 4-BFB (PID)	*43.1*		"	*48.0*		*89.8*	*68-140*			

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12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G25001: Prepared 07/25/04 Using EPA 3520C										
Blank (4G25001-BLK1)										
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	*0.219*		"	*0.270*		*81.1*	*50-150*			
Surrogate: Octacosane	*0.158*		"	*0.195*		*81.0*	*50-150*			
LCS (4G25001-BS1)										
Diesel Range Hydrocarbons	1.31	0.250	mg/l	2.00		65.5	45-105			
Surrogate: 2-FBP	*0.243*		"	*0.270*		*90.0*	*50-150*			
LCS (4G25001-BS2)										
Lube Oil Range Hydrocarbons	1.26	0.500	mg/l	2.00		63.0	50-150			
Surrogate: 2-FBP	*0.242*		"	*0.270*		*89.6*	*50-150*			
Surrogate: Octacosane	*0.217*		"	*0.195*		*111*	*50-150*			
LCS Dup (4G25001-BSD1)										
Diesel Range Hydrocarbons	0.962	0.250	mg/l	2.00		48.1	45-105	30.6	50	
Surrogate: 2-FBP	*0.146*		"	*0.270*		*54.1*	*50-150*			
LCS Dup (4G25001-BSD2)										
Lube Oil Range Hydrocarbons	1.35	0.500	mg/l	2.00		67.5	50-150	6.90	50	
Surrogate: Octacosane	*0.182*		"	*0.195*		*93.3*	*50-150*			
Batch 4H03011: Prepared 08/03/04 Using EPA 3520C										
Blank (4H03011-BLK1)										
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	*0.139*		"	*0.270*		*51.5*	*50-150*			
Surrogate: Octacosane	*0.127*		"	*0.195*		*65.1*	*50-150*			

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12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4H03011: Prepared 08/03/04 Using EPA 3520C										
LCS (4H03011-BS1)										
Diesel Range Hydrocarbons	1.45	0.250	mg/l	2.00		72.5	45-105			
Surrogate: 2-FBP	*0.207*		"	*0.270*		*76.7*	*50-150*			
LCS Dup (4H03011-BSD1)										
Diesel Range Hydrocarbons	0.931	0.250	mg/l	2.00		46.6	45-105	43.6	50	
Surrogate: 2-FBP	*0.147*		"	*0.270*		*54.4*	*50-150*			

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12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Pentachlorophenol by GC/MS with Selected Ion Monitoring - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4G27009: Prepared 07/27/04 Using EPA 3520C										
Blank (4G27009-BLK1)										
Pentachlorophenol	ND	0.500	ug/l							
Surrogate: 2,4,6-TBP	*33.6*		"	*50.0*		*67.2*	*45-135*			
LCS (4G27009-BS1)										
Pentachlorophenol	10.1	0.500	ug/l	20.0		50.5	45-135			
Surrogate: 2,4,6-TBP	*35.1*		"	*50.0*		*70.2*	*45-135*			
LCS Dup (4G27009-BSD1)										
Pentachlorophenol	10.5	0.500	ug/l	20.0		52.5	45-135	3.88	50	
Surrogate: 2,4,6-TBP	*34.6*		"	*50.0*		*69.2*	*45-135*			
Matrix Spike (4G27009-MS1)					**Source: B4G0619-02**					
Pentachlorophenol	13.8	0.500	ug/l	18.9	ND	73.0	20-130			
Surrogate: 2-FP	*ND*		"	*47.2*			*60-120*			
Surrogate: 2,4,6-TBP	*30.7*		"	*47.2*		*65.0*	*22-162*			
Surrogate: 2-FBP	*27.1*		"	*47.2*		*57.4*	*30-150*			
Matrix Spike Dup (4G27009-MSD1)					**Source: B4G0619-02**					
Pentachlorophenol	14.3	0.500	ug/l	19.2	ND	74.5	20-130	3.56	50	
Surrogate: 2-FP	*ND*		"	*48.1*			*60-120*			
Surrogate: 2,4,6-TBP	*30.2*		"	*48.1*		*62.8*	*22-162*			
Surrogate: 2-FBP	*29.2*		"	*48.1*		*60.7*	*30-150*			

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12100 NE 195th St	Project Number: 2306.3312.0012.0004	**Reported:**
Bothell, WA/USA 98011	Project Manager: Bryan Graham	08/17/04 10:30

Notes and Definitions

D-08	Results in the diesel organics range are primarily due to overlap from a gasoline range product.
G-02	The chromatogram for this sample does not resemble a typical gasoline pattern. Please refer to the sample chromatogram.
I-06	The analyte concentration may be artificially elevated due to coeluting compounds or components.
Q-28	This sample was re-analyzed at a dilution due to matrix related internal standard failure at the initial final volume.
X	See case narrative.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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3209 Denali St, Anchorage, AK 99503-4030 907-334-9200 FAX 334-9210

CHAIN OF CUSTODY REPORT

Work Order #: BHG0577

CLIENT: Time Oil

REPORT TO: Jim Sims (ccB Graham @ttfwi)
ADDRESS: 2737 W Commodore Way Seattle WA
PHONE (206) 286645 FAX:

INVOICE TO: Same as Left

P.O. NUMBER:

PROJECT NAME: Quarterly Groundwater Monitoring July 04
PROJECT NUMBER: 2306.332.002.0004
SAMPLED BY: ETobey

TURNAROUND REQUEST
in Business Days *
Organic & Inorganic Analyses: 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE: HCl	HCl	–	REQUESTED ANALYSES: NW TPH Gx/BTEX	NW TPH Dx	PCP EPA 8270 SIM	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	NCA WO ID
1	01MW-TB05	7/20/04 0750				X			W	1		01
2	01MW-17	7/20/04 0805				X	X		W	5		02
3	01MW-13	7/20/04 0825				X	X		W	5		03
4	01MW-12	7/20/04 0855				X	X		W	5		04
5	01MW-21	7/20/04 0915				X	X	X	W	7		05
6	01MW-22	7/20/04 0945				X	X	X	W	7		06
7	01MW-23	7/20/04 1016				X	X	X	W	7		07
8	01MW-24	7/20/04 1100				X	X	X	W	7		08
9												
10												

RELEASED BY: Ellen D Tobey
PRINT NAME: Ellen D Tobey FIRM: TTFWI DATE: 7/20/04 TIME: 1501

RECEIVED BY: Colette Weaver
PRINT NAME: Colette Weaver FIRM: NCA DATE: 7/20/04 TIME: 1501

RELEASED BY: PRINT NAME: FIRM: DATE: TIME:

RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS: Silica Gel Clean up on Diesel Samples 3 Coolers W/ COC

COC REV 1/03

TEMP: 3.1c W/CS

PAGE 1 OF 1

DRAFT
QUARTERLY GROUNDWATER SAMPLING REPORT FOR NOVEMBER 2004

at

2737 West Commodore Way and
2750 West Commodore Way
Seattle, Washington

Prepared for

Time Oil Company

March 2005

Prepared by

TETRA TECH EC, INC.

12100 NE 195th, Suite 200
Bothell, WA 98011

DRAFT
QUARTERLY GROUNDWATER SAMPLING REPORT FOR NOVEMBER 2004

at

2737 West Commodore Way and
2750 West Commodore Way
Seattle, Washington

Prepared for

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2737 West Commodore Way
Seattle, WA 98199
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March 2005

Prepared by

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APPENDIX A LABORATORY DATA PACKAGES

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
°C	degrees Celsius
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
HDPE	high-density polyethylene
mg/L	milligrams per liter
mL/min	milliliters per minute
mS/cm	millisiemens per centimeter
msl	mean sea level
µg/L	micrograms per liter
MTCA	Model Toxics Control Act
NOAA	National Oceanic and Atmospheric Administration
NTU	nephelometric turbidity unit
NWTPH-Dx	Northwest total petroleum hydrocarbon-diesel range hydrocarbons
NWTPH-Gx	Northwest total petroleum hydrocarbon-gasoline range hydrocarbons
ORP	oxidation reduction potential
PCP	pentachlorophenol
sim	selective ion monitoring
SQuiRT™	Screening Quick Reference Tables
TOC	Time Oil Company
VOC	volatile organic compound

1. INTRODUCTION

Investigations to assess groundwater levels and specific chemical concentrations were conducted at two Time Oil Company (TOC) properties located at 2737 West Commodore Way and 2750 West Commodore Way, Seattle, Washington (Figure 1-1). TOC retained Tetra Tech EC, Inc. (Tt EC) to conduct quarterly groundwater monitoring at these properties as part of an independent cleanup action.

Monitoring wells at the properties are sampled on a quarterly basis, which began in July 2001. This quarterly report presents the results of the November 2004 groundwater sampling activities at 2737 and 2750 West Commodore Way. Figure 1-2 provides a plan view of the properties relative to one another. The report is organized as follows:

- **Section 1** briefly describes the purpose and organization of the report.
- **Section 2** describes the field methods used to measure water levels and to collect samples.
- **Section 3** presents the groundwater level data.
- **Section 4** presents the analytical results.
- **Section 5** describes the conclusions and provides recommendations for future actions.
- **Appendix A** provides the data packages from the analytical laboratory for November 2004.

2. METHODS AND PROCEDURES

Field activities for November 2004 at the two TOC properties included water level measurement and quarterly groundwater sampling. This section presents a brief description of the specific methods and procedures used for quarterly monitoring.

2.1 GROUNDWATER ELEVATION SURVEY

Groundwater elevations are determined each quarter by measuring the depth to water in 28 wells at 2737 West Commodore Way and 7 wells at 2750 West Commodore Way. The depth to water measurements are collected on a single day and subtracted from the survey level at the top of the well casing to calculate the potentiometric surface (water table elevation).

Before measuring the depth to groundwater in the first well, the water level indicator is calibrated by visually comparing the markings on the tape to the markings on a measurement tape. After removing the well cap and allowing the well to stabilize, the probe is lowered into the well until the sound alarm is activated, indicating that the probe has touched the water surface. The static depth to water is read directly from the tape by holding the tape to the permanent mark on the well casing or cap. The probe is then raised and lowered to confirm the reading. An oil/water interface probe is then used in a similar manner in wells where floating product is suspected to be present.

2.2 GROUNDWATER SAMPLING

Groundwater samples are collected each quarter using a low-flow micro-purging technique in accordance with U.S. Environmental Protection Agency (EPA) guidelines (EPA 1996, EPA/540/S-95/504). Each monitoring well is micro-purged (300 to 500 milliliters per minute [mL/min]) using a peristaltic pump with disposable high-density polyethylene (HDPE) tubing. A small section of thick-walled silicon is used around the head of the peristaltic pump to achieve the pressures necessary to draw the groundwater up the well. Groundwater samples are collected in laboratory-supplied glassware and hand delivered to the laboratory each evening after sampling.

Groundwater sampling was conducted in November 2004 in accordance with the following sampling procedures:

1. Calibrate field instruments in accordance with the manufacturer's directions. Record all calibration data in the field log book.
2. Confirm well identification using site map.
3. Measure the depth to water at each well. Record the depth to water. Decontaminate the water level meter before each measurement.
4. Carefully lower the HDPE tubing into the well with as little disturbance to the groundwater as possible. Place the intake at the middle of the screen interval. Set pump rate to ensure the water column in the well does not drop more than 0.2 feet below the initial water level reading.
5. Purge the well at a flow rate of 300 to 500 mL/min. Monitor water level to ensure minimal drawdown. Monitor water quality parameters every 3 to 5 minutes during purging (turbidity, pH, temperature, conductivity, oxidation reduction potential [ORP], and dissolved oxygen) using in-line monitoring equipment. Stabilization is achieved if three successive readings are within ±0.1 pH units, ±1 degree Celsius (°C) for temperature, ±10 percent for conductivity, ±10 percent for dissolved oxygen, and ± 10 millivolts for ORP.
6. When water quality parameters are stable for three consecutive readings, turn off the pump and remove the tubing from the well or leave the tubing in place securing it at the surface within the well head. Place the tubing in a sealed, labeled plastic bag. Replace the well cap and seal the monument.
7. Return within 24 hours and insert the appropriate HDPE tubing into the well. Connect the pump and adjust the pump flow to a rate of approximately 200 mL/min. Collect samples for volatile organic compounds (VOC) and gasoline analyses first. Fill the containers so that no headspace exists.
8. Increase the flow rate to approximately 300 to 500 mL/min while maintaining minimal to no drawdown and collect the remaining samples.

2.3 GROUNDWATER ANALYSES

Groundwater samples were collected on November 17 through November 19, 2004, using laboratory-supplied glassware. Table 2-1 shows the wells sampled in November 2004. The groundwater samples were delivered to the laboratory each evening after sampling and,

depending on the specific data needs, were analyzed for all or some of the following contaminants:

- Gasoline range hydrocarbons, using Washington State Department of Ecology's (Ecology's) Northwest total petroleum hydrocarbon-gasoline (NWTPH-Gx) method;
- Benzene, toluene, ethylbenzene, xylene (BTEX) using EPA Method 8021B;
- Diesel and Lube oil range hydrocarbons, using Ecology's Northwest total petroleum hydrocarbon-diesel extended (NWTPH-Dx) method; and
- Pentachlorophenol (PCP), using EPA Method 8270-sim (selective ion monitoring).

The groundwater samples analyzed for diesel and oil underwent a silica gel cleanup before analysis. This cleanup was done to remove naturally occurring organic material that may interfere with the analysis. Groundwater samples were analyzed by North Creek Analytical Laboratories, Inc., in Bothell, Washington.

3. GROUNDWATER LEVEL DATA

Field activities conducted at the TOC properties included the quarterly collection of water level measurements. This section describes the collection of November 2004 water level measurements and summarizes groundwater flow directions beneath 2737 and 2750 West Commodore Way.

Measurements for depth to water were made using an electronic measuring tape with markings every 0.01 foot. All water levels were measured on a single day. Measurements were subtracted from surveyed measuring point elevations to produce the water level elevations. Where present, the thickness and specific gravity (0.8) of free phase product fuel on the water table was considered when calculating the elevation of the water table.

3.1 2737 WEST COMMODORE WAY

Water level measurements were collected from 28 wells at 2737 West Commodore Way on November 17, 2004. Table 3-1 provides the well construction information, and Table 3-2 shows the groundwater elevations in feet above mean sea level (msl). In general, the water levels have increased slightly relative to July 2004, possibly due to seasonal variation. The groundwater elevations during the four quarter period are generally consistent showing a slight seasonal decrease (average 0.10 feet) relative to July 2004. Figure 3-1 shows the locations of the wells at 2737 West Commodore Way and the water table elevation (potentiometric space). Groundwater flows to the north toward the Ship Canal. The groundwater flow direction north of the Lower Tank Yard appears to be bifurcated, possibly by the fiber-grained material in the vicinity of Wells 01MW-16 and 01MW-10. The groundwater gradient at the site differs in the tank yards relative to the rest of the site. The gradient across the tank yards (Wells 01MW-17 to 01MW-23) is approximately 0.003 feet per foot and steepens towards the north wall of the Lower Tank Yard. The unpaved surface of the tank yards allows for greater infiltration, resulting in higher groundwater elevations and mounding. The gradient outside the tank yards (Well 01MW-01 to Well MW-09) is approximately 0.029 feet per foot.

3.2 2750 WEST COMMODORE WAY

Water level measurements were collected from seven wells at 2750 West Commodore Way on November 17, 2004. In general, the water levels at 2750 West Commodore Way

have decreased (average 0.63 feet), relative to July 2004. The only exception is Well 02MW-05, which has shown an increase in groundwater elevation for the past year. Figure 3-2 shows the locations of the wells and potentiometric surface at 2750 West Commodore Way. Groundwater flows to the north toward the Ship Canal. The groundwater gradient from Wells 02MW-05 to Well 02MW-02 is approximately 0.017 feet per foot toward the north based on the potentiometric surface map.

4. ANALYTICAL RESULTS

The MTCA Method A Cleanup Levels for groundwater are intended to provide conservative cleanup levels for drinking water beneficial uses at sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. Because the groundwater beneath the TOC sites is not used as a source of drinking water or for municipal supply, comparison of groundwater concentrations to the MTCA Method A Cleanup Levels is not technically appropriate. The primary point of exposure to groundwater beneath the sites is through the discharge of groundwater to the nearby Ship Canal, a freshwater body on the north side of 2750 West Commodore Way. Based on this exposure scenario (no groundwater use but discharge to a water body), groundwater concentrations were compared to the National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT™) values. These values provide screening levels for acute and chronic exposures to both freshwater and saltwater.

The SQuiRT™ values are non-promulgated values developed by the Coastal Protection and Restoration Division of NOAA to protect aquatic habitats that may be affected by hazardous waste sites. They are applicable for use at these TOC sites based on the site-specific groundwater use. Because the SQuiRT™ values are non-promulgated values, concentrations above the SQuiRT™ values do not indicate a regulatory exceedance. It is important to remember that between the various wells and the point of exposure, various chemical, physical, and biological processes occur that are likely to reduce the contaminant concentrations. Therefore, a concentration in a well is most likely not the same concentration at the point of exposure. If SQuiRT™ values were not available for a particular analyte, then the MTCA Method A default values were used.

Table 4-1 presents the groundwater parameters measured during sampling. Tables 4-2 and 4-3 show analytical results for the groundwater samples collected in November 2004 at 2737 and 2750 West Commodore Way, respectively. The footnotes at the bottom of each table identify the applicable action levels.

Appendix A contains the laboratory data packages for the samples collected. The data packages are presented in their entirety to allow the reader to evaluate the data relative to the quality control data associated with the environmental samples.

4.1 QUARTERLY GROUNDWATER SAMPLING AT 2737 WEST COMMODORE WAY

The following analytes were detected above the applicable action levels (Table 4-2):

- PCP was detected above the NOAA SQuiRT™ value (15 micrograms per liter [µg/L]) in Well 01MW-26 at a concentration of 20.3 µg/L (20.9 µg/L in duplicate sample).
- Diesel range hydrocarbons were detected above the MTCA Method A Cleanup Level (0.5 milligrams per liter [mg/L]) in Wells 01MW-03 and 01MW-09 at concentrations of 0.925 mg/L (01MW-03) and 0.736 mg/L (01MW-09).
- Gasoline range hydrocarbons were detected above the MTCA Method A Cleanup Level (800 µg/L with benzene present) in Wells 01MW-02, 01MW-03, 01MW-09, 01MW-12, and 01MW-26. The concentrations in these wells ranged from 1,130 µg/L (1,120 µg/L in duplicate sample) (Well 01MW-26) to 20,100 µg/L (Well 01MW-02).
- Benzene was detected above the NOAA SQuiRT™ value (5,300 µg/L) in Well 01MW-02 at a concentration of 8,600 µg/L.

4.2 QUARTERLY GROUNDWATER SAMPLING AT 2750 WEST COMMODORE WAY

The following analyte was detected above the applicable action level (Table 4-3):

- Gasoline was detected above the MTCA Method A Cleanup Level (800 µg/L with benzene present) in Well 01MW-04 at a concentration of 3,340 µg/L (3,250 µg/L in the duplicate sample).

5. CONCLUSIONS AND RECOMMENDATIONS

The following subsections describe the extent of impacted groundwater beneath the two properties. Figures 5-1 through 5-3 show concentration contour maps for diesel, gasoline, and benzene, respectively.

5.1 2737 WEST COMMODORE WAY

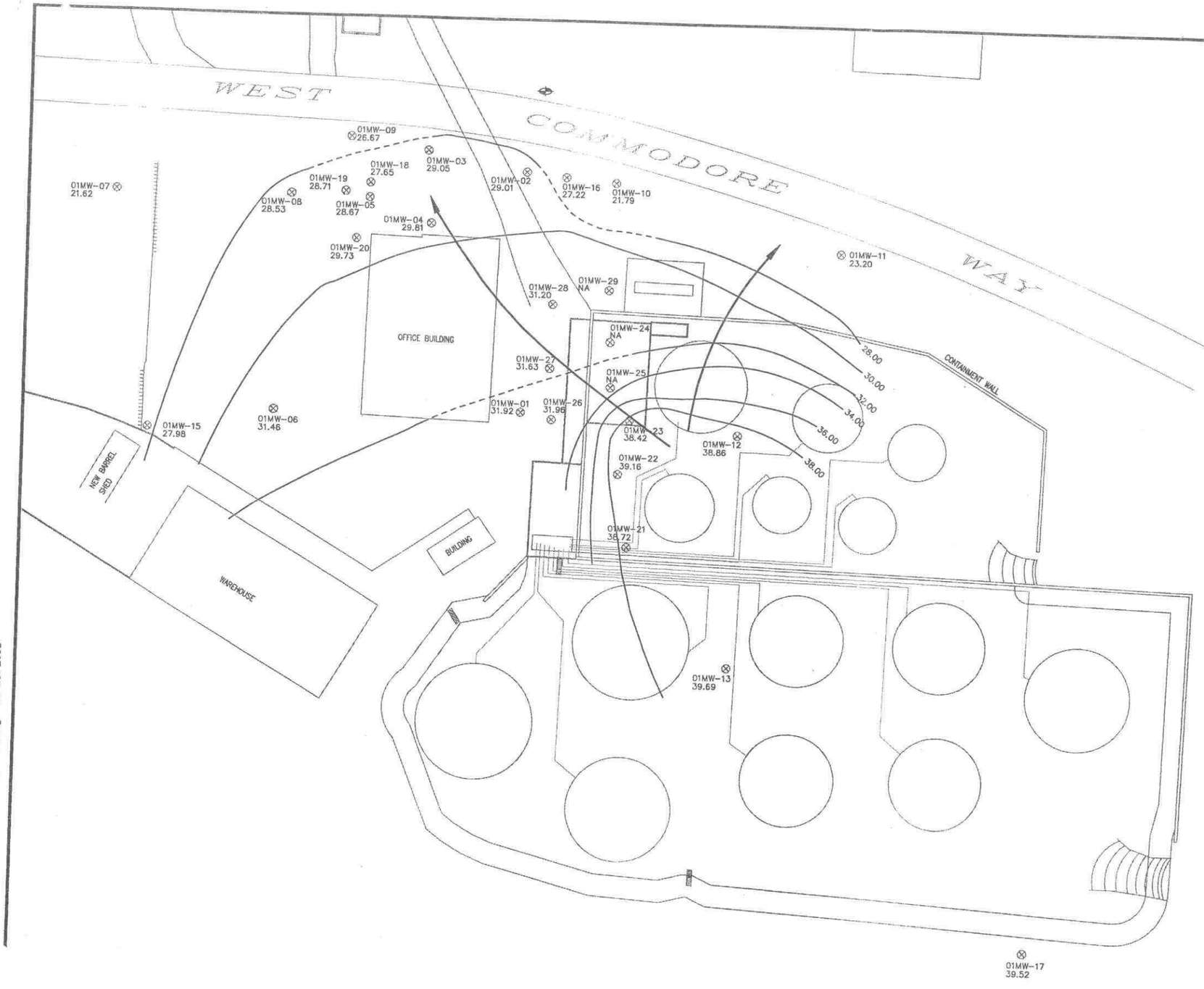
The concentrations of diesel in groundwater are similar to those detected in July 2004. The diesel plume appears to be centralized beneath the former manifold area (01MW-24 and 01MW-25) and the former PCP/Diesel Mixing Area (01MW-21 and 01MW-22) in the Lower Tank Yard. The diesel plume is interpreted to extend towards the north due to the presence of product in Wells 01MW-16, 01MW-10, and 01MW-28.

In general the concentrations of gasoline have increased slightly in Wells 01MW-03 and 01MW-02 relative to those measured in July 2004. The concentrations in Well 01MW-09 are variable and may be influenced by the free-phase product present. The northern extent of the gasoline-impacted groundwater on the property is indicated above the MTCA Method A Cleanup Level by Well 01MW-02 north of the Former Loading Dock and Well 01MW-09 northwest of the office building.

5.2 2750 WEST COMMODORE WAY

Gasoline was the only analyte detected above the MTCA Method A Cleanup Level in groundwater at the property. The exceedance of gasoline concentrations was limited to Well 02MW-04 at a concentration of 3,340 μg/L (3,250 μg/L in the duplicate sample). The gasoline-impacted groundwater does not appear to be migrating toward the Ship Canal based on the lack of detection in the well (01MW-02) near the shoreline.

FIGURES



LEGEND

- 01MW-13 31.29 — MONITORING WELL WITH GROUNDWATER ELEVATION (FEET MSL)
- EQUIPOTENTIAL CONTOUR (DASHED WHERE INFERRED)
- SURVEY MONUMENT
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES

1. CONTOUR INTERVAL IS 2.00 FEET.
2. GROUNDWATER ELEVATIONS IN WELLS 01MW-10 AND 01MW-16 ARE INTERPRETED TO BE UNREPRESENTATIVE OF SHALLOW AQUIFER CONDITIONS DUE TO THICK LAYER OF FINE GRAINED MATERIAL.

N

GRAPHIC SCALE

0 30 60

SCALE IN FEET

TETRA TECH FW, INC.

Figure 3-1
Location of Wells and Potentiometric Surface
at 2737 West Commodore Way,
November 17, 2004

November 2004\ETIDFG 3-1_11-04.dwg 01/26/2005

SHIP CANAL

02MW-02 ⊗
17.43

02MW-07 ⊗
17.54

02MW-03 ⊗
18.24

02MW-01 ⊗
18.15

02MW-04 ⊗
17.68

02MW-06 ⊗
17.73

GEORGE BROOM'S SON & INC.

17.75
18.00
18.25
18.50
18.75
19.00
19.25
19.50
19.75

02MW-05 ⊗
19.95

LEGEND

02MW-05 ⊗ 19.43 — MONITORING WELL WITH GROUNDWATER ELEVATION (FEET MSL)

19.00 — EQUIPOTENTIAL CONTOUR (FEET MSL) (DASHED WHERE INFERRED)

APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES

1. CONTOUR INTERVAL IS 0.25 FEET.

N

GRAPHIC SCALE

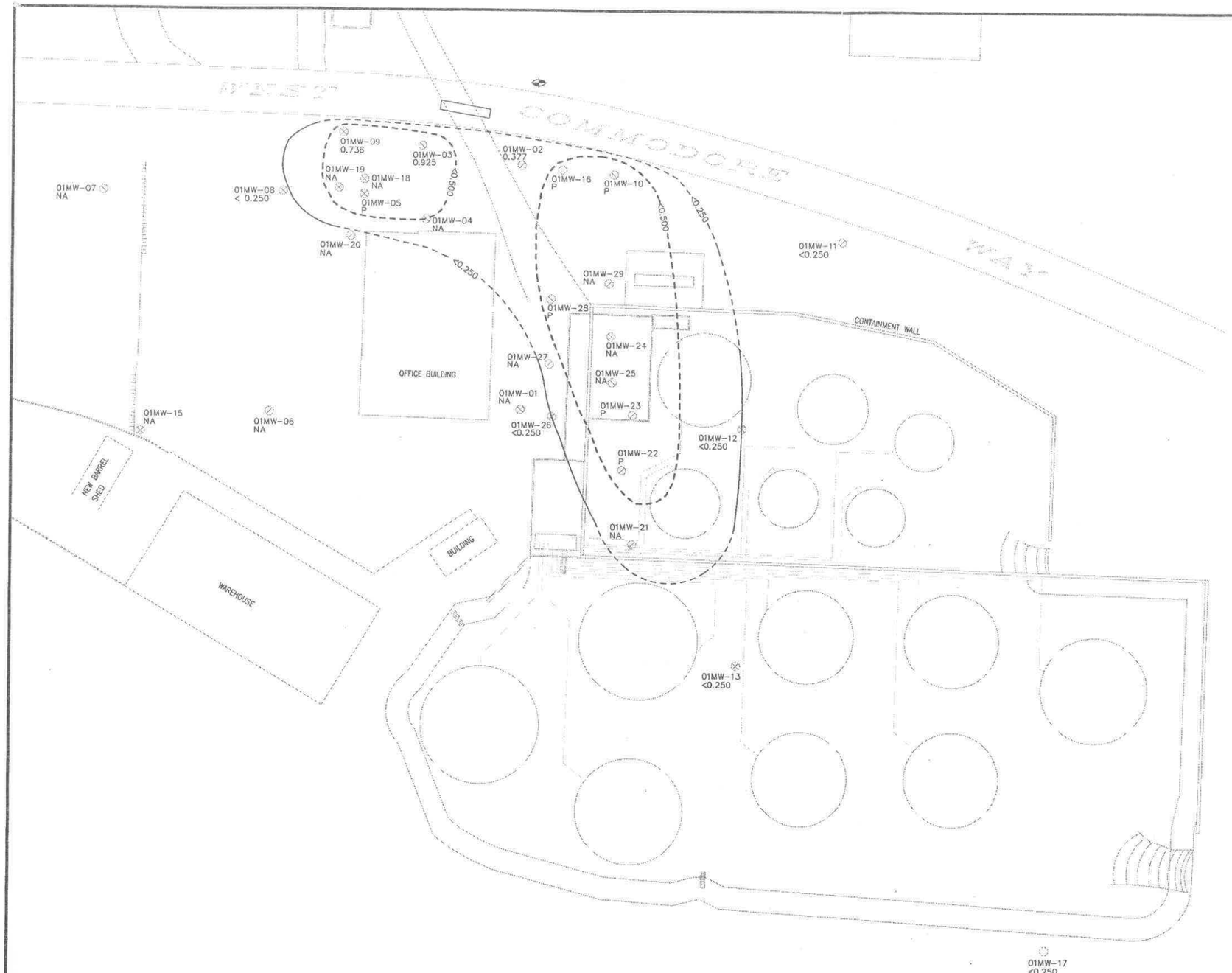
0 10 20

SCALE IN FEET
HORIZONTAL SCALE

I:\Projects\2306331\2\dwg\November 2004\ETIDFG 3-2_11-04.dwg 01/26/2005

TETRA TECH FW, INC.

Figure 3-2
Location of Wells
and Potentiometric Surface at
2750 West Commodore Way,
November 17, 2004



LEGEND

- 01MW-13 <0.250 — MONITORING WELL WITH CONCENTRATION (mg/L)
- MTCA METHOD A CLEANUP LEVEL (0.500 mg/L) (DASHED WHERE INFERRED)
- CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- SURVEY MONUMENT
- P — PRODUCT

NOTES

1. CONCENTRATION CONTOURS ARE BASED ON ANALYTICAL RESULTS. PLEASE SEE TEXT FOR EXPLANATION OF RESULTS.

N

GRAPHIC SCALE

0 30 60

SCALE IN FEET

TETRA TECH FW, INC.

Figure 5-1
Diesel-Impacted Groundwater at
2737 West Commodore Way,
November 2004

I:\Projects\2306312\dwg\November 2004\ETIDFG 5-1_11-04.dwg 01/26/05

TABLES

Table 2-1. November 2004 Sampling Matrix

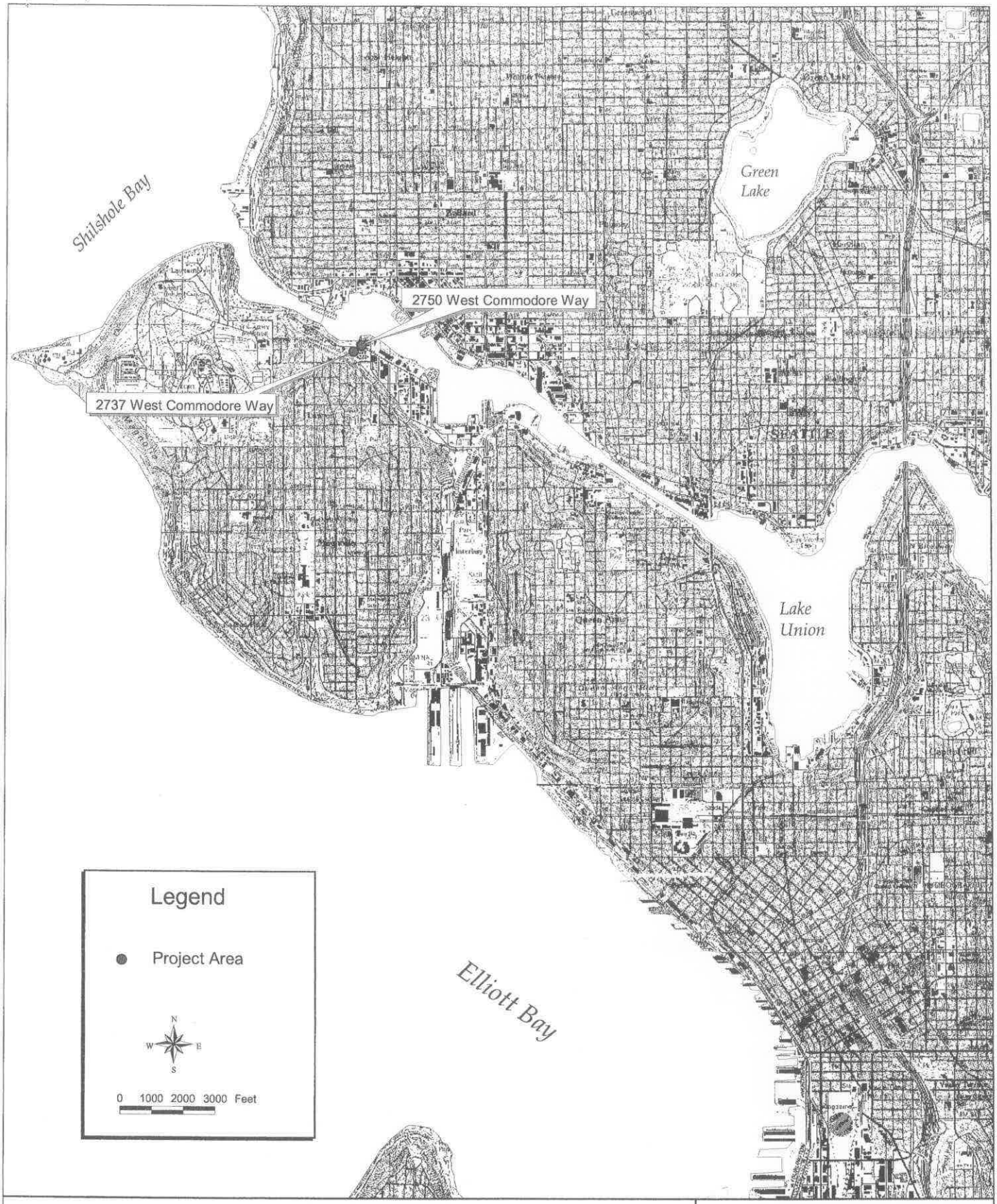
Well	NWTPH-Gx/BTEX	NWTPH-Dx	PCP	Sample Type
2737 West Commodore Way				
01MW-02	1	1	na	Environmental
01MW-03	1	1	na	Environmental
01MW-08	1	1	na	Environmental
01MW-09	1	1	1	Environmental
01MW-11	1	1	na	Environmental
01MW-12	1	1	na	Environmental
01MW-13	1	1	na	Environmental
01MW-17	1	1	na	Environmental
01MW-26	1	1	1	Environmental
01MW-26	1	1	1	Field Duplicate
2750 West Commodore Way				
02MW-01	1	1	na	Environmental
02MW-02	1	1	na	Environmental
02MW-04	1	1	na	Environmental
02MW-04	1	1	na	Field Duplicate
02MW-05	1	1	na	Environmental
02MW-07	1	1	na	Environmental

Abbreviations and Acronyms:
BTEX – benzene, toluene, ethylbenzene, xylene
Dx – diesel range hydrocarbons
Gx – gasoline range hydrocarbons
na – not included in analytical suite
NWTPH – northwest total petroleum hydrocarbon
PCP – pentachlorophenol

Table 3-1. Well Construction Details at West Commodore Way Properties

Well	Coordinate (WA State Plane)		Top of Casing Elevation (Feet msl)	Ground Elevation (Feet msl)	Total Depth of Boring (Feet bgs)	Total Depth of Well (Feet bgs)	Depth of Screen Interval (Feet bgs)	Elevation of Screen Interval (Feet msl)
	Northing (Feet)	Easting (Feet)						
2737 West Commodore Way								
01MW-01	245454.603	1256198.248	46.48	46.76	25.00	25.25	10 – 25	36.76 – 21.76
01MW-02	245585.027	1256198.518	44.78	45.15	25.00	24.91	10 – 25	35.15 – 20.15
01MW-03	245597.585	1256160.493	44.35	44.75	25.20	25.15	10 – 25	34.75 – 19.75
01MW-04	245563.117	1256163.148	45.08	45.56	25.00	24.90	10 – 25	35.56 – 20.56
01MW-05	245569.311	1256114.025	45.40	45.77	25.00	24.88	10 – 25	35.77 – 20.77
01MW-06	245452.677	1256064.638	47.74	48.23	25.00	25.10	10 – 25	38.23 – 23.23
01MW-07	245570.711	1255975.885	45.17	45.53	30.00	28.17	15 – 30	30.53 – 15.53
01MW-08	245570.471	1256070.985	45.21	45.63	25.00	24.93	10 – 25	35.63 – 20.63
01MW-09	245602.062	1256103.039	43.91	44.37	25.00	24.70	10 – 25	34.37 – 19.37
01MW-10	245580.377	1256246.968	45.02	45.35	25.00	24.90	10 – 25	35.35 – 20.35
01MW-11	245545.081	1256368.920	46.10	46.45	30.00	29.90	15 – 30	31.45 – 16.45
01MW-12	245444.877	1256316.069	45.84	46.29	20.00	20.00	5 – 20	40.84 – 25.84
01MW-13	245317.347	1256313.287	46.36	46.81	20.00	19.88	15 – 20	31.81 – 26.81
01MW-15	245441.314	1255996.388	50.89	50.89	30.12	30.00	10 – 30	40.89 – 20.89
01MW-16	245582.687	1256220.015	44.95	44.95	22.50	20.00	10 – 20	34.95 – 24.95
01MW-17	245166.941	1256477.520	59.42	59.42	30.00	30.00	15 – 30	44.42 – 29.42
01MW-18	245577.28	1256114.23	45.18	45.68	26.50	25.00	5 – 20	40.68 – 25.68
01MW-19	245572.45	1256100.62	45.35	45.85	31.50	25.00	5 – 20	40.85 – 25.78
01MW-20	245546.99	1256107.08	46.27	46.77	26.50	25.00	5 – 20	41.77 – 26.77
01MW-21	245382.3	1256257.4	46.21	46.52	23.50	22.92	5 – 22	41.21 – 23.79
01MW-22	245422.2	1256251.7	46.11	46.47	25.00	24.70	5 – 24	41.11 – 21.92
01MW-23	245451.9	1256257.4	45.81	46.11	20.50	19.45	5 – 19	40.81 – 26.86
01MW-24	245494.0	1256245.7	na	44.59	21.00	19.40	5 – 19	39.59 – 25.69
01MW-25	245469.4	1256246.5	na	44.61	20.50	17.32	5 – 16	39.61 – 28.29
01MW-26	245451.1	1256215.0	46.24	46.71	20.50	19.85	5 – 19	41.24 – 27.39
01MW-27	245479.0	1256213.5	46.33	46.70	21.50	19.65	5 – 19	41.33 – 27.68
01MW-28	245513.8	1256214.2	45.54	46.30	25.50	24.61	5 – 24	40.54 – 21.93
01MW-29	245522.2	1256244.6	45.57	45.92	20.50	19.75	5 – 19	40.57 – 26.82
2750 West Commodore Way								
02MW-01	245789.704	1255985.066	24.19	24.72	20.00	19.60	10 – 20	15.22 – 5.22
02MW-02	245848.029	1256019.016	20.06	20.57	10.00	9.90	5 – 10	16.07 – 11.07
02MW-03	245801.020	1256026.193	27.86	28.41	20.00	19.75	10 – 20	18.91 – 8.91
02MW-04	245795.225	1256092.088	27.17	27.59	20.00	20.05	10 – 20	18.09 – 8.09
02MW-05	245706.854	1256069.207	36.59	37.05	35.00	33.85	20 –35	17.55 – 2.55
02MW-06	245803.277	1256129.549	26.54	27.00	20.00	19.97	10 – 20	17.50 – 7.50
02MW-07	245828.584	1255960.724	20.85	21.39	12.00	12.20	2 – 12	19.89 – 9.89

Abbreviations and Acronyms:
bgs – below ground surface
msl – mean sea level
na – no data available
WA – Washington

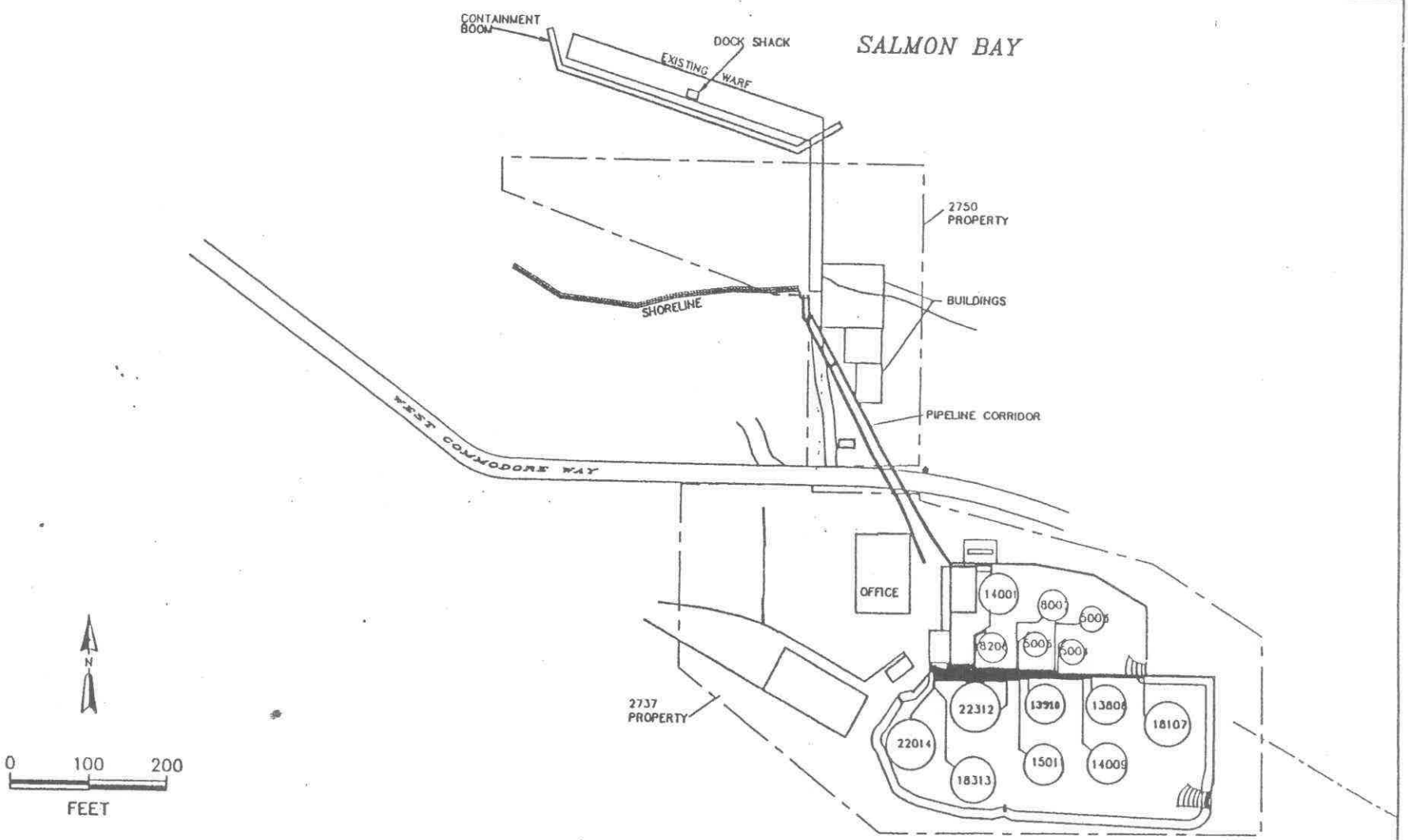


Time Oil Company
Quarterly Groundwater Sampling

Figure 1-1

Locations of 2737 and 2750 West Commodore Way

c:\projects\time_oil\vic_map_2001.apr December 2001



TETRA TECH FW, INC.

Figure 1-2
Layout of 2737 and 2750
West Commodore Way

Table 3-2. Water Levels Measured at West Commodore Way Properties on November 17, 2004

Well	Top of Casing Elevation (Feet msl)	Ground Elevation (Feet msl)	Total Depth of Well (Feet bgs)	Depth to Product (Feet bgs)	Depth to Water (Feet bgs)	Product Thickness (Feet)	Water Elevation (Feet msl)
2737 West Commodore Way							
01MW-01	46.48	46.76	25.25	np	14.56	0.00	31.92
01MW-02	44.78	45.15	24.91	np	15.77	0.00	29.01
01MW-03	44.35	44.75	25.15	np	15.30	0.00	29.05
01MW-04	45.08	45.56	24.90	np	15.27	0.00	29.81
01MW-05[1/]	45.40	45.77	24.88	16.25	18.65	2.40	28.67
01MW-06	47.74	48.23	25.10	np	16.28	0.00	31.46
01MW-07	45.17	45.53	28.17	np	23.55	0.00	21.62
01MW-08	45.21	45.63	24.93	np	16.68	0.00	28.53
01MW-09[1/]	43.91	44.37	24.70	np	17.24	0.00	26.67
01MW-10	45.02	45.35	24.90	22.95	24.35	1.40	21.79
01MW-11	46.10	46.45	29.90	np	22.90	0.00	23.20
01MW-12	45.84	46.29	20.00	np	6.98	0.00	38.86
01MW-13	46.36	46.81	19.88	np	6.67	0.00	39.69
01MW-15	50.89	50.89	30.00	np	22.91	0.00	27.98
01MW-16	44.95	44.95	20.00	17.67	17.97	0.30	27.22
01MW-17	59.42	59.42	30.00	np	19.90	0.00	39.52
01MW-18	45.18	45.68	25.00	np	17.53	0.00	27.65
01MW-19	45.35	45.85	25.00	np	16.64	0.00	28.71
01MW-20	46.27	46.77	25.00	np	16.54	0.00	29.73
01MW-21	46.21	46.52	25.00	np	7.49	0.00	38.72
01MW-22	46.11	46.47	25.00	6.95	6.97	0.02	39.16
01MW-23[1/]	45.81	46.11	25.00	7.37	7.48	0.11	38.42
01MW-24	na	44.59	25.00	na	na	na	na
01MW-25	na	44.61	25.00	na	na	na	na
01MW-26	46.24	46.71	25.00	np	14.28	0.00	31.96
01MW-27	46.33	46.7	25.00	np	14.70	0.00	31.63
01MW-28	45.54	46.3	25.00	14.03	15.58	1.55	31.20
01MW-29[1/]	45.57	45.92	25.00	na	na	na	na
2750 West Commodore Way							
02MW-01	24.19	24.72	19.60	np	6.04	0.00	18.15
02MW-02	20.06	20.57	9.90	np	2.63	0.00	17.43
02MW-03	27.86	28.41	19.75	np	9.62	0.00	18.24
02MW-04	27.17	27.59	20.05	np	9.49	0.00	17.68
02MW-05	36.59	37.05	33.85	np	16.64	0.00	19.95
02MW-06	26.54	27.00	19.97	np	8.81	0.00	17.73
02MW-07	20.85	21.39	12.20	np	3.31	0.00	17.54

Abbreviations and Acronyms:
bgs – below ground surface
msl – mean sea level
na – water level was not determined due to presence of product
np – no product detected

Notes:
[1/] Water elevation may be influenced by passive product skimmer installed in the well.

Table 4-1. Well Sampling Parameters, November 2004

Well	pH	Temperature (Celsius)	Conductivity (mS/cm)	Turbidity (NTU)
2737 West Commodore Way				
01MW-02	6.7	14.4	623	1.0
01MW-03	6.6	15.3	361	0.0
01MW-08	7.0	12.9	812	8.0
01MW-09	6.8	15.2	632	48.0
01MW-11	7.0	13.9	623	6.0
01MW-12	6.6	12.2	683	0.0
01MW-13	6.6	12.8	778	0.0
01MW-17	7.1	11.4	865	13.0
01MW-26	6.6	15.0	491	0.0
2750 West Commodore Way				
02MW-01	6.3	13.2	370	4.8
02MW-02	6.5	13.3	420	0.0
02MW-04	6.6	13.5	737	0.0
02MW-05	6.3	15.6	779	34.0
02MW-07	6.4	12.7	98	3.0

Abbreviations and Acronyms:
mS/cm – millisiemens per centimeter
NTU – nephelometreic turbidity unit

Table 4-2. Groundwater Results from 2737 West Commodore Way, November 2004

Sample	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)
Action Level	15[1/]	0.5[2/]	0.5[2/]	800[3/]	1,000[4/]	5,300[5/]	17,500[5/]	32,000[5/]	1,000[2/]
01MW-02	na	0.377	< 0.500	***20,100***		***8,600***	68.0	207	572
01MW-03	na	***0.925***	< 0.500	***9,320***		3,110	27.0	121	91.4
01MW-08	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-09	na	***0.736***	< 0.500	***5,620***		808	25.9	205	559
01MW-11	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-12	na	< 0.250	< 0.500	***1,320***		276	6.53	16.1	20.5
01MW-13	na	< 0.250	< 0.500	391		1.71	< 0.500	0.774	2.99
01MW-17	na	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
01MW-26A	***20.3***	< 0.250	< 0.500	***1,130***		131	6.94	55.0	38.6
01MW-26B	***20.9***	< 0.250	< 0.500	***1,210***		143	7.83	60.2	38.4
RPD	***3%***	*nc*	*nc*	***6.8%***		***9%***	*12%*	*9%*	*1%*

Abbreviations and acronyms:
mg/L – milligram per liter
µg/L – microgram per liter
MTCA – Model Toxics Control Act
NOAA – National Oceanic and Atmospheric Administration
na – no analysis requested
nc – not calculated
RPD – relative percent difference
SQuiRT™ – Screening Quick Reference Table
% - percent
< symbol indicates result is less than reporting limit

Notes:
Results above action levels in bold and italics
[1/]NOAA SQuiRT™ value for freshwater continuous concentration
[2/]MTCA Method A
[3/] MTCA Method A gasoline range with benzene present
[4/] MTCA Method A gasoline range without benzene present
[5/] NOAA SQuiRT™ value for freshwater maximum concentration

Table 4-3. Groundwater Results from 2750 West Commodore Way, November 2004

Sample	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
Action Level	0.5[2/]	0.5[2/]	800[3/]	1,000[4/]	5,300[5/]	17,500[5/]	32,000[5/]	1,000[2/]
02MW-01	< 0.250	< 0.500	188		48.4	1.24	0.682	4.46
02MW-02	< 0.250	< 0.500	< 50.0		< 0.500	< 0.500	< 0.500	< 1.00
02MW-04A	< 0.250	< 0.500	***3,340***		22.7	25.6	215	220
02MW-04B	< 0.250	< 0.500	***3,250***		21.7	24.1	188	211
RPD	*nc*	*nc*	*3%*		*5%*	*6%*	*13%*	*4%*
02MW-05	< 0.250	< 0.500	178		< 0.500	< 0.500	< 0.500	< 1.00
02MW-07	< 0.250	< 0.500	80.4		< 0.500	< 0.500	< 0.500	1.27

Abbreviations and acronyms:
mg/L – milligram per liter
µg/L – microgram per liter
MTCA – Model Toxics Control Act
NOAA – National Oceanic and Atmospheric Administration
nc – not calculated
RPD – relative percent difference
SQuiRT™ – Screening Quick Reference Table
% - percent
< symbol indicates result is less than reporting limit

Notes:
Results above action levels in bold and italics
[1/]NOAA SQuiRT™ value for freshwater continuous concentration
[2/]MTCA Method A
[3/] MTCA Method A gasoline range with benzene present
[4/] MTCA Method A gasoline range without benzene present
[5/] NOAA SQuiRT™ value for freshwater maximum concentration

Annual Event/Fourth Quarter 2005
Groundwater Monitoring Event
Site #01-600
Seattle, Washington

December 20, 2005

Prepared for

Time Oil Co.
2737 West Commodore Way
Seattle, Washington

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1.0 INTRODUCTION

This report presents the results of the annual groundwater monitoring event conducted in fourth quarter 2005 (October 2005) by Landau Associates on behalf of Time Oil Co. (Time Oil) at the Time Oil Seattle Terminal, Site No. 01-600 (the site). The site is located at 2737 and 2750 West Commodore Way in Seattle, Washington (Figure 1). The two properties are adjacent to each other but on opposite sides of Commodore Way and, for the purposes of this report, will be discussed concurrently. These activities are being conducted by Time Oil as part of an independent cleanup action in progress under a Voluntary Cleanup Program agreement with the Washington State Department of Ecology (Ecology).

2.0 SITE BACKGROUND

The site is an inactive tank farm facility that was used to store gasoline, diesel, and various other liquid fuels and fuel additives. The site is surrounded by commercial and industrial properties to the east, south, and west and by the Lake Washington Ship Canal to the north. A site map showing the site topography, structures, and the locations of the groundwater monitoring wells is provided on Figure 2.

Time Oil has conducted investigations at the site since 1991, including underground storage tank (UST) removal, site assessments, monitoring well installation, and petroleum-impacted soil removal. Passive skimmer pumps were installed at five monitoring well locations beginning in 2001 and a dual-phase extraction (DPE) system was pilot-tested and permitted in 2003-04. Also, product vacuum extractions have been conducted on a periodic basis and monthly extractions are planned for the remainder of 2005. Additional future planned activities in 2005 include tank farm demolition, additional UST removal, and pipeline removal below the pier. Quarterly groundwater monitoring is expected to continue through at least 2008.

3.0 GROUNDWATER MONITORING

Quarterly groundwater monitoring activities began at the site in July 2001. Tetra Tech EC, Inc. conducted the groundwater monitoring activities through the first quarter of 2005. Landau Associates began groundwater monitoring and skimmer pump operation and maintenance during the second quarter of 2005. Landau Associates collected groundwater elevation data from 35 onsite monitoring wells, groundwater samples from 33 onsite monitoring wells (Figures 3, 4, 5, 6, 7, and 8), and product samples from 6 monitoring wells. Nineteen of these wells are sampled on an annual basis; the remainder of the wells are sampled on a quarterly basis. The results of the fourth quarter 2005 event are provided in the following sections.

3.1 GROUNDWATER ELEVATIONS

Groundwater elevation data and product thickness measurements, where observed, were collected on October 24, 2005; these data are shown in Table 1. The depth to water and/or product at each location ranged from 2.46 to 23.54 ft below the top of casing. The groundwater elevation data indicate an approximate groundwater flow direction to the north toward the Ship Canal, as shown on Figure 3. Product was observed in 9 of the 35 monitoring wells (01MW-05, 01MW-10, 01MW-16, 01MW-22 through 01MW-25, 01MW-28, and 01MW-29) at thicknesses ranging from 0.25 ft (01MW-22) to 3.07 ft (01MW-05). Product thickness and the specific gravity of the product (0.8, based on an average estimate of the specific gravity of gasoline and oils) were taken into account in the calculation of the groundwater elevations, as shown in Table 1.

3.2 GROUNDWATER SAMPLING METHODOLOGY

Groundwater samples were collected on October 24 through 26 from 33 onsite groundwater monitoring wells (Figure 3, Table 2). Prior to sampling, the depth to water in each well was measured using a decontaminated electronic oil/water interface probe. New polyethylene tubing was installed in wells (where no tubing was present from previous sampling events) and the wells were purged using a peristaltic pump and low-flow groundwater sampling techniques until the water quality parameters [turbidity, pH, temperature, conductivity, oxidation-reduction potential (ORP), and dissolved oxygen (DO)] were stable (concurrent readings within 10 percent). The groundwater samples were then collected and replicate water quality parameters were measured during sample collection to verify groundwater stability. Groundwater samples were collected directly into sample containers provided by North Creek Analytical Laboratories, Inc. (NCA), stored in a sample cooler on ice, and submitted with chain-of-custody documentation to NCA.

Groundwater samples collected from wells that contained measurable product were collected by inserting ⅝-inch back-pressured polyethylene tubing into the well and through the product layer. Smaller diameter tubing (⅜-inch) was back-pressured and inserted into the ⅝-inch tubing to minimize introduction of product into the groundwater sample. Groundwater was collected using a peristaltic pump, as described above.

3.3 PRELIMINARY GROUNDWATER SCREENING LEVELS

To provide some context for evaluation of the analytical results from the quarterly monitoring event, the data were compared to available published regulatory values for preliminary screening purposes. The preliminary screening levels for detected analytes are referenced in Table 2.

Previous quarterly groundwater monitoring reports prepared by Tetra Tech (2005) used the National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Table (SQuiRT) values. These values were taken from the National Ambient Water Quality Criteria for protection of aquatic organisms. The portion of the Lake Washington Ship Canal (Ship Canal) that is adjacent to the site has been designated as "Lake Class" in Chapter 173-201A-130 (58) of the Washington Administrative Code defining Water Quality Standards for Surface Waters of the State of Washington. The "Lake Class" designation specifically defines the current or potential future use for the Ship Canal as drinking water; fish/shellfish migration, rearing, spawning, or harvesting; wildlife habitat; recreation; and commerce and navigation.

Therefore, the appropriate preliminary screening levels for this site for assessment of groundwater concentrations that are protective of surface water in the Ship Canal are the Ecology Model Toxics Control Act (MTCA) Method B Fresh Surface Water criteria for the protection of groundwater as fresh surface water (Ecology 2001). For each analyte, the most conservative appropriate Method B value was used as the screening level. Typically, these values are analogous to the National Ambient Water Quality Criteria for protection of human health (water ingestion and fish consumption). Where no MTCA Method B values were available (e.g., diesel-range, gasoline-range, and lube oil-range petroleum hydrocarbons), MTCA Method A criteria for the protection of groundwater as drinking water were used.

4.0 GROUNDWATER ANALYTICAL RESULTS

Groundwater samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) using U.S. Environmental Protection Agency (EPA) Method 8021, and gasoline-range total petroleum hydrocarbons (TPH) using Ecology Method NWTPH-Gx. Selected samples were also analyzed for diesel-range TPH using Ecology Method NWTPH-Dx and pentachlorophenol (PCP) using EPA Method 8270-SIM. In addition to the 33 groundwater samples, two field duplicate samples, 01MW-59 and 02MW-25, were collected from 01MW-09 and 02MW-05, respectively. Both duplicate samples were analyzed for BTEX and gasoline-range TPH, for quality assurance/quality control purposes. Sample 01MW-59 was also analyzed for diesel-range TPH. The laboratory analytical data report and data validation memorandum are provided in Appendix A. The analytical results from the groundwater monitoring event completed on October 24 through 26, 2005 are included in Table 2. A comparison of the analytical results for each analyte throughout 2005 is summarized in Table 3. The laboratory analytical results for samples of product collected from six wells (01MW-16, 01MW-22, 01MW-23, 01MW-25, 01MW-28, and 01MW-29) are provided in Table 4. The analytical results for all analytes at each monitoring well are shown on Figure 4. Concentration contours for the gasoline-range petroleum hydrocarbon concentrations in groundwater for the October 2005 event are shown on Figure 5; the benzene concentrations are contoured on Figure 6, the diesel-range petroleum hydrocarbon concentrations are contoured on Figure 7, and the PCP concentrations are contoured on Figure 8. For Figures 5, 6, and 7, the minimum contour represents the preliminary groundwater screening level. A summary of the analytical results is provided below by property.

4.1 2737 WEST COMMODORE WAY (MAIN PROPERTY)

- Diesel-range petroleum hydrocarbons were detected in the groundwater samples from wells 01MW-02, 01MW-03, 01MW-09, 01MW-18, 01MW-19, and 01MW-21 at concentrations ranging from 0.256 to 1.44 milligrams per liter (mg/L); concentrations at four of the six samples contained concentrations greater than the MTCA Method A preliminary screening level of 0.5 mg/L.

- Lube oil-range petroleum hydrocarbons were not detected in any of the groundwater samples collected during fourth quarter 2005.

- Gasoline-range petroleum hydrocarbons were detected in the groundwater samples from wells 01MW-02, 01MW-03, 01MW-04, 01MW-09, 01MW-12, 01MW-13, 01MW-18, 01MW-19, 01MW-20, 01MW-21, 01MW-26, and 01MW-27 at concentrations ranging from 363 to 25,700 micrograms per liter (µg/L); concentrations at 10 of the 12 locations contained concentrations greater than the MTCA Method A preliminary screening level of 800 µg/L (when benzene is present).

- Benzene was detected in groundwater samples from wells 01MW-02, 01MW-03, 01MW-04, 01MW-09, 01MW-12, 01MW-13, 01MW-18, 01MW-19, 01MW-20, 01MW-21, 01MW-26, and 01MW-27 at concentrations ranging from 1.38 to 9,840 µg/L, with the maximum concentration observed at well 01MW-03. All of the detected benzene concentrations are greater than the MTCA Method B preliminary screening level of 1.2 µg/L.

- Toluene was detected in groundwater samples from wells 01MW-02, 01MW-03, 01MW-04, 01MW-09, 01MW-12, 01MW-18, 01MW-19, 01MW-20, 01MW-26, and 01MW-27 at concentrations ranging from 2.88 to 986 µg/L, which are all less than the MTCA Method B preliminary screening level of 1,000 µg/L.

- Ethylbenzene was detected in groundwater samples from wells 01MW-02, 01MW-03, 01MW-04, 01MW-09, 01MW-12, 01MW-18, 01MW-19, 01MW-20, 01MW-26, and 01MW-27 at concentrations ranging from 14.3 to 894 µg/L. Only one sample (01MW-19 with a concentration of 894 µg/L) was above the MTCA Method B preliminary screening level of 700 µg/L.

- Total xylenes were detected in groundwater samples from wells 01MW-02, 01MW-03, 01MW-04, 01MW-09, 01MW-12, 01MW-13, 01MW-18, 01MW-19, 01MW-20, 01MW-21, 01MW-26, and 01MW-27 at concentrations ranging from 2.26 to 4,610 µg/L, which are all less than the MTCA Method B preliminary screening level of 10,000 µg/L.

- PCP was detected in the groundwater samples from 01MW-01, 01MW-22, 01MW-23, and 01MW-26 at concentrations of 6.79, 273, 19.8, and 9 µg/L, respectively. All detected concentrations are greater than the MTCA Method B preliminary screening level of 0.01 µg/L.

4.2 2750 WEST COMMODORE WAY (ADJACENT TO SHIP CANAL)

- Concentrations of all analyzed constituents (gasoline-range hydrocarbons and BTEX) were below laboratory reporting limits at the two wells closest to the Ship Canal, 02MW-02 and 02MW-07, and in well 02MW-06. Except as listed below, concentrations of analyzed constituents were also below laboratory reporting limits.

- Gasoline-range petroleum hydrocarbons were detected at a concentration greater than the MTCA Method A preliminary screening level of 800 µg/L (when benzene is present) in the groundwater sample from well 02MW-04, at an estimated concentration of 3,990 µg/L. Gasoline-range petroleum hydrocarbons were also detected at wells 02MW-01 and 02MW-05 at concentrations of 379 and 335 µg/L, respectively.

- Benzene was detected at concentrations greater than the MTCA Method B preliminary screening level of 1.2 µg/L in groundwater samples from wells 02MW-01 and 02MW-04 at concentrations of 52.2 and 29.2 µg/L, respectively. In addition, benzene was detected at well 02MW-03 at a concentration of 0.894 µg/L.

- Toluene was detected in the groundwater sample from well 02MW-04 at a concentration of 262 µg/L, which is less than the MTCA Method B preliminary screening level of 1,000 µg/L.

- Ethylbenzene was detected in groundwater samples from wells 02MW-01 and 02MW-04 at concentrations of 1.38 µg/L and 24.9 µg/L, respectively, which are less than the MTCA Method B preliminary screening level of 700 µg/L.

- Total xylenes were detected in groundwater samples from wells 02MW-01 and 02MW-04 at concentrations of 3.84 and 263 µg/L, respectively, which are less than the MTCA Method B preliminary cleanup level of 10,000 µg/L.

4.3 PRODUCT SAMPLING

Passive skimmer pumps are currently installed in monitoring wells 01MW-05, 01MW-09, 01MW-23, 01MW-25, and 01MW-29. Product (if present) was not removed from the passive skimmers during fourth quarter 2005. In an effort to determine whether the product on site contains PCP, product samples from wells 01MW-16, 01MW-22, 01MW-23, 01MW-25, 01MW-28, and 01MW-29 were collected and analyzed for PCP. The product results are provided in Table 4. The results indicate that the product in all the wells sampled consists predominantly of diesel- and lube oil-range petroleum constituents and does not contain PCP. This information will be used to identify appropriate disposal options for product removed from the passive skimmers and during planned monthly batch vacuum extractions of product from site wells.

5.0 SUMMARY AND CONCLUSIONS

Gasoline-range petroleum hydrocarbons and benzene were detected at concentrations exceeding MTCA screening levels in wells on both properties in areas including the northern portion of the tank farm and the office building toward Commodore Way and in isolated areas to the north of Commodore Way, as shown on Figures 3, 5, and 6. On the south side of Commodore Way, diesel-range petroleum hydrocarbons also exceeded MTCA screening levels, as shown on Figure 7, but in a less widespread area of the tank farm. PCP exceeded the MTCA screening level where analyzed, but only in the former PCP mixing area (Figure 8). The maximum concentrations of gasoline-range petroleum hydrocarbons and benzene constituents occur in areas north and east of the office building on the 2737 Commodore Way property. Overall, concentrations of the petroleum constituents exceeding the MTCA preliminary screening levels are greater on the 2737 Commodore Way property than on the 2750 Commodore Way property (adjacent to the Ship Canal) and appear to decrease between the two areas. However, this decrease could reflect the distribution of monitoring well locations between the two areas.

In general, detected analytes were found to have decreased from levels observed in the third quarter of 2005 (July) on both the 2737 and 2750 Commodore Way properties (Table 3), with the exception of monitoring wells 01MW-03, 01MW-12, and 02MW-01. During fourth quarter 2005, there were no detections of target analytes in wells 02MW-02 or 02MW-07, which are located adjacent to the Ship Canal and downgradient from the site (Figure 4).

Due to only a 1-liter capacity and quarterly maintenance, the passive skimmer pumps are not able to remove a quantity of product that will have a measurable impact on the groundwater quality. Monthly batch vacuum extractions of product from site wells should be more effective in removing the product. Due to potential concentrations of PCP in the product, the vacuum extractions are scheduled to begin following the determination of a proper disposal method and facility. Based on the lack of PCP in the product, it is anticipated that vacuum extractions will be conducted in the near future to remove the product in areas where there is not a potential for the extractions to influence the PCP distribution in groundwater.

6.0 USE OF THIS REPORT

This quarterly groundwater report has been prepared by Landau Associates for the exclusive use of Time Oil for specific application to the Seattle Terminal No. 01-600 site. Services for this project were conducted in accordance with the Environmental Services Contract between Time Oil Co. and Landau Associates, Inc. Landau Associates has performed our services in accordance with generally accepted engineering and consulting standards for environmental work in effect at the time and locality services were performed. The reuse of information, conclusions, and recommendations provided herein by Time Oil or others in connection with any site other than the Seattle Terminal without Landau Associates' written permission shall be at the sole risk of Time Oil and without liability to Landau Associates.

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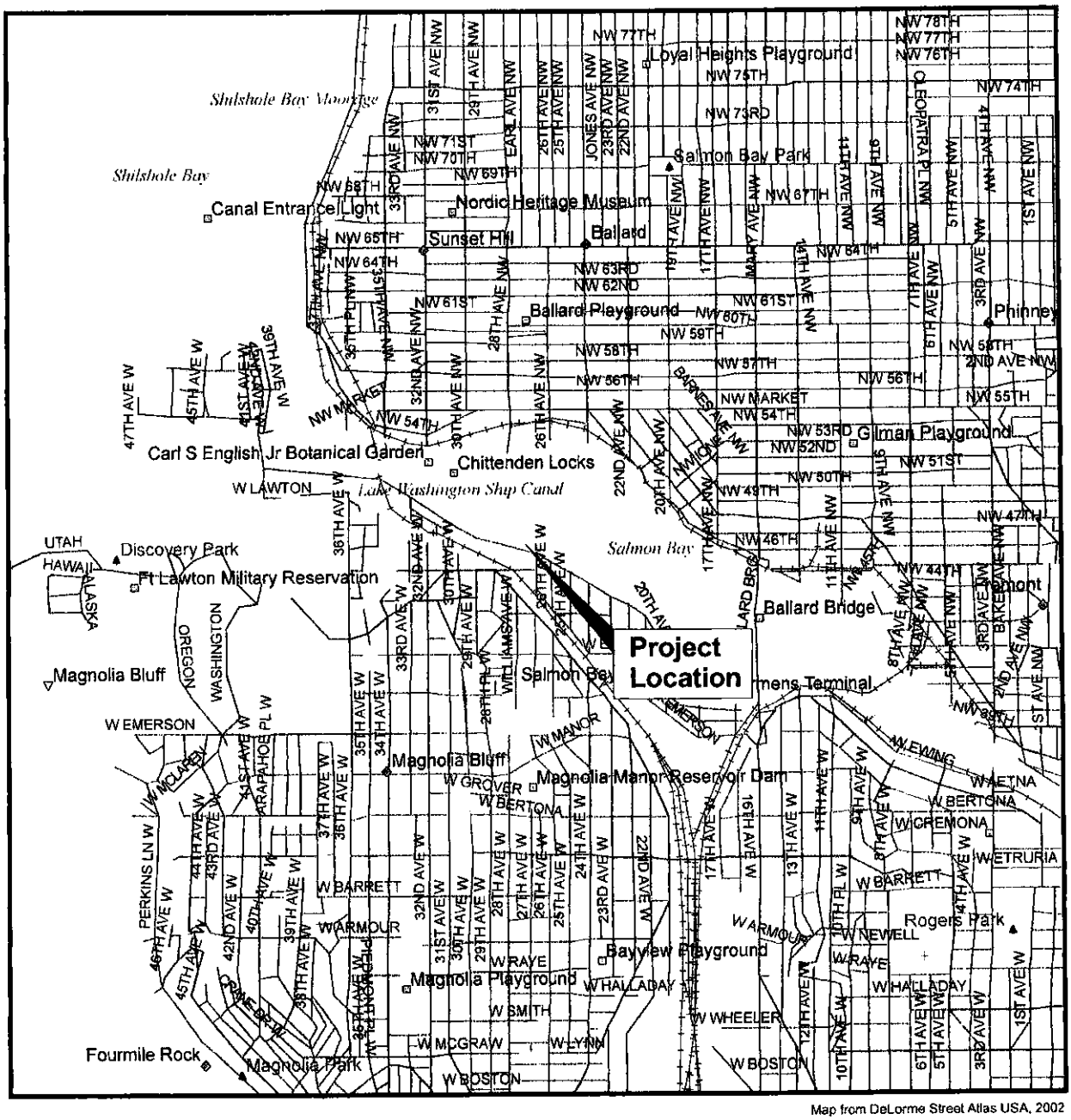
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Project Location
Shilshole Bay Moorage
Shilshole Bay
Canal Entrance Light
Nordic Heritage Museum
Sunset Hill
Ballard
Loyal Heights Playground
Salmon Bay Park
Ballard Playground
Phinney
Carl S English Jr Botanical Garden
Chittenden Locks
Lake Washington Ship Canal
Salmon Bay
Discovery Park
Ft Lawton Military Reservation
Ballard Bridge
Magnolia Bluff
Magnolia Manor Reservoir Dam
Bayview Playground
Magnolia Playground
Rogers Park
Fourmile Rock
Magnolia Park
Gilman Playground
Fremont
W EMERSON
W BARRETT
W RAYE
W HALLADAY
W SMITH
W MCGRAW
W BOSTON
W WHEELER
W NEWELL
W ETRURIA
W CREMONA
W BERTONA
W GROVER
W MANOR
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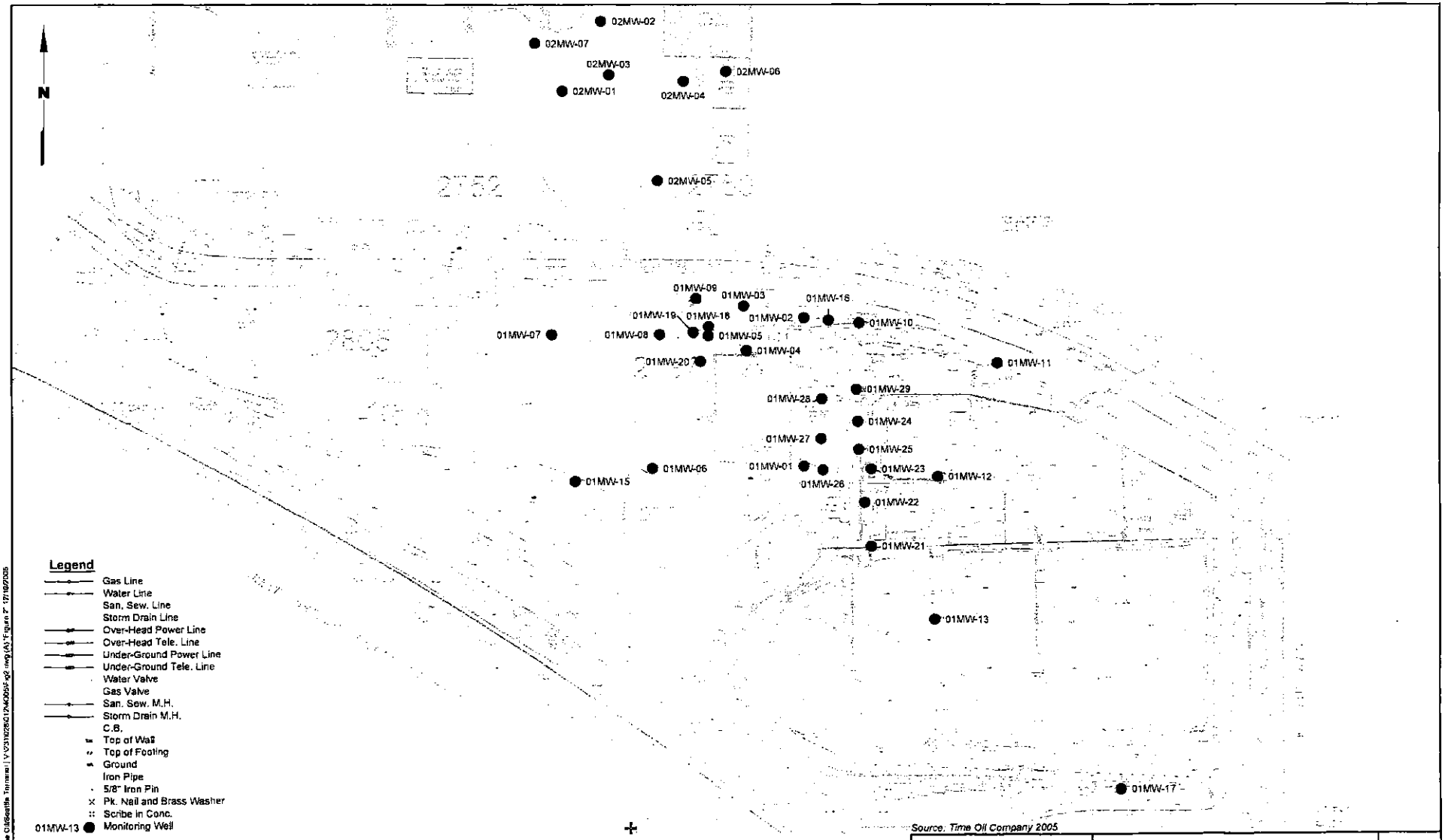

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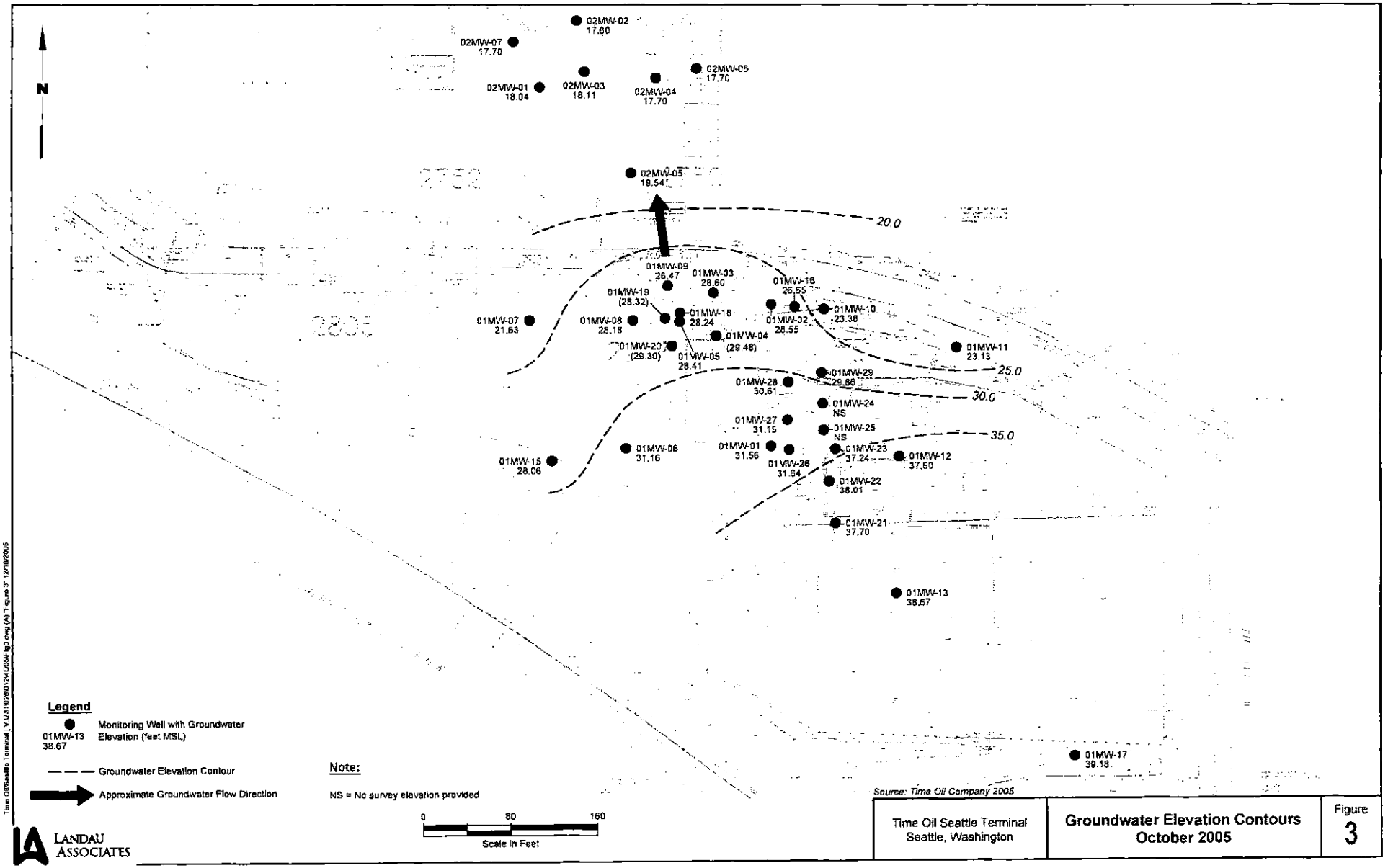
Time Oil Seattle Terminal Seattle, Washington	**Site Plan and Monitoring Well Locations**	Figure **2**

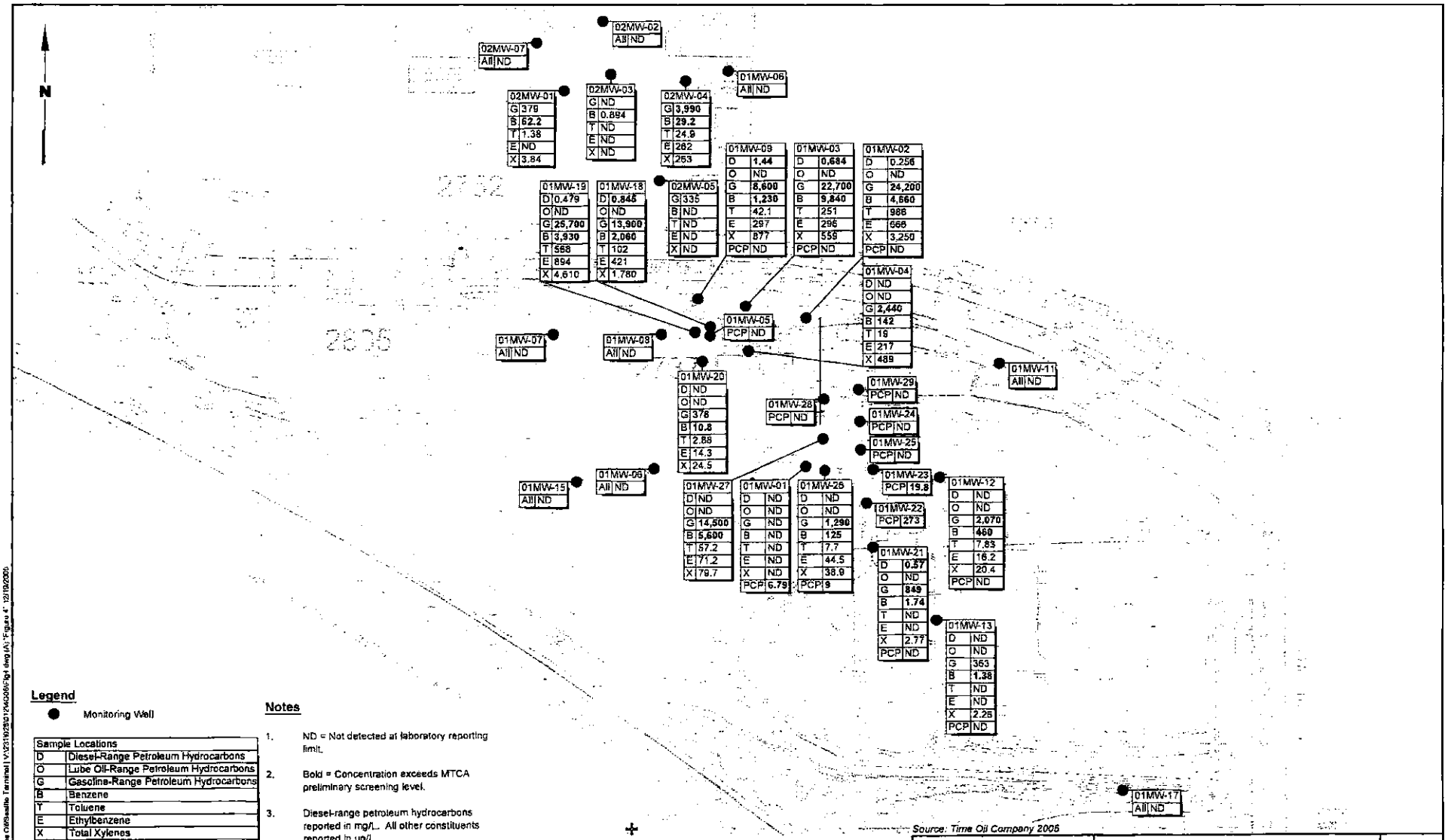
Time Oil/Seattle Terminal | V:\31\0285.01\WORD\F-sp2-map(A).ai "Figure 2" 07/19/2005



LANDAU ASSOCIATES

Time Oil Seattle Terminal Seattle, Washington	**Groundwater Elevation Contours October 2005**	Figure 3

Time Oil Seattle Terminal | V:\231\2005\12\01\005\Fig3.Dwg (A) Figure 3 12/19/2005



Legend

- Monitoring Well

Sample Locations	
D	Diesel-Range Petroleum Hydrocarbons
O	Lube Oil-Range Petroleum Hydrocarbons
G	Gasoline-Range Petroleum Hydrocarbons
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total Xylenes
PCP	Pentachlorophenol

Notes

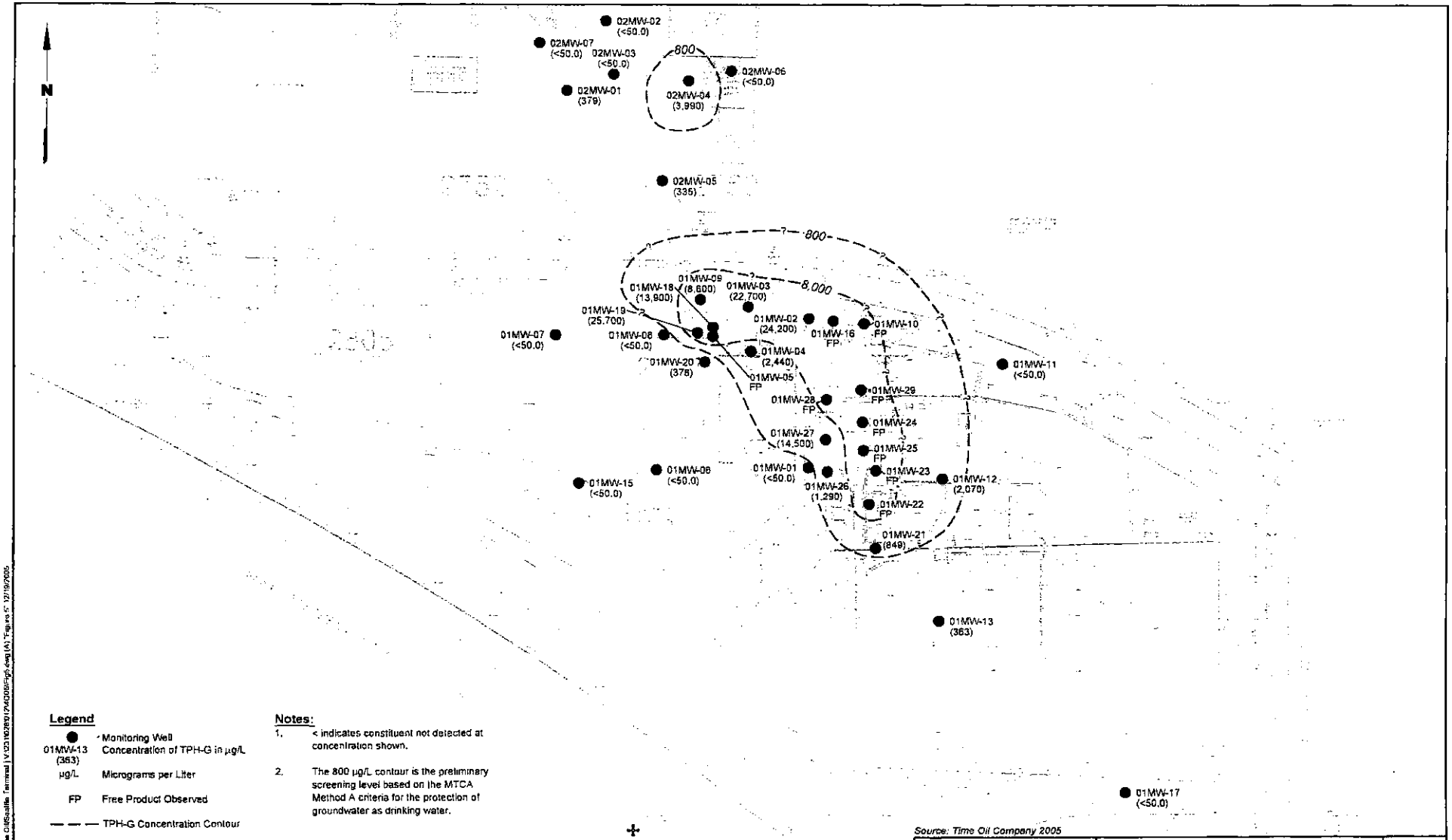
1. ND = Not detected at laboratory reporting limit.
2. Bold = Concentration exceeds MTCA preliminary screening level.
3. Diesel-range petroleum hydrocarbons reported in mg/L. All other constituents reported in µg/L.

LANDAU ASSOCIATES

Time Oil Seattle Terminal
Seattle, Washington

Groundwater Analytical Results
October 2005

Figure
4



Legend

- Monitoring Well
- 01MW-13 (363) — Concentration of TPH-G in µg/L
- µg/L — Micrograms per Liter
- FP — Free Product Observed
- — — — TPH-G Concentration Contour

Notes:

1. < indicates constituent not detected at concentration shown.
2. The 800 µg/L contour is the preliminary screening level based on the MTCA Method A criteria for the protection of groundwater as drinking water.

Source: Time Oil Company 2005

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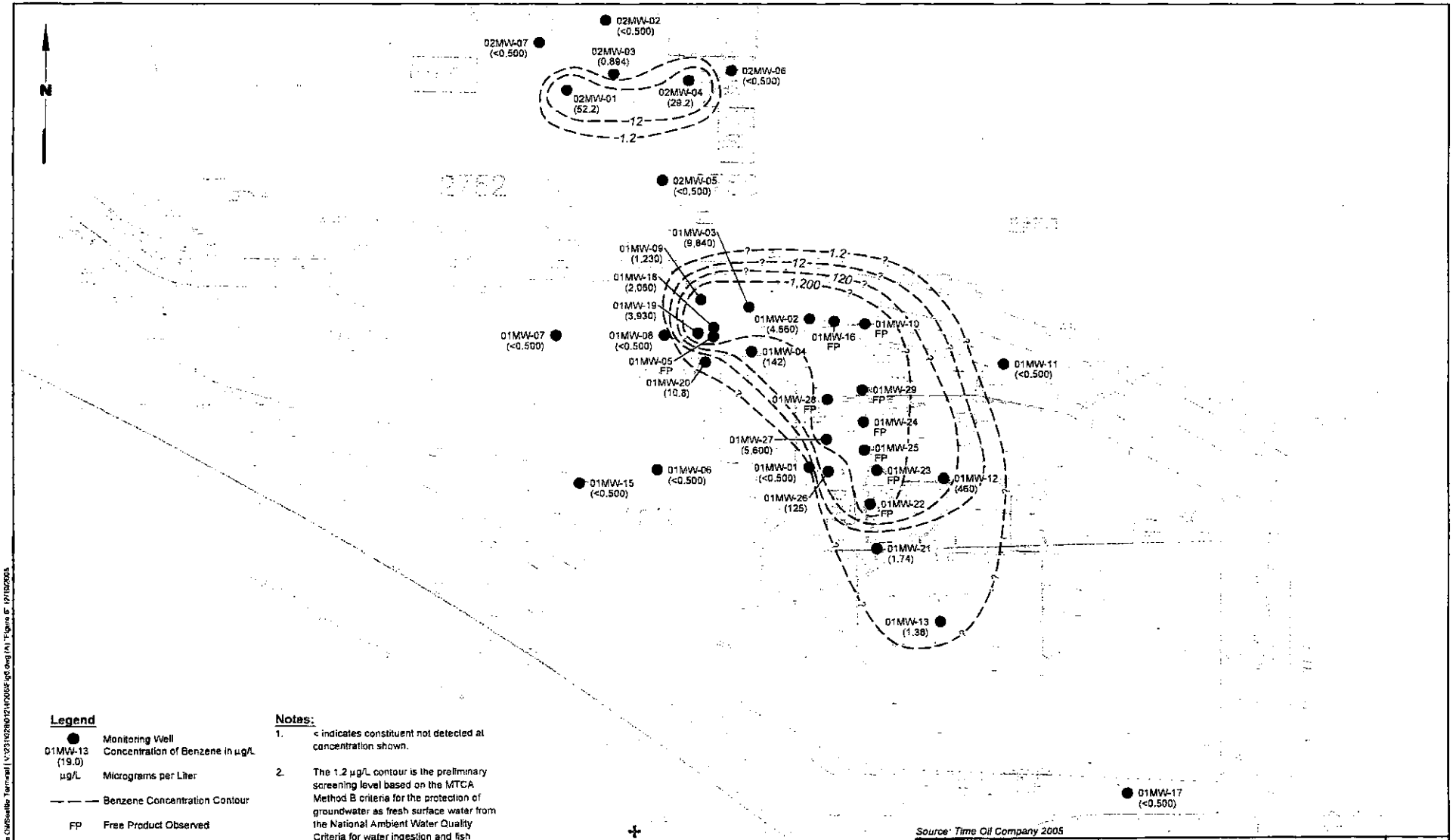
Time Oil Seattle Terminal Seattle, Washington	**Gasoline-Range Petroleum Hydrocarbons in Groundwater October 2005**	Figure **5**

Time Oil\Seattle Terminal | V:\231\62891\PAGD\Fig5.dwg (A) Figure 5 12/19/2005



Legend

- Monitoring Well
- 01MW-13 (19.0) Concentration of Benzene in µg/L
- µg/L Micrograms per Liter
- Benzene Concentration Contour
- FP Free Product Observed

Notes:

1. < indicates constituent not detected at concentration shown.
2. The 1.2 µg/L contour is the preliminary screening level based on the MTCA Method B criteria for the protection of groundwater as fresh surface water from the National Ambient Water Quality Criteria for water ingestion and fish consumption.

0 80 160
Scale in Feet

Source: Time Oil Company 2005

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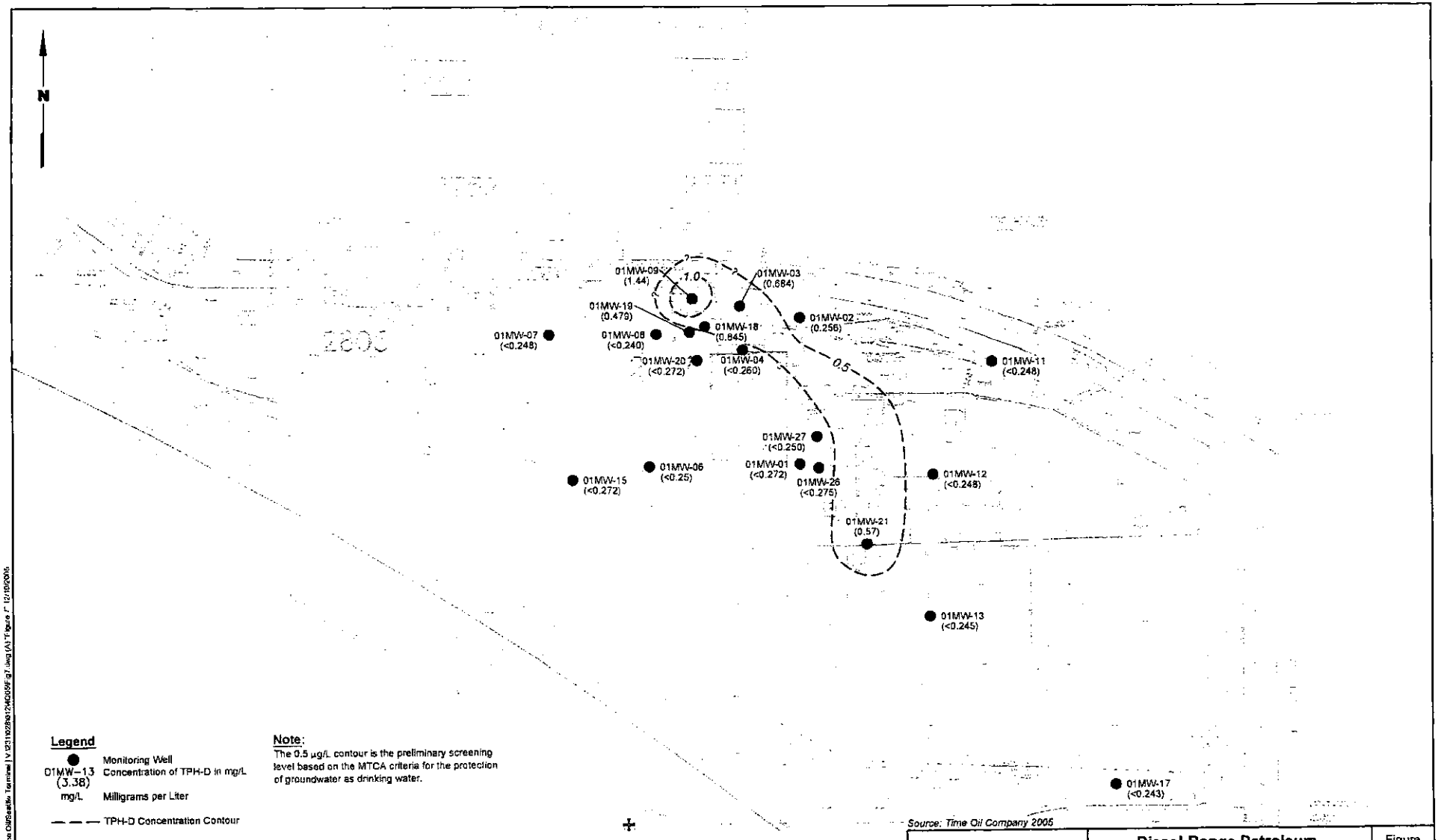
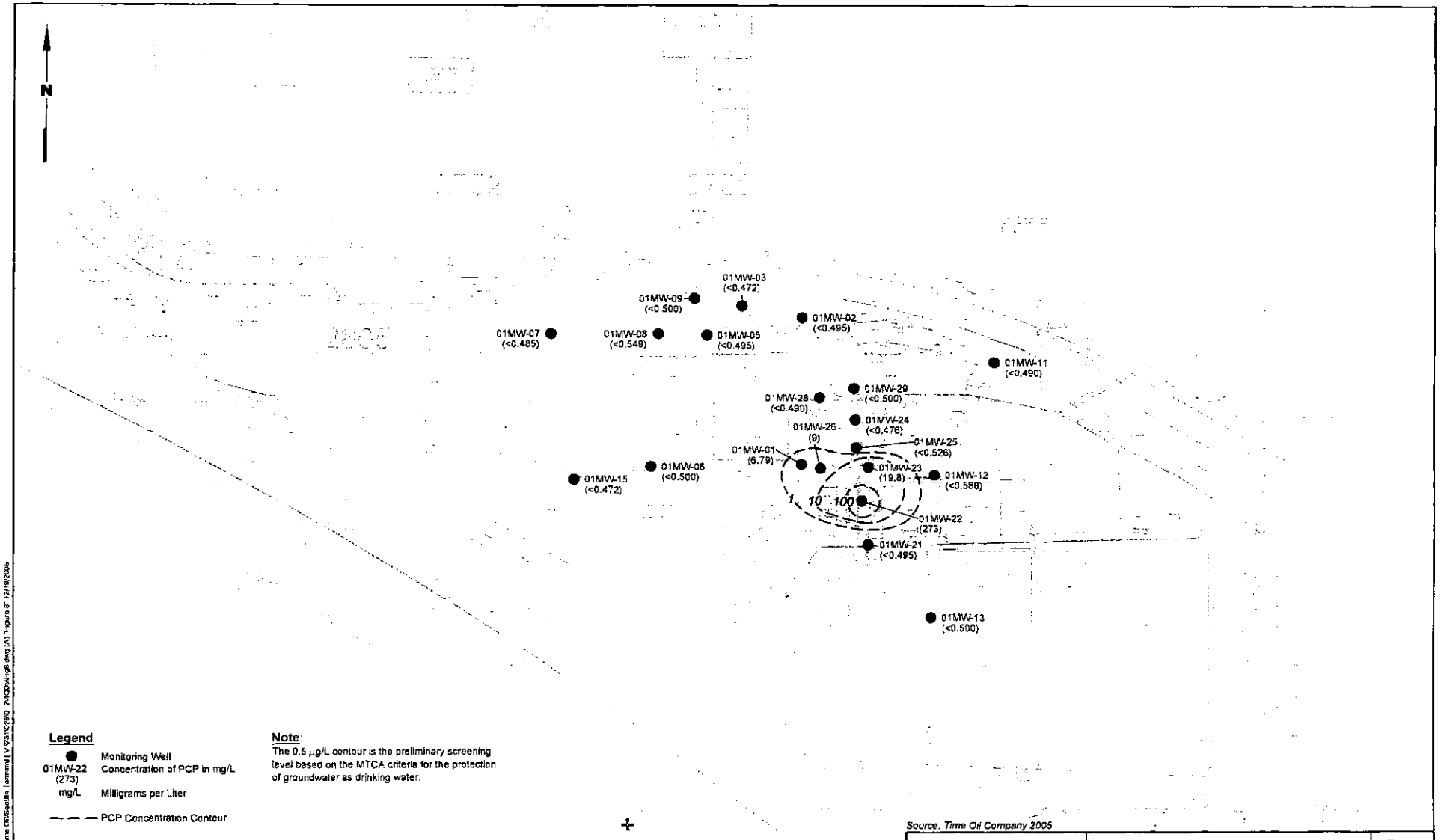
Time Oil Seattle Terminal Seattle, Washington	**Benzene in Groundwater October 2005**	Figure **6**

Time Oil\Seattle Terminal (1V3\192560\12\1F200\F1g06.dwg (H) "Figure 6" 10/19/2005


N
01MW-09 (1.44)
1.0
01MW-03 (0.684)
01MW-19 (0.479)
01MW-18 (0.845)
01MW-02 (0.256)
01MW-07 (<0.248)
01MW-08 (<0.240)
01MW-20 (<0.272)
01MW-04 (<0.260)
0.5
01MW-11 (<0.248)
01MW-27 (<0.250)
01MW-15 (<0.272)
01MW-06 (<0.25)
01MW-01 (<0.272)
01MW-26 (<0.275)
01MW-12 (<0.248)
01MW-21 (0.57)
01MW-13 (<0.245)
01MW-17 (<0.243)
Legend
Monitoring Well
01MW-13 (3.38) Concentration of TPH-D in mg/L
mg/L Milligrams per Liter
TPH-D Concentration Contour
Note:
The 0.5 µg/L contour is the preliminary screening level based on the MTCA criteria for the protection of groundwater as drinking water.
0 80 160
Scale in Feet
Source: Time Oil Company 2005
LANDAU ASSOCIATES
Time Oil Seattle Terminal
Seattle, Washington
Diesel-Range Petroleum Hydrocarbons in Groundwater October 2005
Figure 7



Legend

- Monitoring Well
- 01MW-22 (273) mg/L — Concentration of PCP in mg/L; Milligrams per Liter
- PCP Concentration Contour

Note:
The 0.5 µg/L contour is the preliminary screening level based on the MTCA criteria for the protection of groundwater as drinking water.

0 80 160
Scale in Feet

Source: Time Oil Company 2005

LANDAU ASSOCIATES

Time Oil Seattle Terminal Seattle, Washington	**PCP in Groundwater October 2005**	Figure 8

Time Oil\Seattle Terminal\ V-\25\109800\ACAD\GIS\gift dwg (A) Figure 8 12/19/2005

TABLE 1
GROUNDWATER ELEVATIONS
TIME OIL SITE #01-600 - SEATTLE TERMINAL
SEATTLE, WASHINGTON

Location	Well Casing Elevation	Time	Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation	Comments
01MW-01	46.48	11:40	14.92			31.56	Product odor
01MW-02	44.78	12:20	16.23			28.55	Product odor
01MW-03	44.35	12:25	15.75			28.60	
01MW-04*	45.08	16:32	15.60			29.48	
01MW-05	45.40	12:45	19.45	16.38	3.07	28.41	Sheen, strong odor
01MW-06	47.74	9:39	16.58			31.16	Petroluem odor
01MW-07	45.17	9:52	23.54			21.63	
01MW-08	45.21	9:59	17.03			28.18	
01MW-09	43.91	10:05	17.44			26.47	Sheen, strong odor
01MW-10	45.02	11:55	23.47	21.18	2.29	23.38	Light colored product
01MW-11	46.10	10:10	22.97			23.13	Slight product odor
01MW-12	45.84	10:57	8.24			37.60	Strong product odor
01MW-13	46.36	9:32	7.69			38.67	
01MW-15	50.89	9:42	22.83			28.06	
01MW-16	44.95	12:10	19.40	18.03	1.37	26.65	Light colored product
01MW-17	59.42	9:27	20.24			39.18	
01MW-18	45.18	12:40	16.94			28.24	Strong product odor
01MW-19	45.35	12:30	17.03			28.32	Strong product odor
01MW-20	46.27	12:35	16.97			29.30	Strong product odor
01MW-21	46.21	10:20	8.51			37.70	Well under pressure; strong product odor
01MW-22	46.11	10:24	8.30	8.05	0.25	38.01	Dark black product
01MW-23	45.81	10:36	9.04	8.45	0.59	37.24	Dark black product
01MW-24	NS	11:05	9.37	9.10	0.27	---	Light colored product
01MW-25	NS	11:26	10.21	8.54	1.67	---	Dark black product
01MW-26	46.24	11:31	14.60			31.64	Product odor
01MW-27	46.33	11:43	15.18			31.15	Sheen on probe
01MW-28	45.54	11:48	16.50	14.54	1.96	30.61	Dark black product and light colored product
01MW-29	45.57	11:21	16.72	15.46	1.26	29.86	Light colored product
02MW-01	24.19	8:48	6.15			18.04	
02MW-02	20.06	8:28	2.46			17.60	
02MW-03	27.86	9:05	9.75			18.11	
02MW-04	27.17	9:01	9.47			17.70	
02MW-05	36.59	8:55	17.05			19.54	
02MW-06	26.54	8:58	8.84			17.70	
02MW-07	20.85	8:45	3.15			17.70	

All units in feet, mean sea level.

Where light nonaqueous phase liquid (LNAPL) thickness was measured, groundwater elevation was adjusted to account for the presence of LNAPL in the well using the method described in Lenhard and Parker (1990).

Water levels collected on 10/24/2005.

* Water level collected on 10/25/05.

NS - No survey elevation provided.

TABLE 2
GROUNDWATER ANALYTICAL DATA
TIME OIL SITE #01-600 - SEATTLE TERMINAL
SEATTLE, WASHINGTON

	Screening Criteria	01MW-01 B5J0554-12 10/25/2005	01MW-02 B5J0554-08 10/25/2005	01MW-03 B5J0554-15 10/25/2005	01MW-04 B5J0554-16 10/25/2005	01MW-05 B5J0581-13 10/26/2005	01MW-06 B5J0554-09 10/25/2005	01MW-07 B5J0545-09 10/24/2005	01MW-08 B5J0554-01 10/25/2005
DIESEL-RANGE HYDROCARBONS									
NWTPH-Dx (mg/L)									
Diesel Range Hydrocarbons	0.5 (a)	0.272 U	**0.256**	**0.684**	0.260 U	NA	0.25 U	0.248 U	0.240 U
Lube Oil Range Hydrocarbons	0.5 (a)	0.543 U	0.476 U	0.532 U	0.521 U	NA	0.500 U	0.495 U	0.481 U
GASOLINE AND BTEX									
NWTPH-Gx AND EPA METHOD 8021B (µg/L)									
Gasoline Range Hydrocarbons	800 (a)	50.0 U	**24,200**	**22,700**	**2,440**	NA	50.0 U	50.0 U	50.0 U
Benzene	1.2 (b)	0.500 U	**4,660**	**9,840**	**142**	NA	0.500 U	0.500 U	0.500 U
Toluene	1000 (b)	0.500 U	**986**	**251**	**19**	NA	0.500 U	0.500 U	0.500 U
Ethylbenzene	700 (b)	0.500 U	**666**	**296**	**217**	NA	0.500 U	0.500 U	0.500 U
Xylenes (total)	10,000 (b)	1.00 U	**3,250**	**559**	**489**	NA	1.00 U	1.00 U	1.00 U
PENTACHLOROPHENOL (PCP)									
EPA Method 8270-SIM (µg/L)									
Pentachlorophenol	0.01 (b)	**6.79**	0.495 U	0.472 U	NA	0.495 U	0.500 U	0.485 U	0.549 U

TABLE 2
GROUNDWATER ANALYTICAL DATA
TIME OIL SITE #01-600 - SEATTLE TERMINAL
SEATTLE, WASHINGTON

	Screening Criteria	01MW-09 B5J0554-05 10/25/2005	Dup of 01 MW - 09 01MW-59 B5J0554-06 10/25/2005	01MW-11 B5J0545-13 10/24/2005	01MW-12 B5J0554-11 10/25/2005	01MW-13 B5J0545-12 10/24/2005	01MW-15 B5J0554-02 10/25/2005	01MW-17 B5J0545-11 10/24/2005	01MW-18 B5J0554-07 10/25/2005
DIESEL-RANGE HYDROCARBONS									
NWTPH-Dx (mg/L)									
Diesel Range Hydrocarbons	0.5 (a)	**1.44** J	**0.619** J	0.248 U	0.248 U	0.245 U	0.272 U	0.243 U	**0.845**
Lube Oil Range Hydrocarbons	0.5 (a)	0.495 U	0.532 U	0.495 U	0.495 U	0.490 U	0.543 U	0.485 U	0.495 U
GASOLINE AND BTEX									
NWTPH-Gx AND EPA METHOD 8021B (µg/L)									
Gasoline Range Hydrocarbons	800 (a)	**8,600**	**9,480**	50.0 U	**2,070**	**363**	50.0 U	50.0 U	**13,900**
Benzene	1.2 (b)	**1,230**	**1,440**	0.500 U	**460**	**1.38**	0.500 U	0.500 U	**2,060**
Toluene	1000 (b)	**42.1**	**36.9**	0.500 U	**7.83**	0.500 U	0.500 U	0.500 U	**102**
Ethylbenzene	700 (b)	**297**	**285**	0.500 U	**16.2**	0.500 U	0.500 U	0.500 U	**421**
Xylenes (total)	10,000 (b)	**877**	**725**	1.00 U	**20.4**	**2.26**	1.00 U	1.00 U	**1,780**
PENTACHLOROPHENOL (PCP)									
EPA Method 8270-SIM (µg/L)									
Pentachlorophenol	0.01 (b)	0.500 U	0.485 U	0.490 U	0.588 U	0.500 U	0.472 U	NA	NA

TABLE 2
GROUNDWATER ANALYTICAL DATA
TIME OIL SITE #01-600 - SEATTLE TERMINAL
SEATTLE, WASHINGTON

	Screening Criteria	01MW-19 B5J0554-14 10/25/2005	01MW-20 B5J0554-13 10/25/2005	01MW-21 B5J0554-10 10/25/2005	01MW-22 B5J0545-11 10/26/2005	01MW-23 B5J0581-03 10/26/2005	01MW-24 B5J0581-07 10/26/2005	01MW-25 B5J0581-05 10/26/2005
DIESEL-RANGE HYDROCARBONS								
NWTPH-Dx (mg/L)								
Diesel Range Hydrocarbons	0.5 (a)	**0.479**	0.272 U	**0.57**	NA	NA	NA	NA
Lube Oil Range Hydrocarbons	0.5 (a)	0.500 U	0.543 U	0.481 U	NA	NA	NA	NA
GASOLINE AND BTEX								
NWTPH-Gx AND EPA METHOD 8021B (µg/L)								
Gasoline Range Hydrocarbons	800 (a)	**25,700**	**378**	**849**	NA	NA	NA	NA
Benzene	1.2 (b)	**3,930**	**10.8**	**1.74**	NA	NA	NA	NA
Toluene	1000 (b)	**568**	**2.88**	0.500 U	NA	NA	NA	NA
Ethylbenzene	700 (b)	**894**	**14.3**	0.500 U	NA	NA	NA	NA
Xylenes (total)	10,000 (b)	**4,610**	**24.5**	**2.77**	NA	NA	NA	NA
PENTACHLOROPHENOL (PCP)								
EPA Method 8270-SIM (µg/L)								
Pentachlorophenol	0.01 (b)	NA	NA	0.495 U	**273**	**19.8**	0.476 U	0.526 U

TABLE 2
GROUNDWATER ANALYTICAL DATA
TIME OIL SITE #01-600 - SEATTLE TERMINAL
SEATTLE, WASHINGTON

	Screening Criteria	01MW-26 B5J0554-03 10/25/2005	01MW-27 B5J0554-04 10/25/2005	01MW-28 B5J0581-10 10/26/2005	01MW-29 B5J0581-08 10/26/2005	02MW-01 B5J0545-03 10/24/2005	02MW-02 B5J0545-01 10/24/2005	02MW-03 B5J0545-06 10/24/2005
DIESEL-RANGE HYDROCARBONS								
NWTPH-Dx (mg/L)								
Diesel Range Hydrocarbons	0.5 (a)	0.275 U	0.250 U	NA	NA	NA	NA	NA
Lube Oil Range Hydrocarbons	0.5 (a)	0.549 U	0.500 U	NA	NA	NA	NA	NA
GASOLINE AND BTEX								
NWTPH-Gx AND EPA METHOD 8021B (µg/L)								
Gasoline Range Hydrocarbons	800 (a)	**1,290**	**14,500**	NA	NA	**379**	50.0 U	50.0 U
Benzene	1.2 (b)	**125**	**5,600**	NA	NA	**52.2**	0.500 U	**0.894**
Toluene	1000 (b)	**7.7**	**57.2**	NA	NA	**1.38**	0.500 U	0.500 U
Ethylbenzene	700 (b)	**44.5**	**71.2**	NA	NA	0.500 U	0.500 U	0.500 U
Xylenes (total)	10,000 (b)	**38.9**	**79.7**	NA	NA	**3.84**	1.00 U	1.00 U
PENTACHLOROPHENOL (PCP)								
EPA Method 8270-SIM (µg/L)								
Pentachlorophenol	0.01 (b)	**9**	NA	0.490 U	0.500 U	NA	NA	NA

TABLE 2
GROUNDWATER ANALYTICAL DATA
TIME OIL SITE #01-600 - SEATTLE TERMINAL
SEATTLE, WASHINGTON

	Screening Criteria	02MW-04 B5J0545-08 10/24/2005	02MW-05 B5J0545-05 10/24/2005	Dup of 02MW-05 02MW-25 B5J0545-04 10/24/2005	02MW-06 B5J0545-07 10/24/2005	02MW-07 B5J0545-02 10/24/2005
DIESEL-RANGE HYDROCARBONS						
NWTPH-Dx (mg/L)						
Diesel Range Hydrocarbons	0.5 (a)	NA	NA	NA	NA	NA
Lube Oil Range Hydrocarbons	0.5 (a)	NA	NA	NA	NA	NA
GASOLINE AND BTEX						
NWTPH-Gx AND EPA METHOD 8021B (µg/L)						
Gasoline Range Hydrocarbons	800 (a)	**3,990** J	**335**	**316**	50.0 U	50.0 U
Benzene	1.2 (b)	**29.2**	0.500 U	0.500 U	0.500 U	0.500 U
Toluene	1000 (b)	**24.9**	0.500 U	0.500 U	0.500 U	0.500 U
Ethylbenzene	700 (b)	**262**	0.500 U	0.500 U	0.500 U	0.500 U
Xylenes (total)	10,000 (b)	**263**	1.00 U	1.00 U	1.00 U	1.00 U
PENTACHLOROPHENOL (PCP)						
EPA Method 8270-SIM (µg/L)						
Pentachlorophenol	0.01 (b)	NA	NA	NA	NA	NA

Notes:
(a) Model Toxics Control Act (MTCA) Method A criteria for the protection of groundwater as drinking water
(b) Model Toxics Control Act (MTCA) Method B criteria for the protection of groundwater as fresh surface water. Values based on ambient water quality criteria for the protection of human health
NA = Indicates the compound was not analyzed for this sample
Bold indicates the compound was detected above the laboratory reporting limit
Box indicates exceedance of screening criteria
U = Indicates the compound was undetected at the reported concentration
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

TABLE 3
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
JANUARY 2005 TO PRESENT TIME OIL #01-600 SEATTLE TERMINAL

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)
MTCA Screening Level		*0.01 (b)*	*0.5 (a)*	*0.5 (a)*	*800 (a)*	*1.2 (b)*	*1000 (b)*	*700 (b)*	*10,000 (a)*
01MW-02	01/05/2005	NA	**0.433**	< 0.500	**31,300**	**12,600**	**218**	**290**	**1,000**
01MW-02	04/25/2005	NA	**2.06**	< 0.500	**33,400**	**16,100**	**355**	**457**	**1,340**
01MW-02	07/26/2005	NA	**2.21**	< 0.500	**27,600**	**10,400**	**735**	**664**	**2,570**
01MW-02	10/25/2005	< 0.495	**0.256**	< 0.476	**24,200**	**4,660**	**986**	**666**	**3,250**
01MW-03	01/05/2005	NA	**0.762**	< 0.500	**2,720**	**729**	**17.1**	**32.6**	**24.7**
01MW-03	04/25/2005	NA	**1.12**	< 0.500	**5,690**	**2,550**	**13.4**	**23.5**	**27.1**
01MW-03	07/26/2005	NA	**0.998**	< 0.500	**4,200**	**957**	**13.4**	**10.5**	**35.3**
01MW-03	10/25/2005	< 0.472	**0.684**	< 0.532	**22,700**	**9,840**	**251**	**296**	**559**
01MW-08	01/05/2005	NA	< 0.250	< 0.500	< 50.0	**0.582**	< 0.500	< 0.500	< 1.00
01MW-08	04/25/2005	NA	**0.833**	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
01MW-08	07/26/2005	NA	**0.422**	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
01MW-08	10/25/2005	< 0.549	< 0.240	< 0.481	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
01MW-09	01/05/2005	NA	**0.646**	< 0.500	**6,300**	**1,130**	**45.7**	**231**	**872**
01MW-09	04/25/2005	NA	**1.78**	< 0.500	**7,620**	**1,200**	**63.4**	**281**	**972**
01MW-09	07/26/2005	NA	**20.9**	< 0.500	**9,450**	**900**	**41.9**	**261**	**964**
01MW-09 DUP	07/26/2005	NA	**5.1**	< 1.00	**9,840**	**1,160**	**47.1**	**304**	**1,110**
01MW-09	10/25/2005	< 0.500	**1.44**	< 0.495	**8,600**	**1,230**	**42.1**	**297**	**877**
01MW-09 DUP	10/25/2005	< 0.485	**0.619**	< 0.532	**9,480**	**1,440**	**36.9**	**285**	**725**
01MW-11	01/05/2005	NA	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
01MW-11	04/25/2005	NA	**1.23**	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
01MW-11	07/26/2005	NA	**1.19**	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
01MW-11	10/24/2005	< 0.490	< 0.248	< 0.495	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
01MW-12	01/05/2005	NA	**0.294**	< 0.500	**1,090**	**195**	**5.48**	**14.8**	**13**
01MW-12	04/25/2005	NA	**5.76**	< 2.50	**1,650**	**372**	**4.36**	**15.4**	**13.5**
01MW-12	07/26/2005	NA	**7.14**	**1.25**	**1,800**	**419**	**6.87**	**16.3**	**21.2**
01MW-12	10/25/2005	< 0.588	< 0.248	< 0.495	**2,070**	**460**	**7.83**	**16.2**	**20.4**

TABLE 3
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
JANUARY 2005 TO PRESENT TIME OIL #01-600 SEATTLE TERMINAL

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)
MTCA Screening Level		*0.01 (b)*	*0.5 (a)*	*0.5 (a)*	*800 (a)*	*1.2 (b)*	*1000 (b)*	*700 (b)*	*10,000 (a)*
01MW-13	01/05/2005	NA	< 0.250	< 0.500	**376**	**1.99**	< 0.500	**1.03**	**1.24**
01MW-13	04/25/2005	NA	**3.38**	< 0.500	**374**	**2.28**	< 0.500	**1.49**	**2.51**
01MW-13	07/26/2005	NA	**4.7**	**1.23**	**522**	**2.08**	< 0.500	**0.864**	**3.69**
01MW-13	10/24/2005	< 0.500	< 0.245	< 0.490	**363**	**1.38**	< 0.500	< 0.500	**2.26**
01MW-17	01/05/2005	NA	< 0.250	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
01MW-17	04/25/2005	NA	**0.472**	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
01MW-17	07/26/2005	NA	**0.49**	< 0.500	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
01MW-17	10/24/2005	NA	< 0.243	< 0.485	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
01MW-26	01/05/2005	**21.3**	0.296	< 0.500	**1,050**	**98.6**	**6.16**	**40.1**	**45.4**
01MW-26	01/05/2005	**15.7**	< 0.250	< 0.500	**976**	**96.7**	**6.14**	**39.5**	**29.9**
01MW-26	04/25/2005	**16.9**	**1.88**	< 0.500	**827**	**74.5**	**5.51**	**23.8**	**33.0**
01MW-26	07/26/2005	**22.1**	**1.96**	**0.561**	**1,280**	**92.6**	**10.5**	**43.4**	**88.6**
01MW-26	10/25/2005	**9**	< 0.275	< 0.549	**1,290**	**125**	**7.7**	**44.5**	**38.9**
02MW-01	01/05/2005	NA	< 0.250	< 0.500	**172**	**51.5**	**1.01**	< 0.500	**2.53**
02MW-01	04/25/2005	NA	NA	NA	**188**	**36.2**	**0.863**	< 0.500	**1.86**
02MW-01	07/26/2005	NA	NA	NA	**205**	**48.9**	**1.04**	< 0.500	**2.3**
02MW-01	10/24/2005	NA	NA	NA	**379**	**52.2**	**1.38**	< 0.500	**3.84**
02MW-02	01/05/2005	NA	< 0.250	NA	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
02MW-02	04/25/2005	NA	NA	NA	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
02MW-02	07/26/2005	NA	NA	NA	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
02MW-02	10/24/2005	NA	NA	NA	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
02MW-04	01/05/2005	NA	< 0.250	< 0.500	**2,610**	**20.5**	**18.2**	**190**	**139**
02MW-04 DUP	01/05/2005	NA	< 0.250	< 0.500	**2,760**	**20.1**	**15.8**	**179**	**124**
02MW-04	04/25/2005	NA	NA	NA	**3,830**	**19.0**	**45.1**	**292**	**488**
02MW-04 DUP	04/25/2005	NA	NA	NA	**4,330**	**20.2**	**49.1**	**337**	**465**
02MW-04	07/26/2005	NA	NA	NA	**6,580**	**25.5**	**51**	**411**	**801**
02MW-04	10/24/2005	NA	NA	NA	**3,990**	**29.2**	**24.9**	**262**	**263**

TABLE 3
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
JANUARY 2005 TO PRESENT TIME OIL #01-600 SEATTLE TERMINAL

Sample	Date	PCP (µg/L)	Diesel (mg/L)	Oil (mg/L)	Gas (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)
MTCA Screening Level		*0.01 (b)*	*0.5 (a)*	*0.5 (a)*	*800 (a)*	*1.2 (b)*	*1000 (b)*	*700 (b)*	*10,000 (a)*
02MW-05	01/05/2005	NA	< 0.250	< 0.500	**310**	< 0.500	< 0.500	< 0.500	< 1.00
02MW-05	04/25/2005	NA	NA	NA	**575**	**0.922**	< 0.500	< 0.500	< 1.00
02MW-05	07/26/2005	NA	NA	NA	**503**	**0.781**	< 0.500	**0.54**	**1.08**
02MW-05 DUP	07/26/2005	NA	NA	NA	**505**	**0.727**	< 0.500	< 0.500	< 1.00
02MW-05	10/24/2005	NA	NA	NA	**335**	< 0.500	< 0.500	< 0.500	< 1.00
02MW-05 DUP	10/24/2005	NA	NA	NA	**316**	< 0.500	< 0.500	< 0.500	< 1.00
02MW-07	01/05/2005	NA	< 0.250	NA	**236**	< 0.500	< 0.500	< 0.500	**2.1**
02MW-07	04/25/2005	NA	NA	NA	**319**	< 0.500	< 0.500	**0.662**	**3.42**
02MW-07	07/26/2005	NA	NA	NA	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00
02MW-07	10/24/2005	NA	NA	NA	< 50.0	< 0.500	< 0.500	< 0.500	< 1.00

Notes:

NA = Indicates the compound was not analyzed for this sample.

< symbol indicates result is less than reporting limit.

(a) Model Toxics Control Act (MTCA) Method A criteria for the protection of groundwater as drinking water.

(b) Model Toxics Control Act (MTCA) Method B criteria for the protection of groundwater as fresh surface water. Values based on ambient water quality criteria for the protection of human health.

Bold indicates the compound was detected above the laboratory reporting limit.

Box indicates exceedance of screening criteria.

TABLE 4
PRODUCT ANALYTICAL DATA
TIME OIL SITE #01-600 - SEATTLE TERMINAL
SEATTLE, WASHINGTON

	Screening Criteria	01MW-16	01MW-22 B5J0545-11 10/26/2005	01MW-23 B5J0581-03 10/26/2005	01MW-25 B5J0581-05 10/26/2005	01MW-28 B5J0581-10 10/26/2005	01MW-29 B5J0581-08 10/26/2005
GROUNDWATER:							
PENTACHLOROPHENOL (PCP) **EPA Method 8270-SIM (µg/L)**							
Pentachlorophenol	0.01 (b)	NS	**273**	**19.8**	0.526 U	0.490 U	0.500 U
		01MW-16 PRODUCT B5J0581-12 10/26/2005	01MW-22 PRODUCT B5J0581-02 10/26/2005	01MW-23 PRODUCT B5J0581-04 10/26/2005	01MW-25 PRODUCT B5J0581-06 10/26/2005	01MW-28 PRODUCT B5J0581-11 10/26/2005	01MW-29 PRODUCT B5J0581-09 10/26/2005
PRODUCT:							
PENTACHLOROPHENOL (mg/kg) **EPA 8270 Mod**							
PCP		375 U	375 U	375 U	375 U	375 U	375 U
PETROLEUM HYDROCARBONS (mg/kg) **NWTPH-HCID**							
Diesel Range Hydrocarbons		**DET**	**DET** J	**DET**	**DET**	**DET**	**DET**
Gx Range Hydrocarbons		2000 U	2000 U	2000 U	2000 U	2000 U	2000 U
Heavy Fuel Oil Range Hydrocarbons		10000 U	10000 U	10000 U	10000 U	10000 U	10000 U
Insulating Oil Range Hydrocarbons		10000 U	10000 U	10000 U	10000 U	10000 U	10000 U
Kerosene Range Hydrocarbons		5000 U	5000 U	5000 U	5000 U	5000 U	5000 U
Lube Oil Range Hydrocarbons		10000 U	**DET**	**DET**	**DET**	10000 U	10000 U

Notes:
(a) Model Toxics Control Act (MTCA) Method A criteria for the protection of groundwater as drinking water
(b) Model Toxics Control Act (MTCA) Method B criteria for the protection of groundwater as fresh surface water. Values based on ambient water quality criteria for the protection of human health
NA = Indicates the compound was not analyzed for this sample
NS = Not sampled.
Bold indicates the compound was detected above the laboratory reporting limit
Box indicates exceedance of screening criteria.
U = Indicates the compound was undetected at the reported concentration
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
DET indicates the compound was detected.