

**UNDERGROUND STORAGE TANK
SITE CHECK/SITE ASSESSMENT REPORT
FOR
WHITTEN OIL, INC.
COLVILLE, WASHINGTON
SEACOR Job No. 00004-008-01**

**Submitted by
SEACOR**

**For
Whitten Oil, Inc.
P.O. Box 150
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DEPARTMENT OF COMMUNITY
UNDERGROUND STORAGE TANKS
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1.0 INTRODUCTION

This report presents the results of an underground storage tank (UST) site check/site assessment that was conducted at the former Whitty's Minimart located at 485 South Main Street in Colville, Washington.

This report has been prepared in accordance with the requirements of the Washington State Department of Ecology as provided on Form ECY 010-158 (Underground Storage Tank Site Check/Site Assessment Checklist).

This report is organized into the following sections:

- Section 1 - Introduction
- Section 2 - Site Description
- Section 3 - Purpose and Scope of Work
- Section 4 - Previous Site Activity
- Section 5 - UST Closure Activities
- Section 6 - Analytical Results
- Section 7 - Conclusions and Recommendations
- Section 8 - References

2.0 SITE DESCRIPTION

Whitty's Minimart is a closed retail gasoline station located on an approximate 0.75 acre parcel in a residential and commercial neighborhood in Colville, Washington. The Whitty's Minimart property is located at 485 South Main Street in southwest Colville (Figure 1). A site plan showing site conditions prior to the facility remedial investigation (RI) is shown on Figure 2. The legal description for the property as provided by the title deed is:

"The South 111 feet of the Southwest 1/4 of Block 25, COLVILLE, in the City of Colville, according to plat recorded in Volume A of Plats, page 1, in Stevens County, Washington.

SUBJECT TO easements, restrictions and reservations of record."

The Minimart ceased operation on August 7, 1992. On July 29, 1992 Whitten Oil began operating a new retail gasoline facility at South Main Street, approximately three blocks south of the Minimart. The Minimart site is presently occupied by the vacant Minimart building and the pump island canopy. The property was operated by Whitten Oil from March 1977 until closure. The site is currently owned by Mr. Carroll Whitten and his wife. Records indicate that the site was previously operated as Larry's Exxon.

The site layout and nearby properties are shown on Figure 2. The Minimart property is bordered to the north by residential housing. An alley borders the east side of the site. Bowe's Office Equipment and vacant portions of residential lots bound the east side of the alley. Dominion Avenue borders the south side of the site. Colville Auto Repair is located on the south side of Dominion Avenue opposite the Minimart. U.S. Route 395 (Main Street) borders the west side of the site. A parking lot and restaurant are located west of Main Street opposite the Minimart.

Two storm drains are located adjacent to the Minimart site. One drain is located under the east side of Main Street and drains to the south. The other storm drain serves as a conduit for a small unnamed creek that has been diverted below grade to run generally east to west under Dominion Avenue. The two storm drains are believed to converge at the west side of Main Street and then flow to an outfall southwest of the Minimart. The locations of the storm drains are shown on Figure 2. The small unnamed receiving creek flows to the west and southwest where it discharges into the Colville River in the vicinity of Colville's sewage disposal ponds (Figure 1).

Whitty's Minimart used four underground storage tanks (USTs) for the storage of gasoline and diesel fuel products. These USTs were installed in 1977. The USTs include:

- A 10,000-gallon regular unleaded gasoline (unleaded) UST;
- A 6,000-gallon super unleaded gasoline (super) UST;
- A 6,000-gallon leaded gasoline (regular) UST; and,
- A 2,000-gallon diesel fuel UST.

The USTs were drained shortly after the station closed in August 1992. The USTs remained in-place and have not been used since. A petroleum hydrocarbon-like sheen and odors have been observed periodically in an outfall of the unnamed creek located downstream of the site (Figure 2). Recently, the creek culvert has been altered by construction activity and the former discharge location has been paved over. Petroleum hydrocarbons have been identified in soil and groundwater beneath the Whitty's Minimart station, as well as at Colville Auto Repair, located across Dominion Street south of the site.

3.0 PURPOSE AND SCOPE OF WORK

SEACOR's purpose and scope of work related to the UST decommissioning and removal activities was to provide a registered UST supervisor/site assessor to observe closure and conduct the State required Site Check/Site Assessment, including:

- Observe and document closure activities.
- Provide on-site instrumentation and technical support to assist during soil excavation and segregation activities.
- Collect Site Check/Site Assessment samples.
- Collect stockpile soil samples.
- Analyze samples and report results to Coogan Excavating and Whitten Oil, Inc.
- Prepare State Site Check/Site Assessment Checklists.
- Prepare and submit the UST closure report.
- Make requisite notifications to Ecology per Washington Administrative Code (WAC) 173-340-450 *Releases from Underground Storage Tanks*.

All excavation services were provided under direct contract to Whitten Oil, Inc. by Coogan Excavating of Kettle Falls, Washington. Coogan Excavating also removed and disposed of the underground storage tanks.

Coogan Excavating was supervised by Industrial Tank Maintenance (ITM) of Spokane, Washington who also was under direct contract to Whitten Oil, Inc. ITM also inerted and cleaned each of the USTs during this decommissioning project.

4.0 PREVIOUS SITE ACTIVITY

This section provides a chronological description of the investigative activities previously conducted at the Minimart site. The locations of samples collected as part of previous investigations are shown on Figure 2. The results of several studies at the site culminated in a Remedial Investigation and Feasibility Study (RI/FS) in 1992.

4.1 PRE-RI/FS ACTIVITY

In July, 1984, Petroleum Equipment Maintenance Co. of Spokane, Washington conducted tightness tests of the four UST systems at the Minimart. According to the tests, the regular gasoline dispensing line and the diesel fuel line were leaking. A portion of the regular gasoline dispensing line was replaced as was the diesel fuel tank and distribution line.

The Whitty's Minimart site was studied again in 1984 by Soil Exploration Company of St. Paul, Minnesota (Soil Exploration Company, 1984). This study investigated potential sources of gasoline entering the storm sewer and the small unnamed creek near the Minimart site. During this investigation, a cut-off trench equipped with a sump was installed along a portion of the west side of the property to intercept and prevent gasoline in the subsurface from entering the storm sewer and the creek.

During July of 1990, gasoline was again reported to be present in the creek, and Ecology initiated an "emergency response" to mitigate the presence of the fuel. Emergency response activities included pumping the sump at the Minimart site's cut-off trench. Ecology initiated a second emergency response in the fall of 1990 during which two additional trenches were constructed by Olympus Environmental, Inc. along the southern and western boundaries of the site, in an attempt to determine specifically where gasoline was entering the storm sewer system. The trenches were also used as part of a vapor extraction system which was intended to prevent off-site migration of petroleum products (Olympus Environmental, Inc., 1990).

A Preliminary Remedial Investigation was conducted by Ecology at the site in 1991 to further investigate the source(s) of petroleum hydrocarbons in the area. As part of the investigation, several borings and monitoring wells were completed on the Minimart site and Colville Auto Repair. Petroleum hydrocarbons were detected in groundwater and soil at the Minimart and at Colville Auto Repair. The investigation recommended additional work to further define the source(s) of petroleum hydrocarbons being released to the storm sewer system (Science Applications International Corporation, 1991).

On July 15, 1991, Ecology issued Enforcement Order No. DE-91-E701 mandating that Whitten Oil conduct UST system tightness tests and subsequent excavation to expose product distribution lines and the tops of the tanks at the Minimart site. Pursuant to the Order, Whitten Oil completed the UST system tests. The testing dates and initial results are provided in Table 1.

TABLE 1 - UST SYSTEM TIGHTNESS TESTS		
Date	System Tested	Result
August 10 and 11, 1991	Regular UST	Tight
	Regular Dispensing Line	Suspect
	Unleaded UST	Suspect
	Unleaded Dispensing Line	Suspect
	Super UST	Suspect
	Super Dispensing Line	Tight
	Diesel UST	Tight
	Diesel Dispensing Line	Tight
August 13, 1991	Regular Dispensing Line	Tight
	Unleaded Dispensing Line	Failed
August 29, 1991	Unleaded UST	Tight
	Super UST	Tight

Based on the results of the UST and associated system tests, the tops of the USTs and dispensing pipelines were excavated and exposed on August 20 and 21, 1991. Pin-hole leaks were observed in the unleaded dispensing line. Additional pressure testing of the unleaded line revealed leaks at the pin-holes. Between August 27 and 30, 1991 the unleaded dispensing pipeline was removed and replaced.

In order to comply with the requirements of regulations specified in WAC 173-340-450(3) of the Model Toxics Control Act (MTCA), regarding confirmed petroleum releases, Whitten Oil subsequently completed a series of interim response actions. These included collection of soil samples from along the product dispensing lines and from near the regular and super UST fill ports on August 20 and 21, 1991. This action also included the excavation and collection of soil samples from beneath the location of the dispensing line pin-holes. On August 30, 1991, soil samples were collected from these same areas after replacing the product dispensing lines.

A supplemental site characterization study was completed to comply with WAC 173-340-450(4)(b) (SEACOR, 1991). On October 3 and 4, 1991, a field study was completed consisting of the following elements:

- Drilling and sampling six shallow soil borings around the location of the dispensing line pin-holes.
- Drilling and sampling a groundwater monitoring well near the northwest corner of the Minimart station site.
- Completing and sampling a hand auger boring near the 6,000-gallon leaded gasoline (regular) UST at the Minimart station.

One soil sample was collected from each of the six borings completed in the vicinity of the pin-hole leaks at the Minimart. The sample that was collected above the groundwater level with the highest photoionization detector (PID) reading from each boring was selected for analysis of gasoline and

diesel petroleum hydrocarbons. The results of the analyses were compared to the Method A soil cleanup level specified by MTCA.

The results of the laboratory analyses indicated that soil samples from three of the six borings exceeded the MTCA Method A cleanup level for Total Petroleum Hydrocarbons (TPH) as diesel, and that three of the soil samples also met or exceeded MTCA Method A cleanup levels for one or more gasoline constituents.

A groundwater monitoring well (MW-1) was installed in the City easement near the northwest corner of the site to help assess groundwater flow direction and the presence of potential upgradient hydrocarbon sources. Groundwater was not encountered during well completion. Results of the PID organic vapor readings of the soil from the monitoring well showed no positive readings. A soil sample collected from the MW-1 boring was tested and revealed no detectable levels of petroleum hydrocarbon analytes.

A shallow hand auger boring was completed adjacent to the 6,000-gallon leaded gasoline (regular) UST at the Minimart to assess the apparent vertical extent of petroleum hydrocarbons in the soil at this location. The results of the PID organic vapor screening of the hand auger boring near the regular UST indicated detectable levels of organic vapors to an approximate depth of 4 feet. A soil sample collected from 4 feet and submitted to a laboratory contained no analytes exceeding MTCA Method A cleanup levels. Based on field observations, the affected soil at the tank location was believed to be from minor UST overfills at the site (SEACOR, 1991).

4.2 RI/FS RESULTS

Ecology subsequently issued a second Enforcement Order (DE-91TC702) that required conducting a full Remedial Investigation and Feasibility Study (RI/FS) of the Whitty's Minimart site.

4.2.1 Soil Investigation

Thirty-one soil vapor probes, a backhoe trench and 13 soil borings were completed in the vicinity of the Minimart site as part of the RI. Fifteen soil borings had been completed at the site during previous investigations. Soil encountered in the borings consisted of a mixed zone of silts, sands and gravels to a depth of 7 to 8 ft below ground surface (BGS), underlain by a clay layer. The two deeper soil borings indicated that the clay layer appears to be underlain by silts and sands at a depth of approximately 20 to 22 feet BGS. The locations of the soil vapor probes, the trench and soil borings are shown on Figures 3 and 4.

Based on the results of the soil vapor and soil samples collected as part of the RI, there are three areas that exhibit concentrations of petroleum hydrocarbons in excess of MTCA Method A soil cleanup levels. These areas are shown on Figure 5. These areas include soil sampled from the boring for MW-16 located west of the Colville Auto Repair facility, MW-11 located in Dominion Avenue south of the Whitten Oil facility, and the Minimart site as evidenced by samples from Well MW-10 southwest of the pump islands and by borings B-10 and B-11 located immediately north of the pump islands. The Minimart site appears to be the source for the petroleum hydrocarbons detected in soil at the Minimart and under Dominion Avenue. Colville Auto Repair appears to be the source for the petroleum hydrocarbons detected in the soil at boring MW-16. The highest concentrations of petroleum hydrocarbons in the soil were detected at, or very near, the groundwater

table which suggests that they may have migrated on top of the water table. During previous excavation of the soil in the vicinity of the unleaded line leaks at the Minimart, a zone of unaffected soil was identified between the line leaks and the affected soil near the groundwater surface. The elevated concentrations noted in soil at the pinholes were not observed to extend vertically through the soil column to the groundwater table.

Two USTs were also present at the former Chamber of Commerce site. Soil samples from boring B-9 near the former Chamber of Commerce site also contained detectable concentrations of petroleum hydrocarbons which included gasoline and diesel fuel range organic compounds and xylenes. Two gasoline USTs at the former Chamber of Commerce property north of the Minimart site were removed by Coogan Excavating on September 22, 1992. These USTs were observed to be adjacent to the storm drain. Numerous visible holes were noted by SEACOR on both tanks and gasoline-like odors and a sheen were noted on soil and groundwater in the tank excavation.

The highest concentration of petroleum hydrocarbons encountered in soil during the RI investigation was in MW-11 located in Dominion Avenue downgradient of the diesel UST and dispensing pump at the Minimart. The petroleum hydrocarbons contained in the MW-11 soil sample were a complex mixture of diesel and gasoline range fuel products.

The next highest concentrations in soil were observed in the samples from borings B-10 and B-11, located immediately north of the east and west Minimart pump islands, respectively. These borings are located upgradient of all known sources of petroleum hydrocarbons at the site, including those previously identified, and the source of the petroleum hydrocarbons in these borings is currently unknown.

An additional potential source of petroleum hydrocarbons encountered in the storm drain and the unnamed creek has been identified since completing the RI. Free phase petroleum hydrocarbons that appeared to be gasoline were observed in soil and on groundwater by Colville City personnel during work on a city water line in Main Street near the intersection of Main Street and Columbia Avenue adjacent to the Mercantile store (Figure 2). According to Mr. Bob Cleaver of the Colville Building and Planning Department, approximately 1/8-inch of gasoline was observed in a sample of groundwater from the bottom of a soil excavation adjacent to the water line under the street. A UST of unknown size was identified under the sidewalk adjacent to the excavation. The UST reportedly once stored gasoline (Bob Cleaver, personal communication, October 26, 1992).

4.2.2 Groundwater Investigation

A total of 10 groundwater monitoring wells were completed during the RI. An additional seven wells had been completed during previous studies. The locations of the wells are shown on Figure 6. Groundwater is first encountered at a depth of approximately 6 feet below ground surface (BGS) within shallow silt and sand deposits. These deposits overlie an apparently laterally continuous clay layer which appears to act as an aquitard and confines deeper water bearing layers. The depth at which the clay layer was first encountered was generally 7 to 8 feet BGS. Therefore, the saturated thickness of the first water bearing layer was generally limited to approximately 1 to 2 feet. Based on two deeper borings drilled during the RI, the clay aquitard has an apparent thickness of 9 to 16 feet within the study area.

Groundwater elevation contours for stabilized water elevations which were measured on June 15, 1992 indicate that first encountered groundwater appears to generally flow towards the

south/southwest. Estimated hydraulic conductivity at the site is on the order of 2×10^{-6} to 2×10^{-4} feet per minute. A hydraulic gradient of 0.02 foot/foot and an estimated aquifer porosity of 40 percent (Freeze and Cherry, 1979) were used to calculate an apparent groundwater flow velocity of approximately 0.05 to 5 feet/year.

Analytical results of the groundwater samples collected from the monitoring wells indicated that there are two areas containing petroleum-hydrocarbons in excess of MTCA Method A cleanup levels. These areas are shown on Figure 7. The two areas include the western portion of Colville Auto Repair (MW-16 and MW-12), and the southwestern portion of the Minimart site. The reported diesel concentration in groundwater generally consisted of a mix of gasoline and diesel range products and were partly attributable to heavier oil range products.

The highest petroleum hydrocarbon concentrations in groundwater were observed in the samples from the monitoring wells on the Minimart site. Groundwater samples from wells upgradient of the site and pump islands did not exhibit detectable petroleum hydrocarbon concentrations. The concentration of petroleum hydrocarbons in groundwater at the Minimart site are highest in the area downgradient of the gasoline pump islands. Petroleum hydrocarbon concentrations in groundwater in excess of MTCA Method A cleanup levels do not appear to extend to the west side of Main Street.

Because concentrations of petroleum hydrocarbons in wells MW-5, MW-6 and MW-12 at Colville Auto Repair are lower than in wells both upgradient and downgradient from them, the petroleum hydrocarbons detected in samples from well MW-16 of Colville Auto Repair are not likely to be related to potential sources on the Minimart site. The reported concentration of TPH-G in the sample from MW-16 (downgradient of the former UST locations at Colville Auto Repair) was significantly higher than in the sample from MW-12 (which is upgradient of the former USTs) and suggests a separate source in the vicinity of MW-16 at Colville Auto Repair.

While no analytical data are available from the deeper water-bearing zone, the relatively impermeable overlying clay layer should act as a significant aquitard to minimize vertical migration of dissolved constituents from the shallow aquifer into the deeper water-bearing zone.

The storm drain at sample point SD-1, located near well MW-13 southwest of the Minimart, was below the June 15, 1992 elevation of the groundwater in MW-13. These data and the groundwater elevation contours at and near the Minimart (refer to Figure 10) suggest that the storm drain(s) and/or backfill around them are diverting local groundwater flow toward the southwest along the course of the drain(s). The storm drain at sample point SD-4, is in close proximity to the groundwater and may additionally influence groundwater flow direction on a seasonal basis if water levels fluctuate sufficiently.

4.2.3 Surface Water Investigation

Water samples from the storm drains and the unnamed creek were collected at the locations shown on Figure 8. Analytical results of surface water samples indicate that the concentration of petroleum hydrocarbons in the storm sewer located upstream of the site (SD-5) contained diesel fuel constituents during the first sampling episode. This was not verified during subsequent sampling. The sump water at the Colville Auto Repair site (SD-2) contained diesel constituents and low levels of toluene. This sump does not appear to be downgradient of the SD-3 or SD-4 locations on the Minimart and may be a separate contributing source for hydrocarbons observed in the storm sewer.

During each of the sampling events southwest of the site at SD-3, the surface water contained a mixture of diesel and gasoline constituents. In the creek upstream of the site at SD-4, no petroleum hydrocarbon constituents were detected. Downstream in the creek (SD-1 and the creek outfall), the surface water samples contained low levels of BTEX gasoline constituents during each sampling event. TPH-G was detected in SD-1 only during the first event.

Based upon the sample results, the diesel constituents detected in the upstream sample were not detected downstream. TPH-G and TPH-D constituents were not detected in the creek outfall nor did observed concentrations of BTEX constituents at the outfall exceed the acute freshwater toxicity levels published in the U.S. EPA Water Quality Criteria for 1992. The reported BTEX concentrations are also less than the 1992 U.S. EPA Water Quality Criteria 1×10^{-6} cancer risk concentrations associated with consuming fish from affected waters. These data indicate that releases of petroleum hydrocarbons to the storm drain have not caused significant adverse effects to the creek.

4.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

The following sections provides a summary of findings resulting from the activities conducting during the Whitty's Minimart RI.

4.3.1 Soil Investigation

Based on the results of the soil samples collected as part of the RI, there are three areas that exhibit concentrations of petroleum hydrocarbons in excess of MTCA Method A soil cleanup levels. These areas include soil sampled from the boring for well MW-16 located west of the Colville Auto Repair facility, at MW-11 located in Dominion Avenue south of the Whitten Oil facility, and the Minimart site as evidenced in samples from Well MW-10 southwest of the pump islands and by borings B-10 and B-11 located immediately north of the pump islands. The Minimart appears to be the source(s) for the petroleum hydrocarbons detected in soil at the Minimart and under Dominion Avenue. Colville Auto Repair appears to be the source for the petroleum hydrocarbon detected in the soil at boring MW-16. The highest concentrations of petroleum hydrocarbons in the soil were detected during the interim response actions at, or very near the groundwater table below the pin-hole leaks at the Minimart site. As stated before, a zone of unaffected soil was observed between the identified line leaks and the groundwater.

The soil samples from boring B-9 near and subsequent observation during UST removals at the former Chamber of Commerce site also suggest that a release of petroleum hydrocarbons from the USTs has occurred and suggest that the former Chamber of Commerce site may be a separate source of petroleum hydrocarbons in the storm drain and creek southwest of the site.

The highest concentration of petroleum hydrocarbons encountered in soil during the investigation was in MW-11 located in Dominion Avenue downgradient of the diesel UST and dispensing pump at the Minimart. The petroleum hydrocarbons contained in the MW-11 soil sample were a complex mixture of diesel and gasoline range fuel products.

The next highest concentrations in soil were observed in the samples from borings B-10 and B-11, located immediately north of the east and west Minimart pump islands, respectively, and between 30 to 40 feet from the identified pin-hole leaks. These borings are located in an upgradient

groundwater flow direction from the UST system at the site. The transport pathway for petroleum hydrocarbons detected in these borings was not determined during the RI.

4.3.2 Groundwater Investigation

Groundwater is first encountered at a depth of approximately 6 feet BGS within shallow silt and sand deposits. These deposits overlie an apparently laterally continuous clay layer which appears to act as an aquitard and confines deeper water bearing layers. The depth at which the clay layer was first encountered was generally 7 to 8 feet BGS. Therefore, the saturated thickness of the first water bearing layer was generally limited to approximately 1 to 2 feet. Based on two deeper borings drilled during the RI, the clay aquitard has an apparent thickness of 9 to 16 feet. While no analytical data are available from the deeper water-bearing zone, the relatively impermeable overlying clay layer should act as a significant aquitard to minimize vertical migration of dissolved constituents from the shallow aquifer into the deeper water-bearing zone.

Analytical results of the groundwater samples collected from the monitoring wells indicated that there are two areas containing petroleum-hydrocarbons in excess of MTCA Method A cleanup levels. The two areas include the western portion of Colville Auto Repair (MW-16 and MW-12), and the southwestern portion of the Minimart site. The reported diesel concentration in groundwater generally consisted of a mix of gasoline and diesel range products or were partly attributable to heavier oil range products.

The elevations of storm drains and groundwater near the Minimart site indicate that the groundwater flow direction near the site is affected on at least a seasonal basis by the storm drain.

4.3.3 Surface Water Investigation

Analytical results of surface water samples indicate that the concentration of petroleum hydrocarbons in the storm sewer located upstream of the site (SD-5) vary over time. The storm drain collection sump water at Colville Auto Repair site (SD-2) contained diesel constituents and low levels of toluene. This sump does not appear to be downgradient of the SD-3 or SD-4 locations on the Minimart and may be a separate contributing source for hydrocarbons observed in the storm sewer. During each of the sampling events southwest of the site at SD-3, the surface water contained a mixture of diesel and gasoline constituents. In the creek upstream of the site at SD-4, no petroleum hydrocarbon constituents were detected. Downstream in the creek (SD-1 and the creek outfall), the surface water samples contained low levels of BTEX gasoline constituents during each sampling event. TPH-G was detected in SD-1 only during the first event.

The diesel constituents detected in the upstream sample were not detected downstream. TPH-G and TPH-D constituents were not detected in the creek outfall nor did observed concentrations of BTEX constituents at the outfall exceed the acute freshwater toxicity levels published in the U.S. EPA Water Quality Criteria for 1992. The reported BTEX concentrations are also less than the 1992 U.S. EPA Water Quality Criteria 1×10^{-6} cancer risk concentrations associated with consuming fish from affected waters. These data indicate that releases of petroleum hydrocarbons to the storm drain are not causing significant adverse effects in the creek.

4.4 RI/FS CONCLUSIONS

Petroleum hydrocarbons have been identified in the soil, groundwater, surface water and storm drains in the vicinity of the Minimart. Based on the data and findings of this RI, the following conclusions regarding the nature and extent of the petroleum hydrocarbons have been developed:

- Gasoline and diesel range petroleum hydrocarbons have impacted the soil and groundwater beneath the Minimart site. Pin-hole leaks were identified near the east pump island at the Minimart site. It was not determined how much of the identified petroleum hydrocarbons beneath the site are a result of the identified leaks.
- Whitty's Minimart is a potential source of petroleum hydrocarbons identified in the storm drains and unnamed creek downgradient of the Minimart site.
- Gasoline and diesel range petroleum hydrocarbons have impacted the soil and groundwater beneath the Colville Auto Repair site. The Colville Auto Repair site is an additional potential source of petroleum hydrocarbons to the storm drain system and the creek.
- The majority of petroleum hydrocarbons that have impacted the soil are found in the relatively thin zone of seasonal groundwater fluctuation and the capillary fringe above the groundwater level.
- The direction of groundwater flow is to the southwest and appears to be influenced by submerged storm drains. The degree and/or area of influence may vary with seasonal fluctuations of the local groundwater table.
- The Colville Chamber of Commerce site and normal street runoff are also potential sources of petroleum hydrocarbons to storm drain systems and the creek.

5.0 SITE ACTIVITIES

SEACOR was retained by Whitten Oil, Inc., to provide a registered UST site assessor to observe closure and conduct the State required Site Check/Site Assessment for the decommissioning and removal of four USTs per WAC 173-360. In addition, Industrial Tank Maintenance of Spokane, Washington, and Coogan Excavating of Kettle Falls, Washington, were retained by Whitten Oil to provide decommissioning and removal services, respectively. SEACOR's on-site activities commenced August 23, 1993 and were completed August 28, 1993. Whitten Oil, Inc. notified Ecology prior to beginning UST closure. Photographs of the site activities are presented in Appendix A.

5.1 UST DECOMMISSIONING AND REMOVAL

Removal of the USTs was regulated according to WAC 173-360. Soil sampling protocols and laboratory analytical results are further discussed in Sections 5.2 and 6.0 of this report. A summary of the field observations related to sampling activities is presented in Table 2 - Sample Location Data. The removed USTs and lines, excavation limits and soil sampling locations are depicted in Figure 9 -Site Plan and Sampling Locations. The removed USTs included:

SEACOR Tank Designation	Storage Product (fuel)	Capacity (gallons)	Dimensions
T1	Diesel Fuel	2,000	Diam = 6.3', L = 8.5'
T2	Unleaded Gasoline	10,000	Diam = 8', L = 28'
T3	Regular Gasoline	6,000	Diam = 7.5', L = 17'
T4	Super Unleaded Gasoline	6,000	Diam = 7.5', L = 17'

Coogan Excavating (Coogan) performed on-site work using a KOBELCO MD 140 BLC Trackhoe and 10 yard dump truck. Coogan began the removal process by excavating the concrete pad covering the tanks. The concrete rubble was transported to a Kettle Falls demolition landfill. Approximately two to three feet of soil were removed to uncover the top of each tank. Groundwater was measured at approximately four to six feet below grade across the UST area by observation in the groundwater monitor wells and it was thought the tanks would be nearly submerged. During the decommissioning activities, Tank 2, the 10,000-gallon unleaded gasoline tank, was discovered to contain approximately 9,000-gallons of water which had seeped into the tank since it had been emptied in August of 1992. Following this discovery, decommissioning continued with the two 6,000-gallon tanks (Tank 3 and Tank 4) and the diesel fuel tank (Tank 1).

Industrial Tank Maintenance (ITM) performed the UST decommissioning work on two separate days during the week. ITM inerted each tank with dry ice prior to cleaning. Manholes were cut in the top of USTs T3 and T4 in order to gain entry for cleaning. A worker suited in Level B protection (supplied air) entered each of these tanks to remove bottom sludges. The sludge was retained in 55-gallon drums that remain on-site. Following decommissioning activities, soils along the edge of

each tank were excavated until each tank floated to the surface. After the two 6,000-gallon gasoline tanks were cleaned, removed from the ground, and positioned to prevent rolling, the water from the 10,000-gallon gasoline tank was transferred into them. The 10,000-gallon tank was then inerted with dry ice, a manway access was cut, the sludges were removed and stored in a 55-gallon drum, and the tank was removed from the ground. Coogan transported each of the USTs (except for the two 6,000-gallon tanks) off-site to his facility in Kettle Falls, Washington for demolition.

5.1.1 Gasoline Fuel Line and Pump Island Decommissioning

Some of the gasoline fuel lines at the Minimart site were removed by ITM as part of their tank decommissioning process. Lines removed included the three lines extending from the tank nest to the pump islands, and the two lines between the pump islands. These lines totaled approximately 140 lineal feet. The three lines extending parallel and to the west of the eastern pump island remain in-place (Figure 9). All flexible hose connections joining the tank lines to the pump islands also remain in-place. Approximately 55-gallons of product were recovered from these abandoned lines. The product was contained in 55-gallon drums for temporary storage on-site.

5.1.2 Gasoline Tanks T3 and T4

After decommissioning and fully excavating the overlying soil, USTs T3 and T4 buoyed up from their submerged position. Both of the tanks were constructed of single walled steel and showed no signs of significant rusting or pitting. A petroleum sheen and a blackened sludge was observed on the groundwater surface in the T4 excavation. All excavated soils were stockpiled for further characterization. Three soil samples were collected at the soil/groundwater interface for each of these tanks for Site Assessment purposes (see Section 5.2 for further discussion on soil sampling). A 4-inch diameter sewer line was broken during the removal of T3. The sewer line, which exited the Minimart building 4 feet west of the southeast building corner, was located at approximately 3 feet below grade and ran across the tops of T3 and T4.

5.1.3 Gasoline Tank T2

Prior to decommissioning activities, UST T2 was observed to have approximately 81 inches of water within the 96-inch diameter tank. The water appeared to be stabilized at a depth below grade similar to that of groundwater on-site. The water was sampled and characterized to assess possible disposal options. Analytical results (see Section 6.0 for further discussion) characterized the water as a Washington State Dangerous Waste (exceeding benzene and flash point criteria), and therefore, on-site treatment and/or off-site disposal would be required. Whitten Oil pumped this water into tanks T3 and T4 which had been decommissioned, removed, and positioned on top of Soil Stockpile Number 3. This water is being aerated on-site and will be properly disposed of at a later date.

Following the water removal and decommissioning activities, Tank T2 rose from its submerged position. Observation of the single-walled steel tank revealed a 1/4-inch hole in the bottom east end of the tank. This hole is believed to be the entry route for the water in the tank. A petroleum sheen was observed on the groundwater within the excavation.

Three soil samples were collected along the soil/groundwater interface for Site Assessment purposes.

5.1.4 Diesel Tank (T1) Removal and Overexcavation

The single-walled steel diesel tank did not exhibit significant signs of pitting or rusting. A slight petroleum sheen and blackened sludge was observed on the groundwater surface within the excavation. Petroleum contaminated soils were observed and therefore, some over excavation was performed laterally around the UST. Soil was excavated to the groundwater surface. The final excavation measured 13 feet north-south by 18 feet east-west to approximately 5 feet deep. Four soil samples (one from each sidewall of the excavation) were collected at the soil/groundwater interface for Site Assessment purposes.

5.1.5 Soil Stockpiles

Coogan constructed a soil stockpile area on the east side of the Minimart building using 55-gallon drums as a berm and a 10 ml visqueen liner. Spoils removed from the ground during the UST and product line excavations were placed in the soil stockpile area. Three piles were generated which included:

- Soil Stockpile #1 (the most northerly pile) contains approximately 30 cubic yards of gasoline-containing soils;
- Soil Stockpile #2 (the middle pile) contains approximately 40 cubic yards of diesel and heating oil-containing soils; and
- Soil Stockpile #3 (the southern most pile) contains approximately 60 cubic yards of gasoline-containing soils. This stockpile also supports the two 6,000-gallon USTs (T3 and T4) as temporary storage/treatment vessels for water pumped from tank T2 during decommissioning (see Figure 9).

Three soil samples were collected from each soil stockpile for characterization and management assessment purposes.

5.1.6 Heating Oil Tank Removal

A 630-gallon heating oil tank (Diameter = 4.5 feet, Length = 5.3 feet) was removed from the east side (rear) of the building. This tank is exempt from the site check/site assessment regulations. However, when a tank of this nature is removed and a petroleum release is confirmed by visual or olfactory observations, or by an on-site field instrument such as a PID, the releases are regulated under WAC 173-340 MTCA and sampling and cleanup must be performed. As the tank was removed from the ground, three soil samples were collected for interpretation. PID readings, strong petroleum odors, and observed holes near the bottom of the tank confirmed a release. Subsequently, the tank cavity was over-excavated and soils were stockpiled with the diesel-containing spoils. Approximately 15 yards of spoils were excavated during the heating oil tank cleanup. Soil sampling was performed after the excavation, and the results are described in Sections 5.2 and 6.0 of this report.

There were approximately 25 gallons of water in the heating oil tank. This water was placed into a 55-gallon drum that is stored on-site pending treatment and/or disposal.

5.2 UST DECOMMISSIONING SOIL SAMPLING

Soil sampling was conducted in accordance with Ecology's *Guidance for Site Checks and Site Assessments for Underground Storage Tanks*. Soil samples were collected from beneath both of the main pump islands west of the station building, from below the product pipes, and from the soil/groundwater interface of each of the four regulated USTs (T1-T4), the heating oil tank, and from the soil stockpiles. Sample locations are provided on Figure 9 - Site Plan and Sampling Locations, and are described in Table 2 - Sample Collection Data. Analytical results from these samples are described in Section 6.0 of this report.

The sample collection procedures for soil are described below including sample collection, handling, and equipment decontamination.

Sample Collection and Documentation

- UST soil samples were collected from soils exposed at the sidewalls of the excavation at the groundwater interface. Three soil samples for each tank were collected from the gasoline-UST cavity (Figure 9). Three soil samples were collected from the heating-oil tank excavation. Four soil samples were collected from the diesel fuel UST excavation. Soil samples from beneath pipelines were obtained from native soil underlying the pipes.
- The samples were collected using a clean, stainless steel scoop (pump island samples were collected using a hand auger) and placed in individual clean containers supplied by the laboratory. The sample containers were clearly labeled denoting the sample location, date, time, job number and sampler's name. Labels were securely taped to the container. All lids were screw-threaded, Teflon®-lined, and secured in place with tape.
- Sample documentation forms were used to document each sampling event and included: sample identity; analytical parameters; sample collection method; and chain-of-custody when samples were sent to an independent laboratory.
- Labels were filled out with water-proof ink and affixed to the sample containers prior to shipment. The samples were shipped to the analytical laboratory via chain-of-custody protocol.

Sample Handling

- Samples were stored on ice in coolers during field sampling and in transit to the laboratory. Chain-of-custody procedures were followed. Custody forms were relinquished upon sample delivery to the laboratory.

Equipment Decontamination

- All equipment that came into contact with potentially contaminated water, oil, or soil was decontaminated prior to and after each use and between each sample collected. Decontamination consisted of cleaning in an aqueous solution of Liqui-Nox® cleanser, rinsing with distilled water, and rinsing a second time with distilled water.

6.0 ANALYTICAL RESULTS

Full copies of the laboratory analytical reports are presented in Appendix B. The results of the site check samples from the diesel fuel tank (Tank T1) ranged from a low of 370 mg/kg TPH-D [equivalent to parts per million (ppm)] to a high of 820 ppm TPH-D.

The results of the site check samples from beneath the gasoline pump islands revealed that BTEX constituents were not detectable. The highest TPH-G concentration was 1.4 ppm and the highest total lead concentration was 14 ppm.

The results of the site check samples from beneath the gasoline dispensing lines revealed that gasoline-range constituents (TPH-G and xylenes) were detected in only one of the three samples. TPH-G was detected at 13 ppm and xylene was detected at 0.12 ppm. Total lead was reported at a concentration of 15 ppm. The results of the site check samples obtained from the gasoline UST cavity reveal exceedances of MTCA Method A soil cleanup levels for TPH-G or one or more BTEX constituents in seven of the nine samples.

The analytical results of soil stockpile samples reveal that soil in the stockpile SS1 and SS3 exceeds the MTCA Method A soil cleanup level for TPH-G. The soil in stockpile SS2 (from the heating oil tank and the diesel fuel UST) does not appear to exceed the MTCA Method A soil cleanup level for TPH-D.

7.0 CONCLUSIONS AND RECOMMENDATIONS

A review of the analytical data confirms a release of gasoline and diesel fuel on the Whitten Oil Minimart site at 485 South Main Street in Colville, Washington. Residual concentrations of diesel- and gasoline-range petroleum hydrocarbons in excess of MTCA Method A soil cleanup levels remain in vadose zone soil at the Minimart site. The observed integrity of the two 6,000-gallon USTs, the results of the tank testing conducted prior to the RI, the relatively high proportion of xylenes to benzene and toluene in the soil samples, and the absence of detectable lead suggest that the observed gasoline constituents in the soil are the result of past (not recent) overfills of one or both of the unleaded gasoline USTs at the site.

TPH-G in soil in the gasoline UST stockpiles (SS1 and SS2) exceeds the MTCA Method A soil cleanup level. Therefore this soil must either be treated before use as on-site fill material or it should be properly disposed of at a permitted off-site facility.

The soil samples from the diesel fuel UST and heating oil tank stockpile (SS3) do not exceed the MTCA Method A soil cleanup level for TPH-D and this stockpile may be used as on-site fill material. The analytical results for the soil samples obtained from the overexcavated heating oil tank cavity indicate that the release from this tank has been successfully remediated.

Although concentrations of diesel range hydrocarbons in two samples from the diesel tank excavation are somewhat higher than previously observed in soil samples from the site, the air sparging and vapor extraction remedial alternative selected during the Feasibility Study remains an appropriate approach to remediation of this facility.

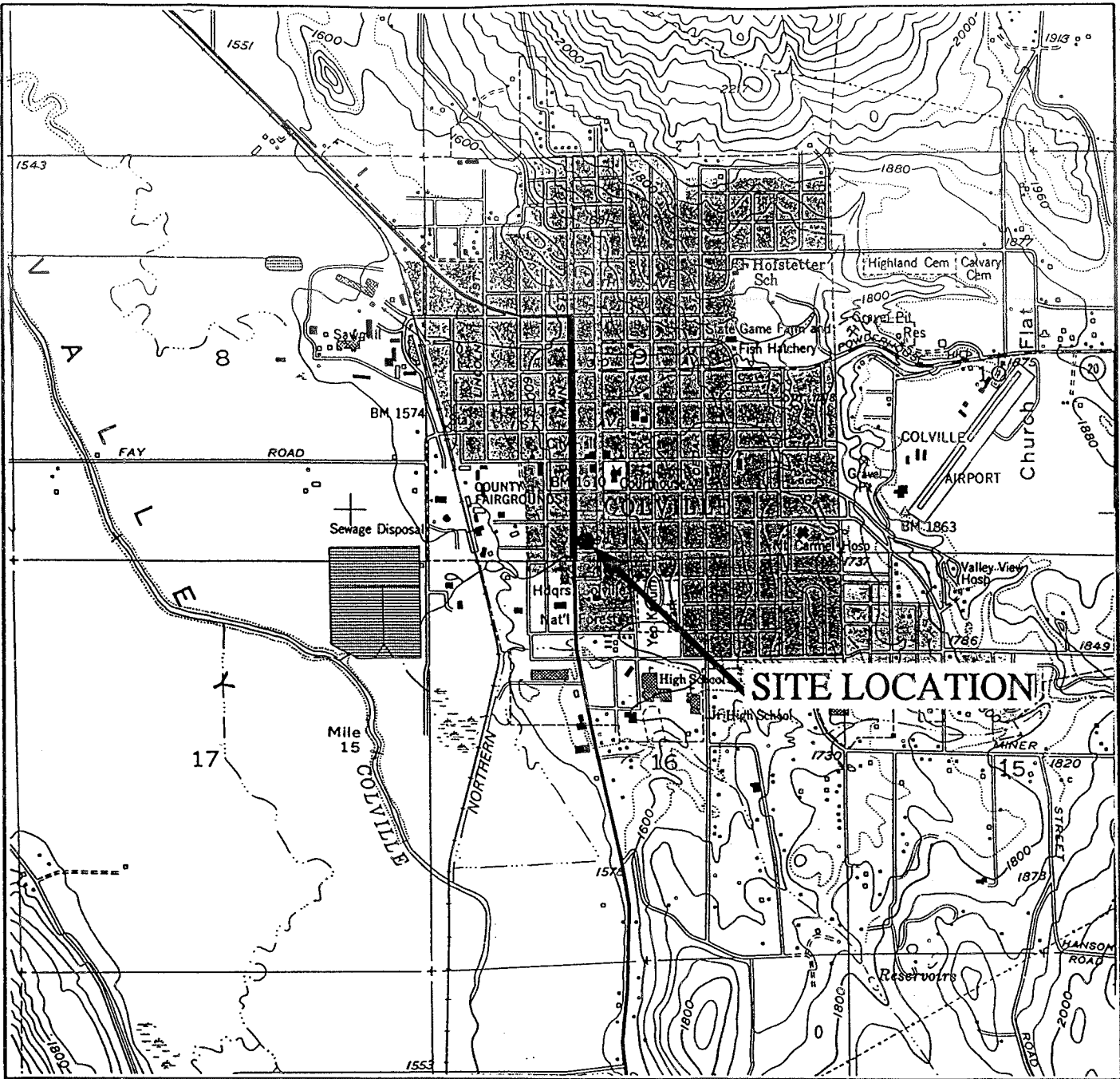
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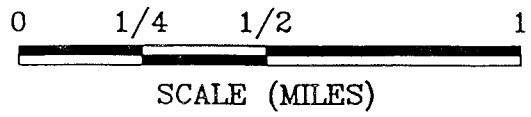
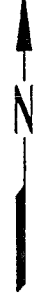
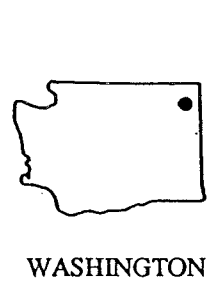
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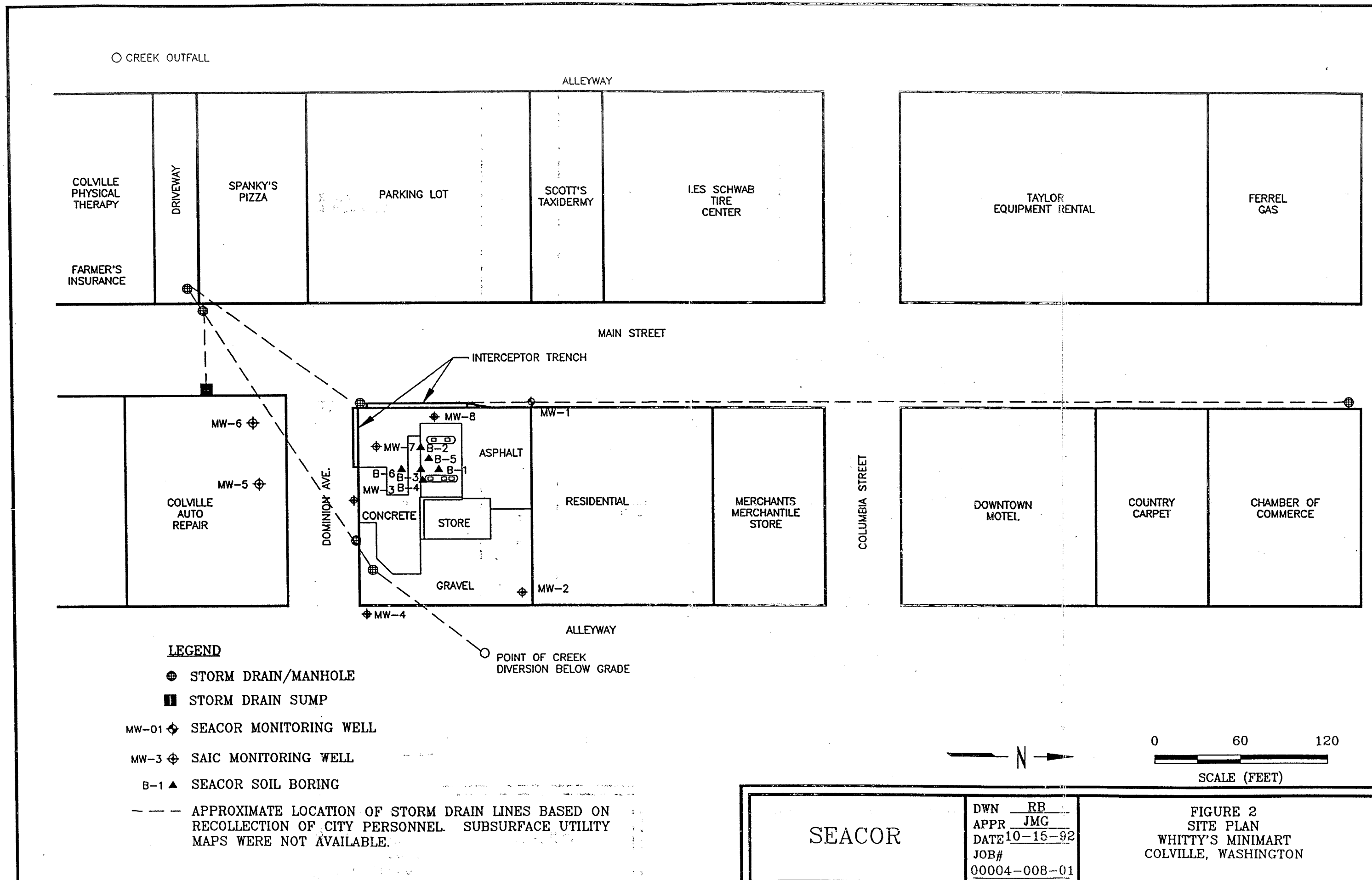
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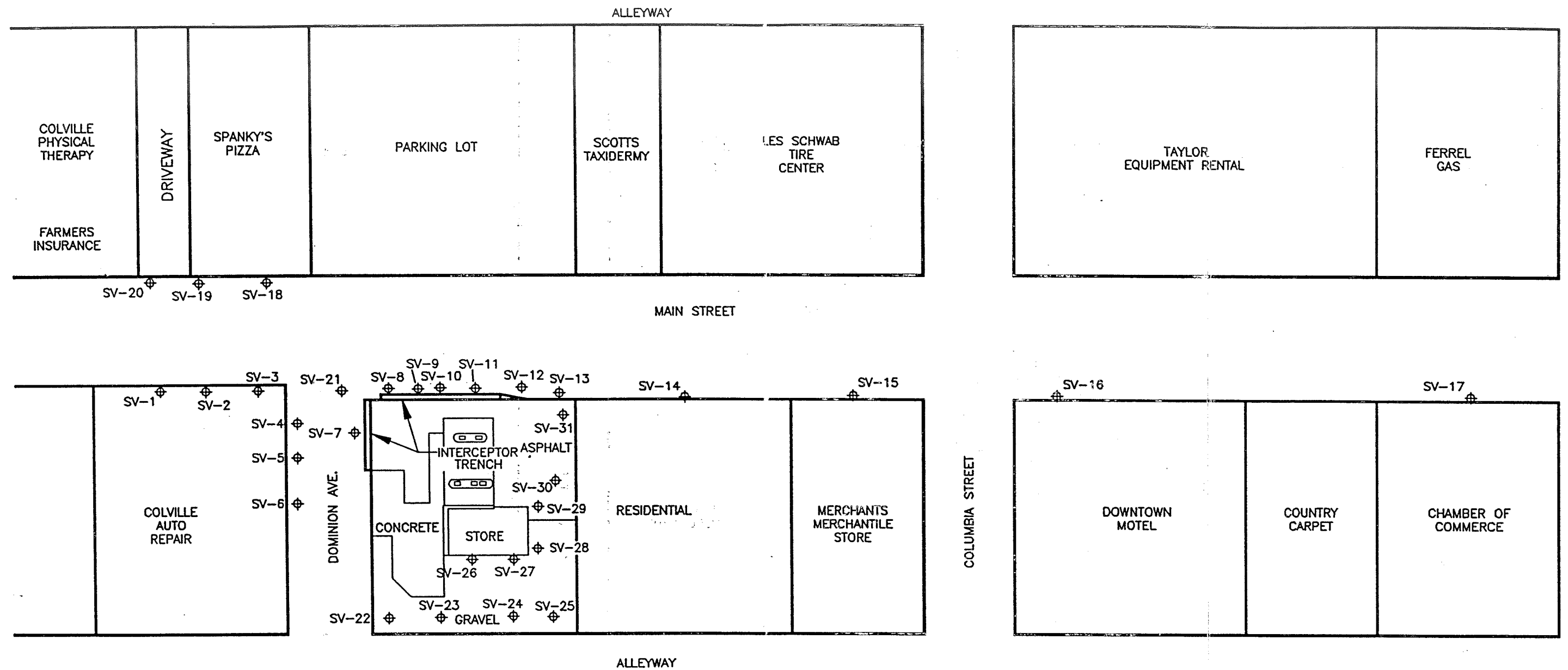


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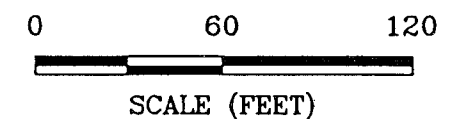
FIGURE 1
 SITE LOCATION MAP
 WHITTY'S MINIMART
 COLVILLE, WASHINGTON





LEGEND

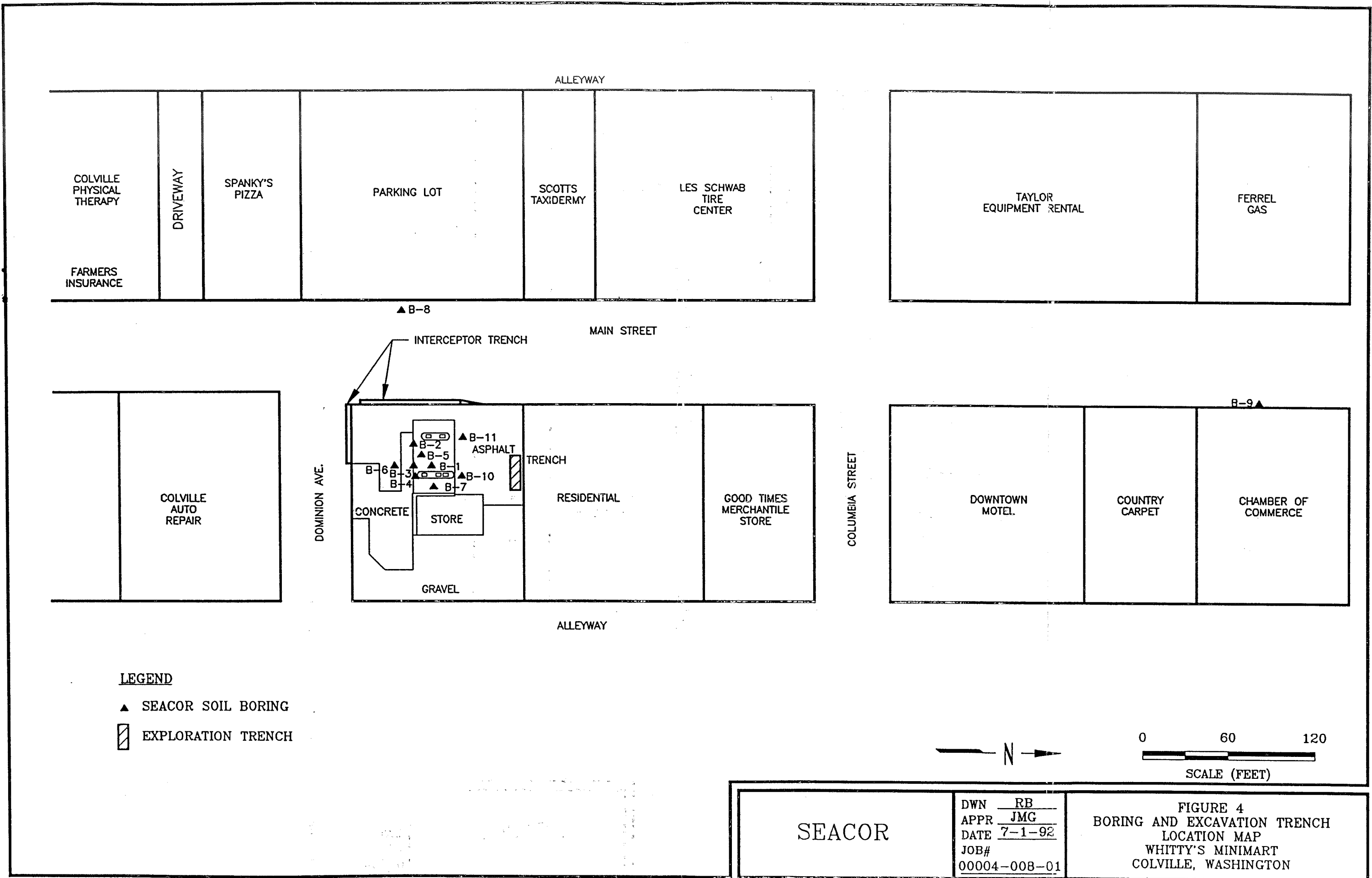
SV-31 ⊕ SOIL VAPOR PROBE LOCATION

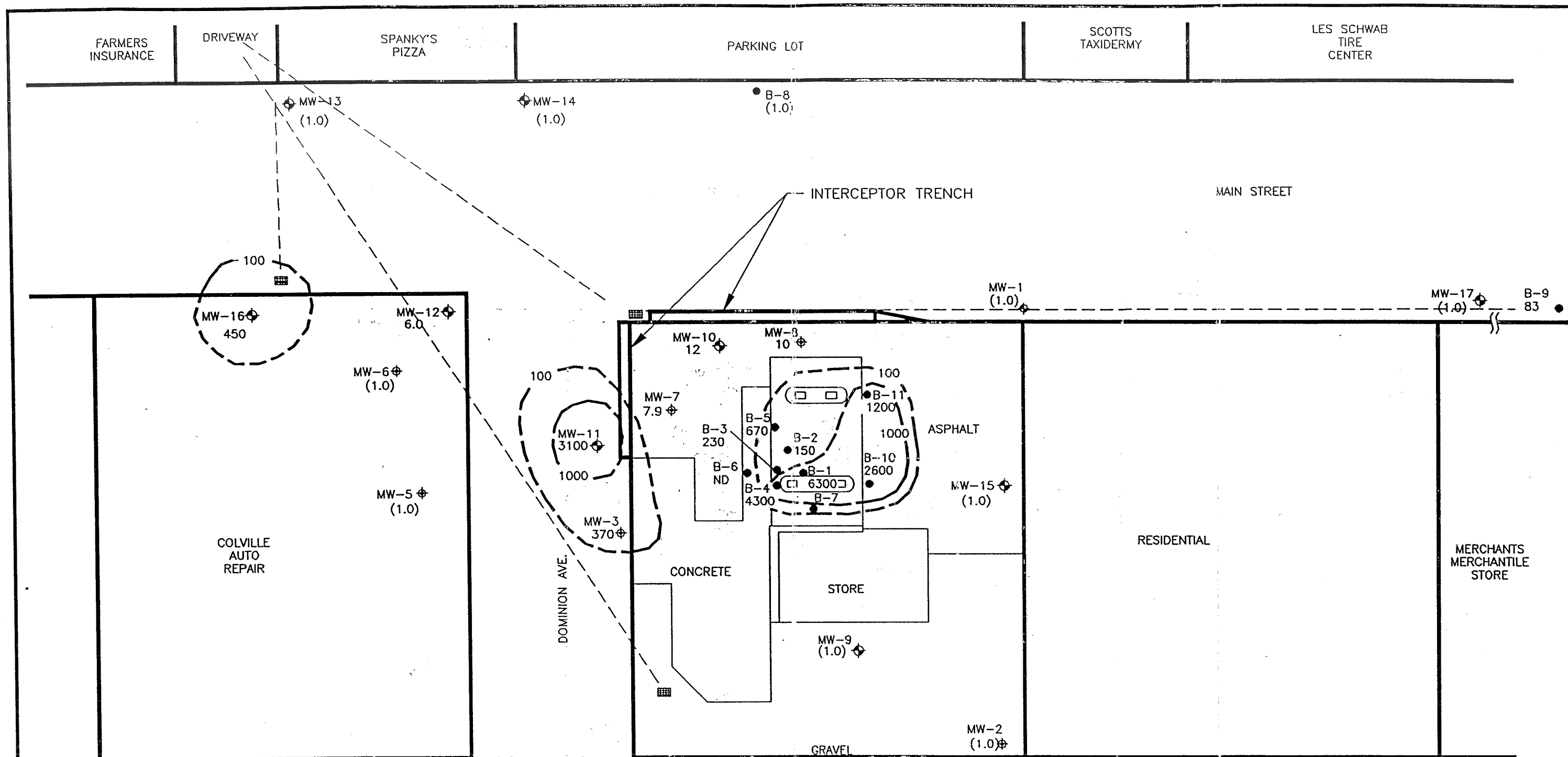


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FIGURE 3
SOIL VAPOR SAMPLING MAP
WHITTY'S MINIMART
COLVILLE, WASHINGTON





LEGEND

MW-01 SEACOR MONITORING WELL

MW-3 SAIC MONITORING WELL

B-8 SEACOR SOIL BORING

--- APPROXIMATE LOCATION OF STORM DRAIN LINES BASED ON RECOLLECTION OF CITY PERSONNEL. SUBSURFACE UTILITY MAPS WERE NOT AVAILABLE.

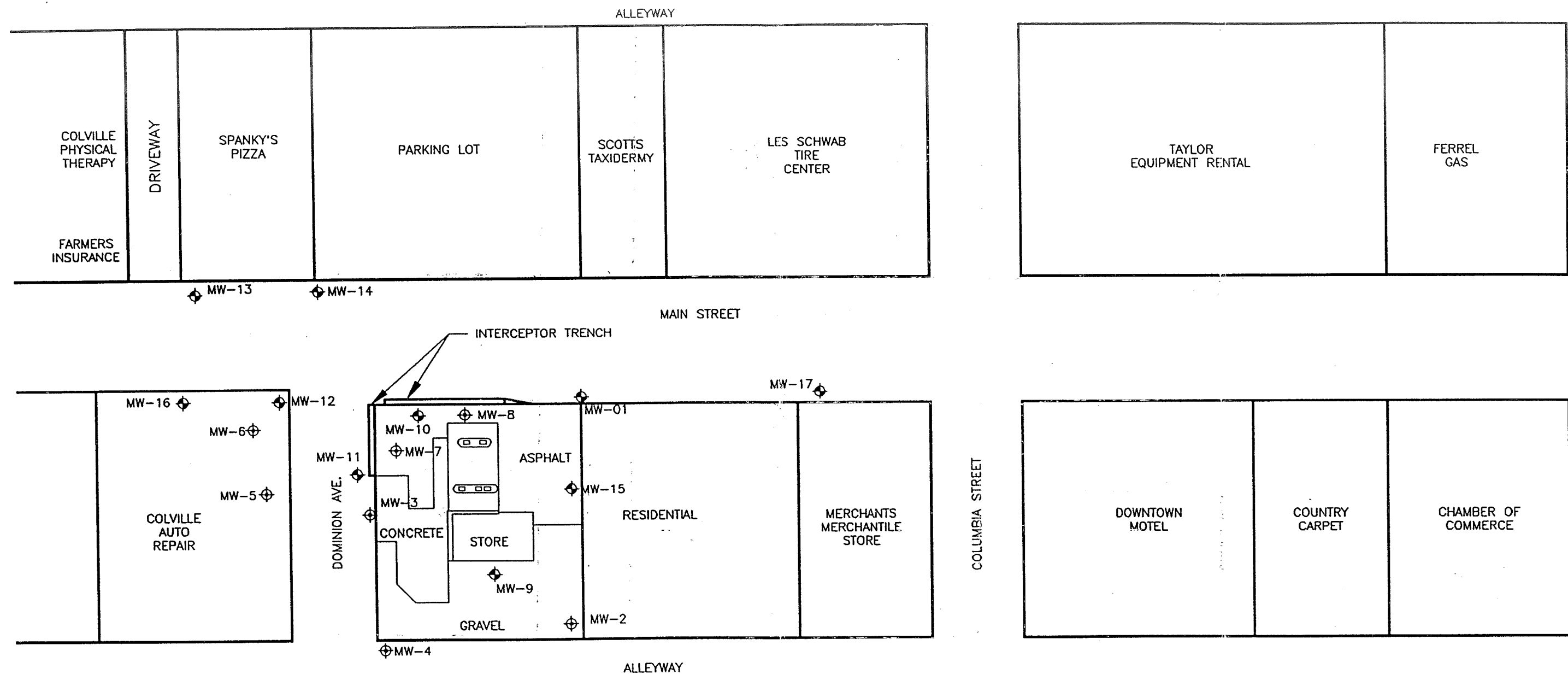
--- SOIL TPH-G CONCENTRATION CONTOURS (PPM)
ALL TPH CONCENTRATIONS ANALYZED FROM A ZONE BETWEEN 5' AND 8'. RESULTS ARE A COMBINATION OF STUDY DATES INCLUDING 3/91, 10/91, AND 5/92. CONCENTRATIONS IN PARENTHESES DO NOT EXCEED LABORATORY DETECTION LIMITS.

SEACOR

DWN RB
APPR JMG
DATE 10/15/92
JOB#
00004-008-01

FIGURE 5
SOIL TPH CONCENTRATION
CONTOUR MAP
WHITTY'S MINIMART
COLVILLE, WASHINGTON

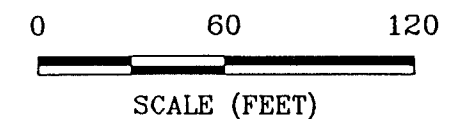
0 30 60
SCALE (FEET)



LEGEND

MW-1  SEACOR MONITORING WELL

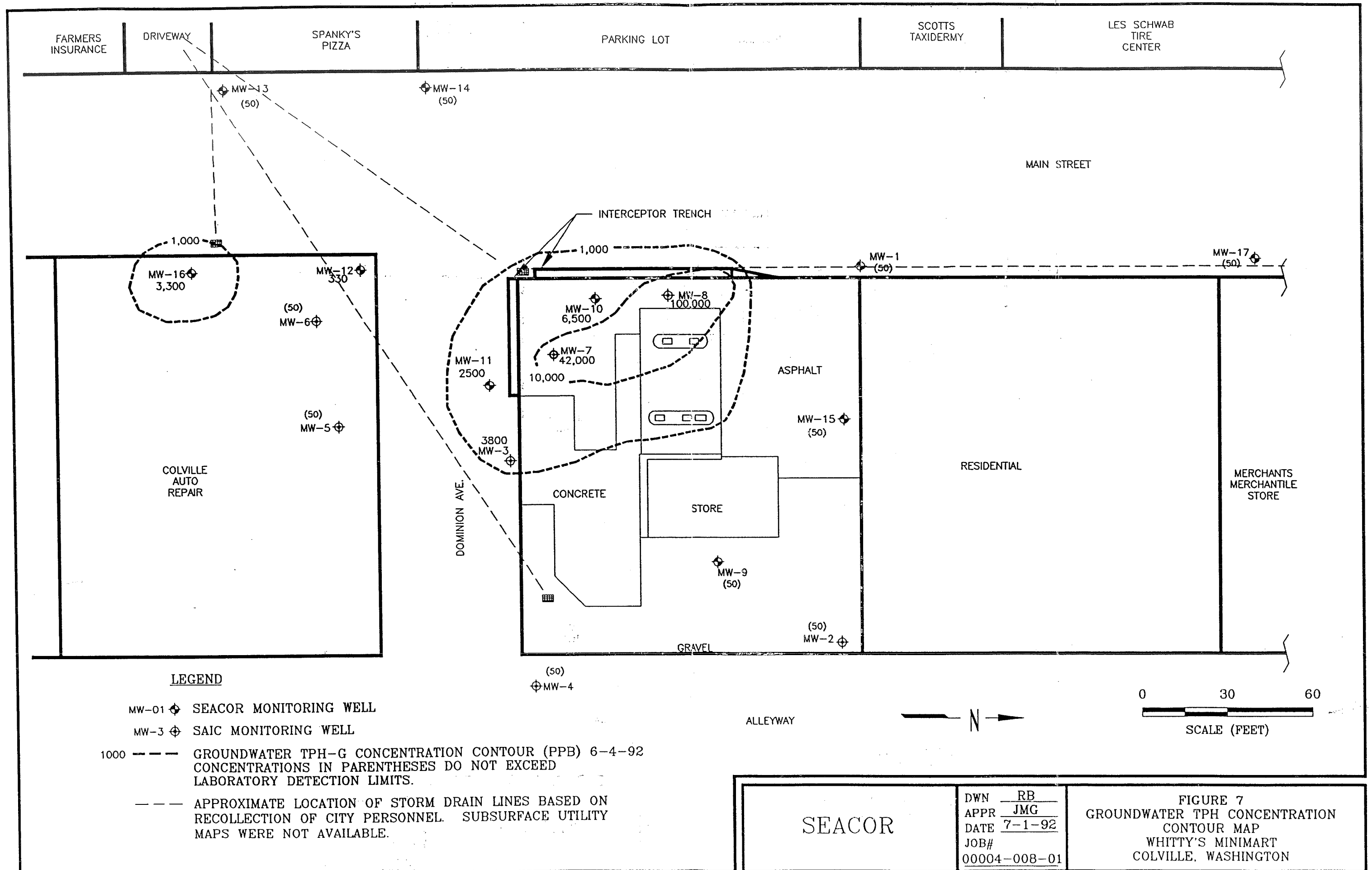
MW-3  SAIC MONITORING WELL



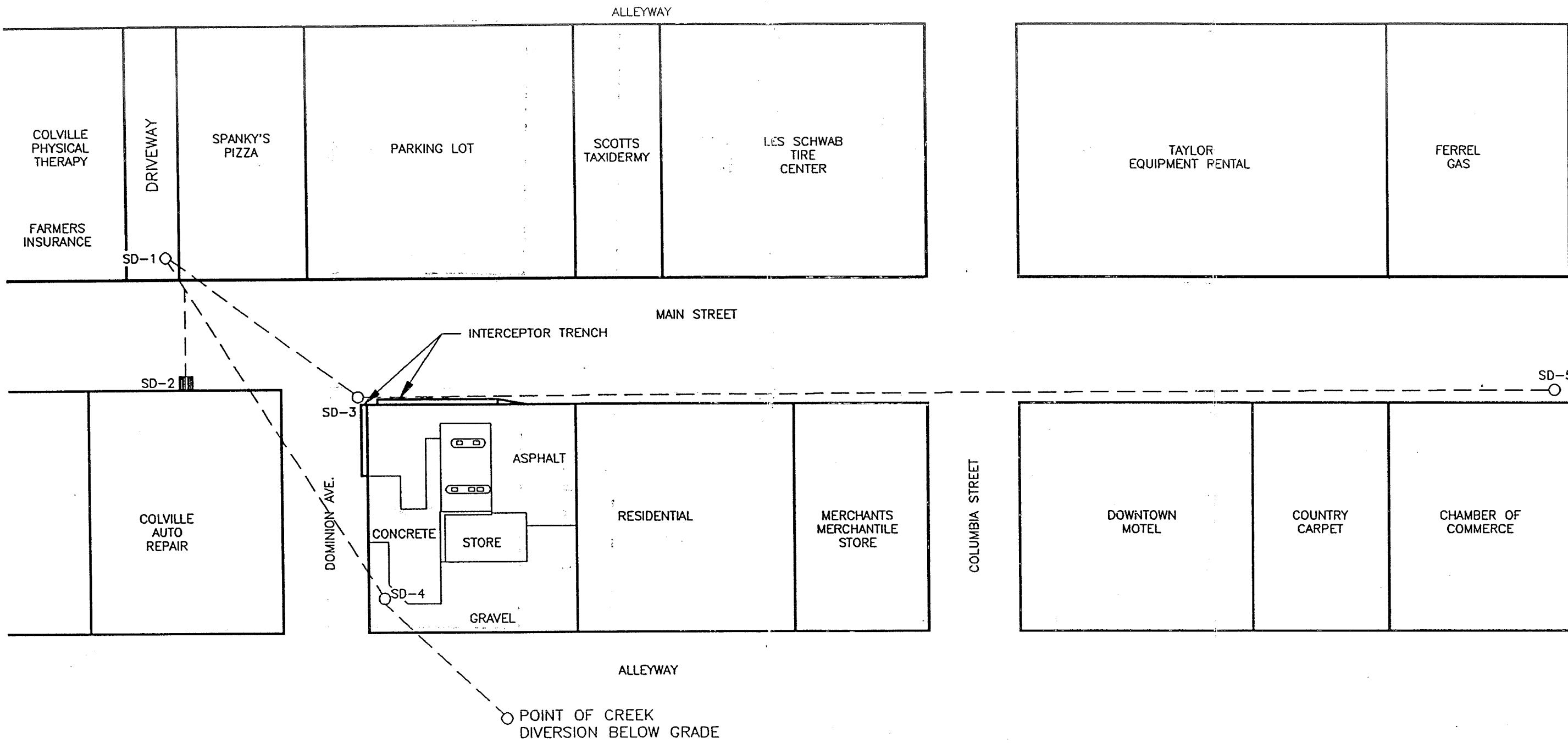
SEACOR

DWN RB
APPR JMG
DATE 7-1-92
JOB#
00004-008-01

FIGURE 6
MONITORING WELL LOCATION MAP
WHITTY'S MINIMART
COLVILLE, WASHINGTON

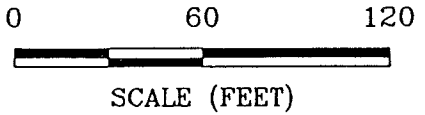


O CREEK OUTFALL



LEGEND

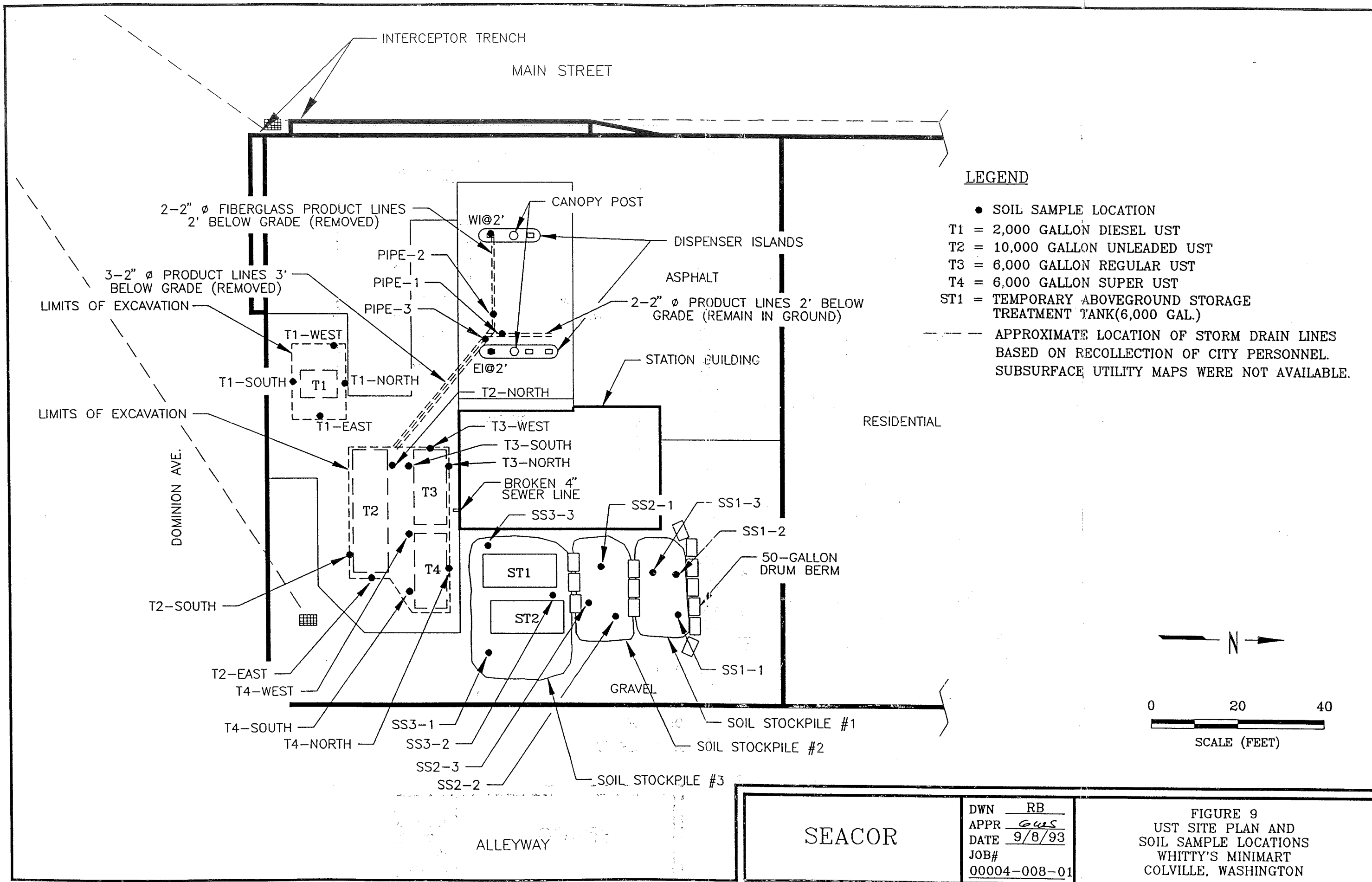
- SD-5 ○ SURFACE AND STORM DRAIN WATER SAMPLE POINT
- SD-2 ■ STORM DRAIN SUMP SAMPLE POINT
- — — APPROXIMATE LOCATION OF STORM DRAIN LINES BASED ON RECOLLECTION OF CITY PERSONNEL. SUBSURFACE UTILITY MAPS WERE NOT AVAILABLE.



SEACOR

DWN RB
APPR JMG
DATE 7-1-92
JOB#
00004-008-01

FIGURE 8
SURFACE WATER SAMPLE LOCATION MAP
WHITTY'S MINIMART
COLVILLE, WASHINGTON



SEACOR

DWN RB
APPR GWS
DATE 9/8/93
JOB#
00004-008-01

FIGURE 9
UST SITE PLAN AND
SOIL SAMPLE LOCATIONS
WHITTY'S MINIMART
COLVILLE, WASHINGTON

TABLE 1
TANK 2 WATER
SUMMARY OF ANALYTICAL RESULTS
[All results in $\mu\text{g/L}$ equivalent to parts per billion (ppb)]

	<u>TPH-G¹</u>	<u>Benzene</u>		<u>Toluene</u>		<u>Ethyl Benzene</u>		<u>Xylenes</u>		<u>Lead</u>		<u>Flash Point (Degrees in Centigrade)</u>
		<u>Total²</u>	<u>TCLP³</u>	<u>Total</u>	<u>TCLP</u>	<u>Total</u>	<u>TCLP</u>	<u>Total</u>	<u>TCLP</u>	<u>Total</u>	<u>TCLP</u>	
	160,000	14,000	6,600	23,000	12,000	26,000	1,500	13,000	8,300	(100) ⁵	NA ⁶	57
Dangerous Waste Criteria ⁷	-- ⁸	500	--	--	--	--	--	--	--	5,000	--	60

NOTES: All analyses, North Creek Analytical of Spokane, Washington.

1 TPH-G = Total petroleum hydrocarbons as gasoline by Method WTPH-G.

2 Total benzene, toluene, ethyl benzene, and xylenes by EPA Method 8020.

3 TCLP benzene, toluene, ethyl benzene and xylenes by EPA Method 8020.

4 Total lead by EPA Method 7420.

5 () means not detected at the enclosed detection limit.

6 NA = Not analyzed.

7 WAC 173-303-090 Dangerous Waste Characteristics

8 " --" means no criteria.

TABLE 2
SAMPLE LOCATION DATA
WHITTY'S MINIMART
COLVILLE, WASHINGTON

<u>Sample I.D.</u>	<u>Date/Time</u>	<u>Location</u>	<u>Depth (ft)</u>	<u>PID Reading (ppm)</u>	<u>Description</u>
<i>Sample From T2, T3, T4 Tank Lines</i>					
Pipe-1	August 24, 1993/2040	Below Pipes (See Figure 9)	2.5	12	Brown Clay with Pea Gravel, No Odor
Pipe-2	August 24, 1993/2045	Below Pipes (See Figure 9)	2.5	15	Brown Clay with Pea Gravel, No Odor
Pipe-3	August 24, 1993/2050	Below Pipes (See Figure 9)	3.5	12	Brown Clay with Pea Gravel, No Odor
<i>Heating Oil Tank Overexcavation</i>					
HO-1	August 25, 1993/1130	Center-bottom	5.5	103	Clayey Blue Sand, Medium Grained - Sample Collected Before Overexcavation and Was Not Analyzed
HO-2	August 25, 1993/1140	South-base	6.0	15	Clayey Blue Sand, Medium Grained, Slight Petroleum Odor
HO-3	August 25, 1993/1150	North-base	6.0	10	Brown Sand, Medium Grained, No Odor
HO-4	August 25, 1993/1200	East-base	6.0	25	Clayey Blue Sand, Medium, Grained, No Odor

NOTES:

All analyses conducted by North Creek Analytical in Spokane, Washington.

1 Depth is relative to existing surface grade at the excavation location.

2 PID = photoionization detector.

TABLE 2 (CON'T)
SAMPLE LOCATION DATA
WHITTY'S MINIMART
COLVILLE, WASHINGTON

<u>Sample I.D.</u>	<u>Date/Time</u>	<u>Location</u>	<u>Depth (ft)</u>	<u>PID Reading (ppm)</u>	<u>Description</u>
<i>Product Dispenser Islands</i>					
EI @ 2'	August 26, 1993/1230	2 Feet Below South Dispenser on East Pump Island	2	NA	Coarse Grained Sand with Peagravel, Heavy Petroleum Odor
WI @ 2'	August 26, 1993/1240	2 Feet Below South Dispenser on West Pump Island	2	NA	Coarse Grained Sand with Peagravel, Heavy Petroleum Odor
<i>Tank T3 - 6,000-Gallon Regular UST</i>					
T3-West	August 27, 1993/1200	West Wall	5	>2,500	Coarse Grained Sand, Brown, Gasoline Odor
T3-South	August 27, 1993/1210	South Wall	5	403	Coarse Grained Sand, Brown, Gasoline Odor
T3-North	August 27, 1993/1230	North Wall	5	>2,500	Fine Grained Sand, Blue, Gasoline Odor
<i>Tank T4 - 6,000-Gallon Super UST</i>					
T4-North	August 27, 1993/1405	North Wall	5	1,913	Coarse Grained Sand and Clay, Brown, Gasoline Odor
T4-West	August 27, 1993/1430	West Wall	5	>2,500	Coarse Grained Sand, Brown, Gasoline Odor
T4-South	August 27, 1993/1450	South Wall	5	>2,500	Coarse Grained Sand, Brown, Gasoline Odor

NOTES:

All analyses conducted by North Creek Analytical in Spokane, Washington.

1 Depth is relative to existing surface grade at the excavation location.

2 PID = photoionization detector.

TABLE 2 (CON'T)
SAMPLE LOCATION DATA
WHITTY'S MINIMART
COLVILLE, WASHINGTON

<u>Sample I.D.</u>	<u>Date/Time</u>	<u>Location</u>	<u>Depth (ft)</u>	<u>PID Reading (ppm)</u>	<u>Description</u>
<i>Tank T2 - 10,000-Gallon Unleaded UST</i>					
T2-North	August 27, 1993/1730	North Wall	5	>2,500	Coarse Grained Sand, Brown, Gasoline Odor
T2-East	August 27, 1993/1745	East Wall	5	>2,500	Coarse Grained Sand, Brown, Gasoline Odor
T2-South	August 27, 1993/1755	South Wall	5	68	Coarse Grained Sand and Peat, Brown, Slight Gasoline Odor
<i>Tank T1 - 2,000-Gallon Diesel UST Overexcavation</i>					
T1-West	August 28, 1993/0835	West Base	4.5	2,103	Coarse Grained Sand and Gravel, Brown, Petroleum Odor
T1-South	August 28, 1993/0840	South Base	4.5	2,500	Fine Grained Sand, Brown, Diesel Odor
T1-East	August 28, 1993/0845	East Base	4.5	133	Clayey Sand, Blue, Mild Petroleum Odor
T1-North	August 28, 1993/0900	North Base	4.5	106	Clayey Sand, Brown, No Odor

NOTES:

All analyses conducted by North Creek Analytical in Spokane, Washington.

1 Depth is relative to existing surface grade at the excavation location.

2 PID = photoionization detector.

TABLE 2 (CON'T)
SAMPLE LOCATION DATA
WHITTY'S MINIMART
COLVILLE, WASHINGTON

<u>Sample I.D.</u>	<u>Date/Time</u>	<u>Location</u>	<u>Depth (ft)</u>	<u>PID Reading (ppm)</u>	<u>Description</u>
<i>Soil Stockpile #1 - Gasoline Contaminated Soils</i>					
SS1-1	August 28, 1993/0725	Stockpile	>1	>2,500	Sand and Gravel, Brown, Gasoline Odor
SS1-2	August 28, 1993/0735	Stockpile	>1	>2,500	Sand and Gravel, Brown, Gasoline Odor
SS1-3	August 28, 1993/0745	Stockpile	>1	1,799	Sand and Gravel, Brown
<i>Soil Stockpile #3 - Gasoline Contaminated Soils</i>					
SS3-1	August 28, 1993/0800	Stockpile	>1	754	Sand and Gravel, Brown, Gasoline Odor
SS3-2	August 28, 1993/0810	Stockpile	>1	1,049	Sand and Gravel, Brown, Gasoline Odor
SS3-3	August 28, 1993/0820	Stockpile	>1	>2,500	Sand and Gravel, Brown, Gasoline Odor
<i>Soil Stockpile #2 - Diesel and Heating Oil Contaminated Soils</i>					
SS2-1	August 28, 1993/1045	Stockpile	>1	534	Sand and Clay, Brown, Petroleum Odor
SS2-2	August 28, 1993/1055	Stockpile	>1	34	Sand and Clay, Brown, Slight Petroleum Odor
SS2-3	August 28, 1993/1105	Stockpile	>1	110	Sand and Clay, Brown, Petroleum Odor

NOTES:

All analyses conducted by North Creek Analytical in Spokane, Washington.

1 Depth is relative to existing surface grade at the excavation location.

2 PID = photoionization detector.

TABLE 3
UST SITE CHECK SOIL SAMPLES
SUMMARY OF ANALYTICAL RESULTS

<u>Sample I.D.</u>	<u>TPH-G¹ mg/kg</u>	<u>TPH-D² mg/kg</u>	<u>Benzene³ mg/kg</u>	<u>Toluene³ mg/kg</u>	<u>Ethyl Benzene³ mg/kg</u>	<u>Xylenes³ mg/kg</u>	<u>Lead⁴ mg/kg</u>
EI@2'	1.4 G ²	NA ⁵	(0.050) ⁶	(0.050)	(0.050)	(0.10)	(7.5)
WI@2'	(1.0)	NA	0.050	(0.050)	(0.050)	(0.10)	14
Pipe-1	(1.0)	NA	(0.50)	(0.50)	(0.50)	(0.10)	NA
Pipe-2	(1.0)	NA	(0.50)	(0.50)	(0.50)	(0.10)	NA
Pipe-3	13 G ²	NA	(0.50)	(0.50)	(0.50)	0.12	15
T1-West	NA	370	NA	NA	NA	NA	NA
T1-North	NA	760	NA	NA	NA	NA	NA
T1-East	NA	820	NA	NA	NA	NA	NA
T1-South	NA	380	NA	NA	NA	NA	NA
T2-North	1,300	NA	(1.25)	2.4	2.7	67	(7.5)
T2-East	1,300	NA	(0.5)	1.6	2.7	39	(7.5)
T2-South	(1.0)	NA	(0.05)	(0.05)	(0.05)	(0.10)	(7.5)
T3-North	13,000	NA	(12.5)	17	24	200	(7.5)
T3-West	3,800	NA	(5)	7.7	6.2	130	(7.5)
T3-South	(1.0)	NA	(0.05)	(0.05)	(0.05)	(0.10)	(7.5)
T4-North	160	NA	(0.05)	0.15	0.11	0.90	(7.5)
T4-West	3,800	NA	(1.25)	2.9	3.8	160	(7.5)
T4-South	890	NA	(0.25)	2.4	2.7	67	(7.5)

NOTES: All analyses by North Creek Analytical of Spokane, Washington.

² = The chromatograph for this sample is not a typical gasoline fingerprint.

¹ TPH-G = Total petroleum hydrocarbons as gasoline by Method WTPH-G.

² TPH-D = Total petroleum hydrocarbons as diesel by Method WTPH-D.

Benzene, ethyl benzene, toluene and xylenes by EPA Method 8020.

Total Lead by EPA Method 7420.

⁵ NA = Not analyzed.

⁶ () = Not detected at the enclosed detection limit.

Model Toxics Control Act (MTCA) WAC 173-340-740(2)(a).

TABLE 3 (Con't)
UST SITE CHECK SOIL SAMPLES
SUMMARY OF ANALYTICAL RESULTS

<u>Sample I.D.</u>	<u>TPH-G¹ mg/kg</u>	<u>TPH-D² mg/kg</u>	<u>Benzene³ mg/kg</u>	<u>Toluene³ mg/kg</u>	<u>Ethyl Benzene³ mg/kg</u>	<u>Xylenes³ mg/kg</u>	<u>Lead⁴ mg/kg</u>
SS1-1	180	NA	(0.05)	(0.05)	(0.05)	1.5	(7.5)
SS1-2	670	NA	(0.5)	0.67	0.90	12	(7.5)
SS1-3	240	NA	(0.5)	0.11	0.21	1.7	(7.5)
SS2-1	NA	60	NA	NA	NA	NA	NA
SS2-2	NA	63	NA	NA	NA	NA	NA
SS2-3	NA	37	NA	NA	NA	NA	NA
SS3-1	2.6	NA	(0.05)	(0.05)	(0.05)	(0.10)	(7.5)
SS3-2	25	NA	(0.05)	(0.05)	(0.05)	(0.10)	(7.5)
SS3-3	1,500	NA	(0.5)	0.76	1.7	20	(7.5)
HO2	NA	(10)	NA	NA	NA	NA	NA
HO3	NA	(10)	NA	NA	NA	NA	NA
HO4	NA	(10)	NA	NA	NA	NA	NA
MTCA Method A Criteria ⁷	100	200	0.5	40	20	20	250

NOTES: All analyses by North Creek Analytical of Spokane, Washington.

¹ = The chromatograph for this sample is not a typical gasoline fingerprint.

TPH-G = Total petroleum hydrocarbons as gasoline by Method WTPH-G.

TPH-D = Total petroleum hydrocarbons as diesel by Method WTPH-D.

³ Benzene, ethyl benzene, toluene and xylenes by EPA Method 8020.

Total Lead by EPA Method 7420.

⁵ NA = Not analyzed.

⁶ () = Not detected at the enclosed detection limit.

Model Toxics Control Act (MTCA) WAC 173-340-740(2)(a).