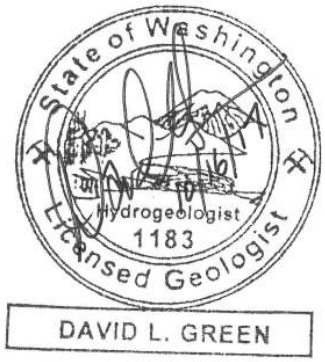
Remedial Investigation/Feasibility Study

Comet Trailer Corp Site - Facility No. 503
501 South First Street
Selah, WA 98942
Agreed Order No. DE 11193

Prepared For:

Bud Owens Limited Family Partnership
P.O. Box 129
Selah, WA 98942

Prepared By:



SAGE Earth Sciences, Inc.
1396 Lombard Loop Rd.
Wapato, WA 98951

October 16, 2017

October 17, 2017

Mr. Kyle Parker
WA State Department of Ecology
Toxics Cleanup Program / Central Regional Office
1250 W. Alder Street, Union Gap, WA 98903

SUBJECT: FINAL *REMEDIAL INVESTIGATION/FEASIBILITY STUDY* REPORT FOR AGREED ORDER NO. DE 11193.

Per our telephone conversation today, this letter serves to document the reason no *Feasibility Study* was included in the above mentioned report. Our remedial investigation, documented in the report, found no areas requiring remediation. Since no areas requiring remediation were found, cleanup alternatives were not investigated or evaluated and no *Feasibility Study* was required.

Sage Earth Sciences, Inc. appreciates your assistance in this project. Please contact us if you have any additional questions or comments.

Respectfully,
SAGE EARTH SCIENCES, INC.

David L. Green
President

cc: file
Bud Owens Family Limited Partnership, Selah, WA

RECEIVED
OCT 19 2017
Dept of Ecology
Central Regional Office

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GUIDE TO ACRONYMS

AST	Above-ground Storage Tank
BGS	Below Ground Surface
BNSF	Burlington Northern-Santa Fe Railroad
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
Cleanup Levels	*Method A Groundwater and Soil Cleanup Levels of WAC-173-340-740 or* *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*
CPAH	Carcinogenic Polycyclic Aromatic Hydrocarbons
DOE	State of Washington, Department of Ecology
DTW	Depth To Water
EPH	Extractable Petroleum Hydrocarbons
FBI	Friedman & Bruya, Inc.
GPS	Global Positioning System
HPE	Hi-Point Excavation LLC
KI	Kleinfelder, Inc.
LNAPL	Light Non-Aqueous Phase Liquid
MW	Monitoring Well
PCS	Petroleum Contaminated Soil
PPM	Parts Per Million or mg/Kg or mg/L
RI/FS	Remedial Investigation/Feasibility Study
SWWTP	Selah Waste Water Treatment Plant
TES	Technico Environmental Services
USCS	Unified Soil Classification System
VOC	Volatile Organic Compound
Work Plan	Work Plan for a Remedial Investigation/Feasibility Study

1.0 Background Summary

1.1 Site Location

The Comet Trailer facility is located at 501 South First Street, Selah, WA. It is situated within the W 1/2 of the NW 1/4, Section 01, Township 13 North, Range 18 East, Willamette Meridian. Project activities were conducted on Yakima Tax Parcel Numbers: 181301-22423 & 181301-23001. The approximate site latitude is 46° 38' 46.1" and the approximate longitude is 120° 31' 42.9". Figure 1 shows the location of parcels associated with this Remedial Investigation/Feasibility Study (RI/FS).

1.2 Site Description & Adjacent Land Use

The facility is currently owned by:

Bud Owens Limited Family Partnership
P.O. Box 129
Selah, WA 98942
(509) 697-7264

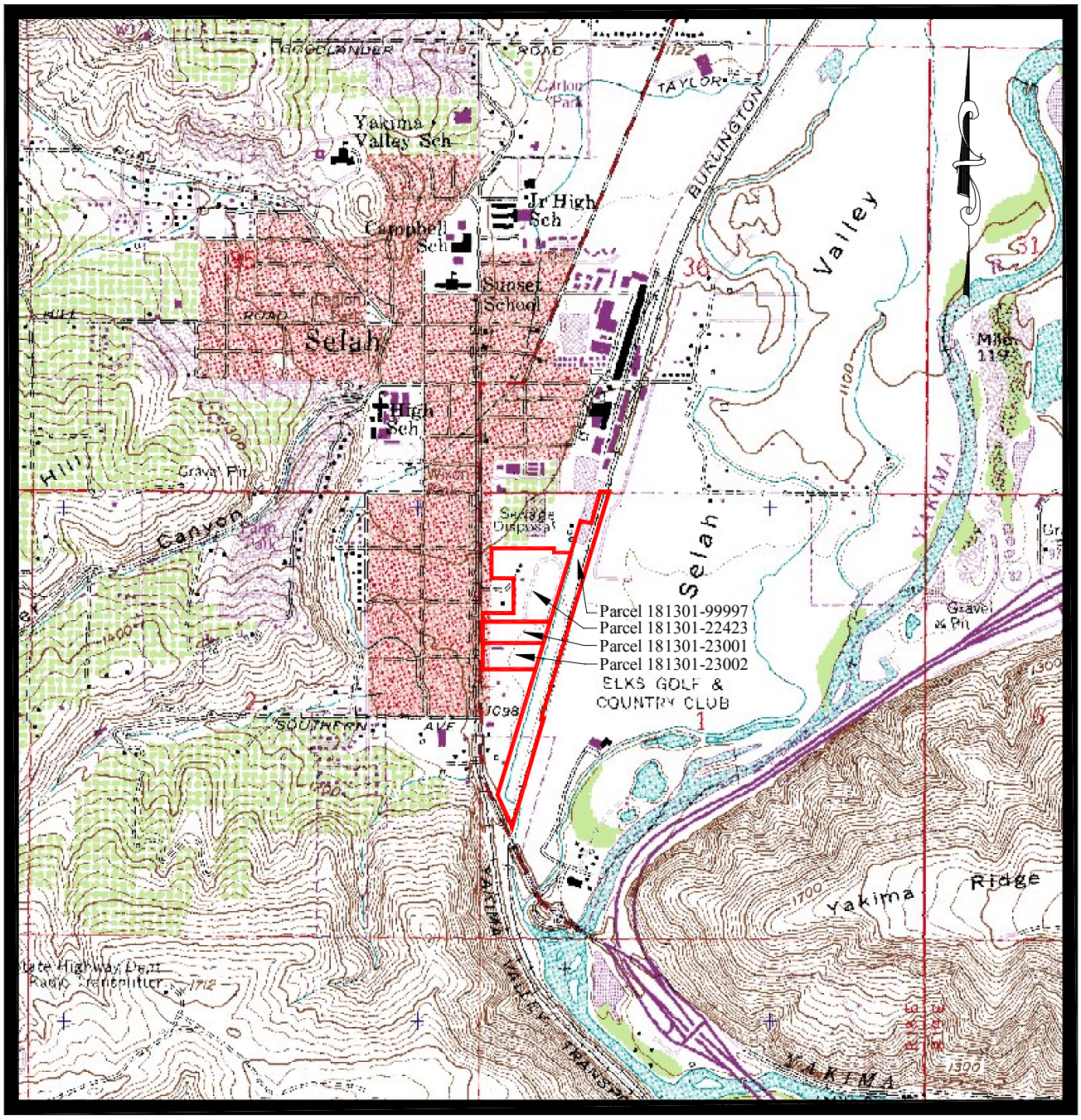
The State of Washington, Department of Ecology (DOE) Site Manager is:

Kyle Parker
WA State Department of Ecology
Toxics Cleanup Program / Central Regional Office
1250 W. Alder Street, Union Gap, WA 98903
Direct (509) 454-7833

As shown by Figure 2, the eastern portion of Parcel Number 181301-22423 is occupied by the former Comet Trailer manufacturing building, which was occupied by the following commercial businesses during Sage's field activities: Tree Top & Ross Plant Ingredient Division Warehouse, Graham Packaging and Yakama Juice. The area surrounding the building was covered by asphalt surface. The northwestern portion of this parcel was occupied by a gravel parking lot. The southwestern portion of this parcel was occupied by a storage buildings and a residential dwelling. These western areas were separated from the asphalted area by fencing.

The eastern portion of Parcel Number 181301-23001 was occupied by an asphalt parking and equipment storage area. The western portion of this parcel was occupied by a strip mall, an apartment complex and a residential dwelling.

Goodwill Industries and small commercial businesses lie west of the northern portion of Parcel Number 181301-22423. South First Street lies immediately west of the Parcel Number 181301-23001 and the southern portion of Parcel Number 181301-22423.



Graphic Scale

Contour Interval - 20 Feet

Figure 1. Site Location Map

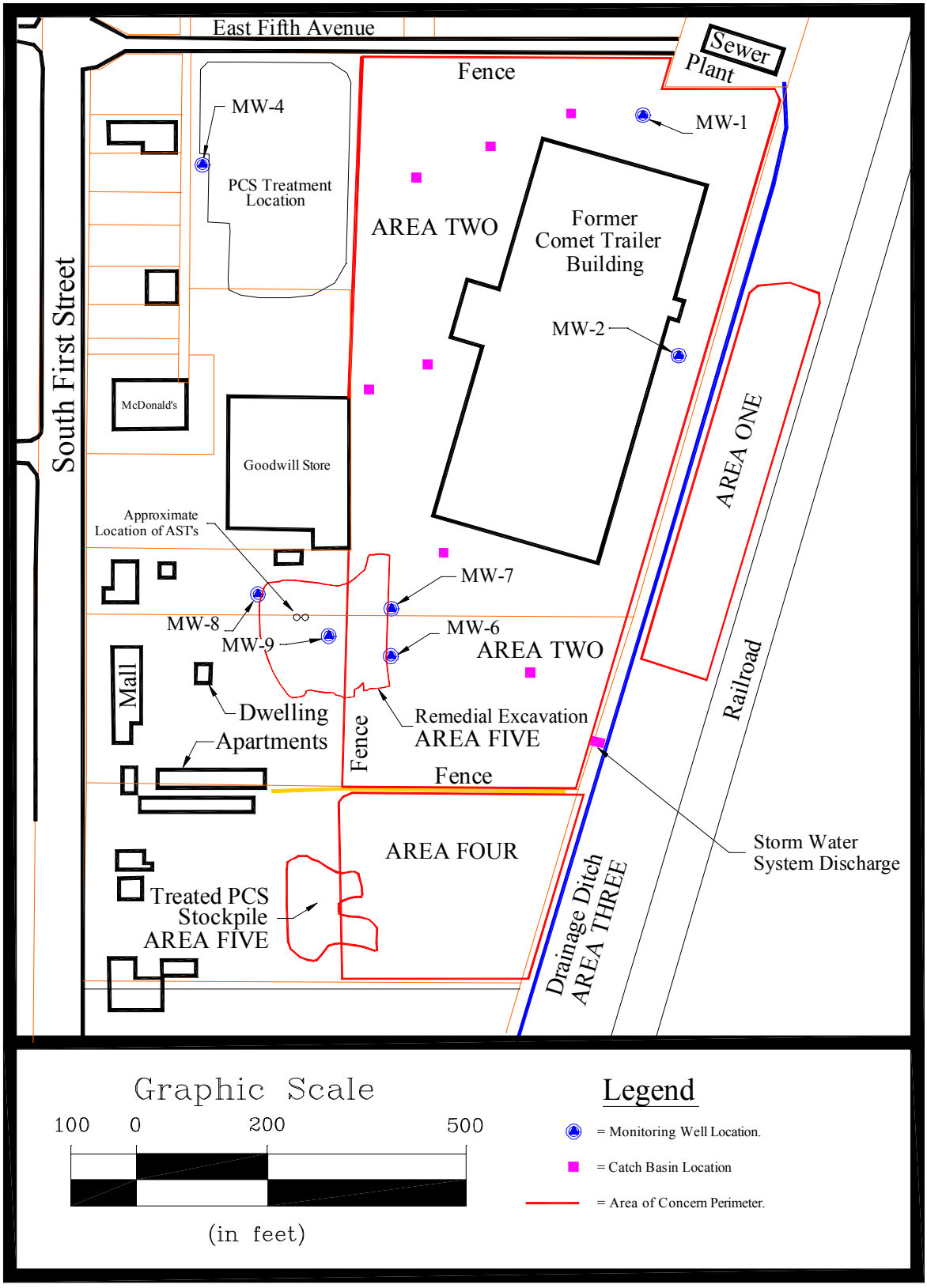


Figure 2. Property Use and Areas of Concern

The local topography slopes gently southeast. A drainage ditch, which discharges effluent from the municipal sewer treatment plant, lies immediately east of the subject parcels. The drainage ditch discharges into the Yakima River, which lies approximately three-tenths of a mile southeast of the site.

1.3 Site History

The late Mr. Bud Owens was a former owner of Comet Trailer, which operated a truck trailer manufacturing business on parcel 181301-22423 and 181301-23001 from 1984-1995. In the course of trailer manufacturing activities, trailers and/or their components were sandblasted prior to painting. Mr. Owens placed spent sandblast media on property south of the manufacturing facility and on property east of the site leased from Burlington Northern-Santa Fe Railroad (BNSF) property.

Mr. Owens also operated a heating oil sales and delivery business. The business utilized two (2) Above-ground Storage Tanks (AST's) of unknown size from parcels 181301-22423 and/or 181301-23001 to support the sale of heating oil. The approximate location of the AST's is shown by Figure 2.

1.4 Geology and Hydrogeology

Selah is located near the northwest margin of the Yakima Fold Province of the Columbia River Plateau, which is lithologically composed of Columbia River Basalts and interbedded sediments of the Ellensburg Formation[7]. This province is characterized by anticlinal ridges and synclinal valleys that generally trend east-west forming drainage basins. Selah is located within the Selah sub-basin of the Upper Yakima River Basin, as shown by Figure 3 and Figure 4. The Selah sub-basin is bounded on the north by the Umtanum Anticline and on the South by Yakima Ridge, both of which are anticlinal ridges composed of Columbia River Basalts and the interbedded Ellensburg Formation[8]. Basalt in the central portion of the sub-basin is overlain by up to several hundred feet of Ellensburg Formation sediments.

The site lies approximately three-tenths of a mile northwest of the Yakima River. The Yakima River flows south-southwest through the Selah basin, from the Yakima River Canyon to Selah Gap, which is a narrow gap in Yakima Ridge cut by the Yakima River during uplifting of the ridge. The Yakima River has deposited unconsolidated gravels, small boulders, primarily basaltic, and flood silts derived from rocks upstream in the Yakima River, as well as the Wenas and Selah Creek drainages. Surface water from the area west of the Yakima River is drained by Wenas Creek. Groundwater recharge is supplied by precipitation, snow runoff and irrigation water diverted from the Naches River by the Naches-Selah Canal.

During previous excavation and drilling activities at the site, subsurface materials observed consisted of: medium brown, slightly pebbly, clayey silt[16]. This soil unit is classified as "ML" according to the Unified Soil Classification System (USCS). Soil located near, and east of the fence also exhibited poorly sorted, river gravels up to approximately six inches in diameter underlying the silt. The surface of the gravel unit lies at depths ranging from six feet Below

Ground Surface (BGS) and extends to a depth of at least thirteen feet BGS[18]. This soil unit is classified as "GP" according to the USCS.

Previous hydrogeologic investigations at the subject site, discussed in Section 3.5.2 of this *RI/FS*, found the uppermost portion of a very shallow unconfined water-bearing unit at depths ranging from approximately 2 to 4 feet below top of casing wells near the plume of diesel contamination (known as "Area 5" in this *RI/FS*). The groundwater was observed to seasonally fluctuate up to approximately one and one-half (1.5) feet.

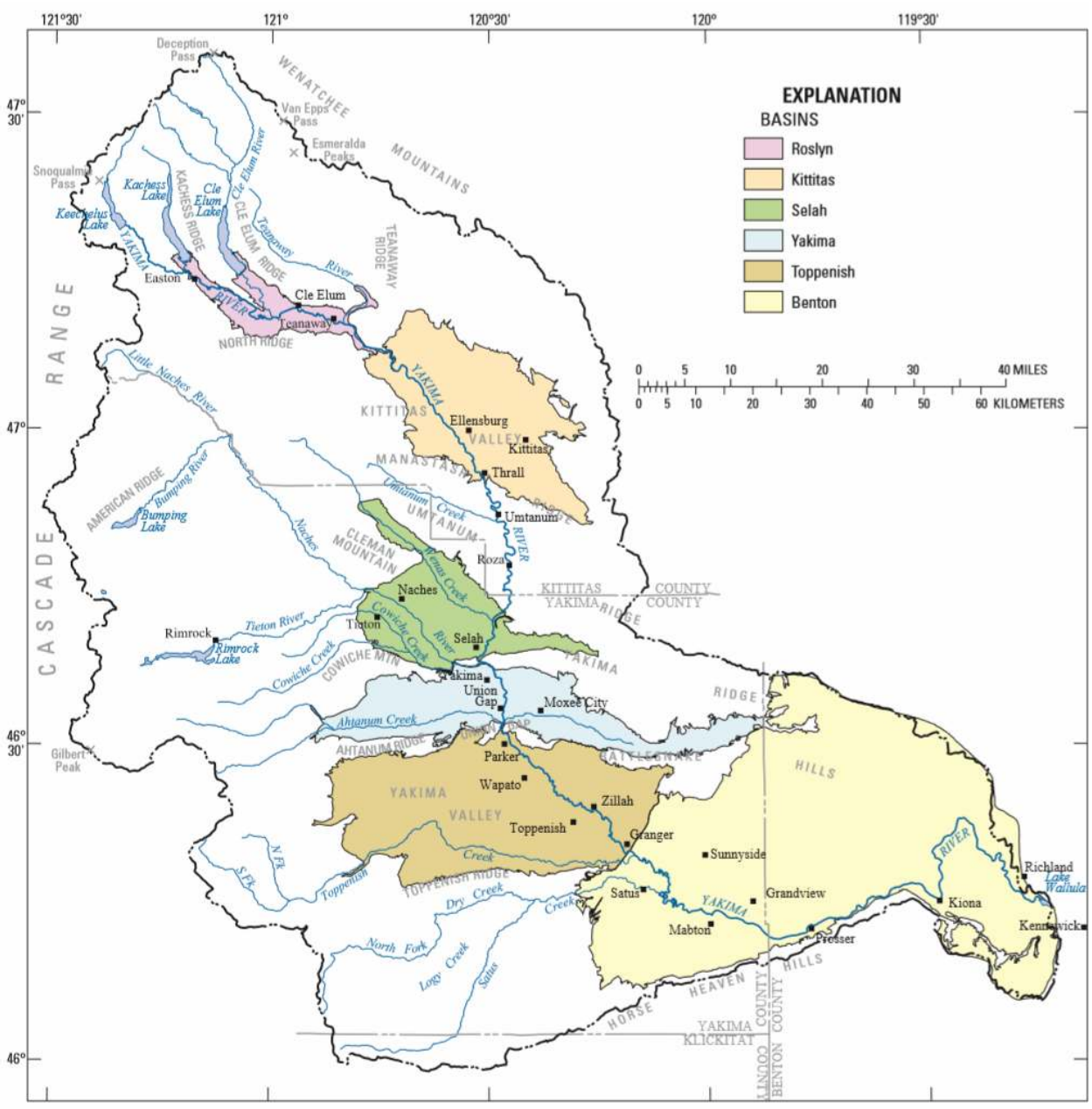


Figure 3. Basins in the Yakima River Drainage[8].

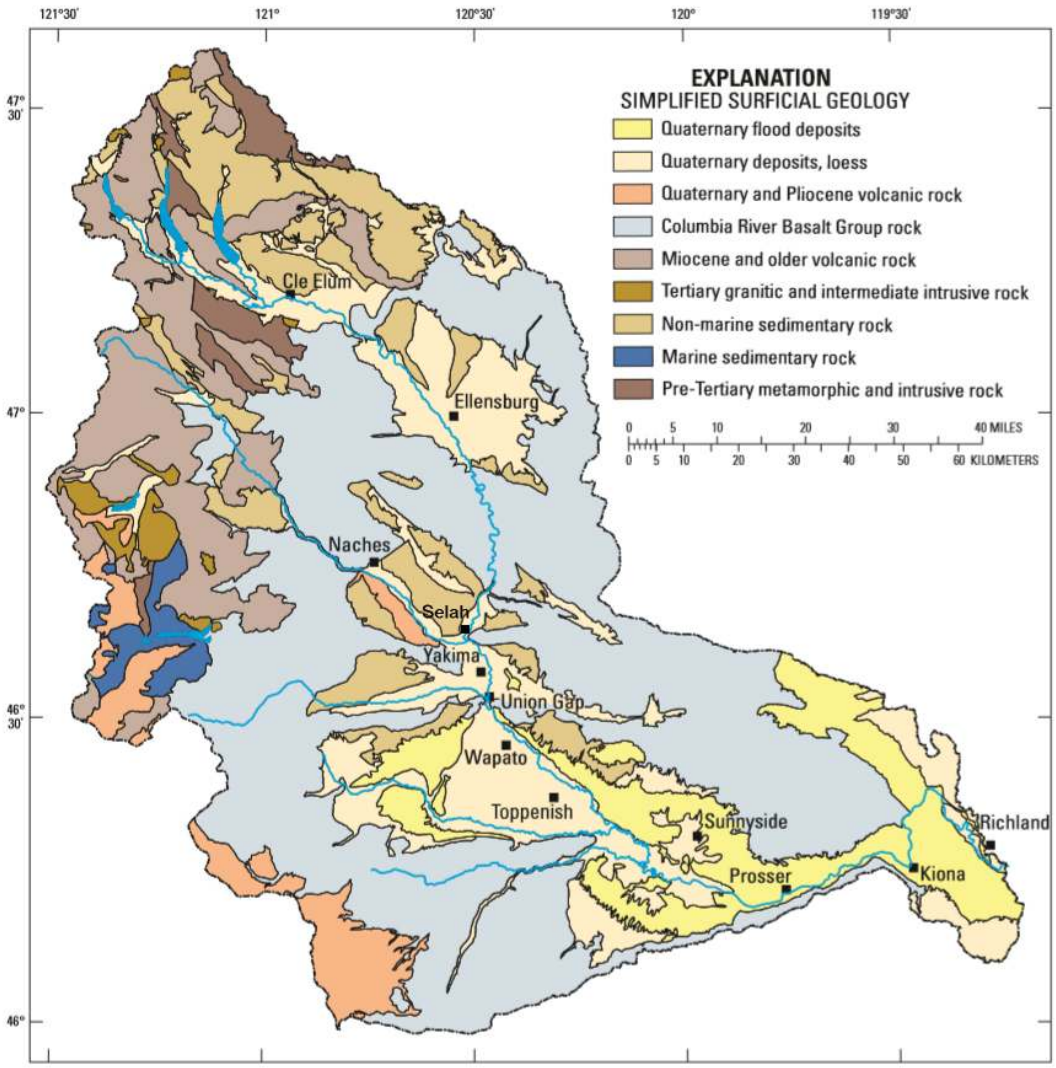


Figure 4. Simplified Surficial Geologic Map of the Yakima River Drainage[8].

2.0 Previous Agreed Order & Work Plan

2.1 Initial Investigation

On March 11 and May 13 1991, the State of Washington, Department of Ecology (DOE) conducted an initial investigation at the Comet Trailer facility[26]. Due to the nature of business at the Comet Trailer facility, the DOE collected samples of sandblast waste and sludge from a catch basin on the north end of the site. The catch basins were connected to a storm drain system which entered a nearby storm water drain which eventually flows to the Yakima River. A summary of the DOE findings is presented below.

- Catch Basin Sludge Samples: Samples collected from the catch basin were analyzed for volatile organics and total metals, which found the following compounds were detected: trichlorofluromethane, toluene, styrene, ethylbenzene and xylenes[26]. The DOE required the facility to: cease discharge from the catch basins, manage sludge from the sampled catch basin as "Dangerous Waste" per Chapter 173-303 WAC[3], collect and designate samples from the remaining catch basins and verify through sampling and analysis that the catch basin system had been cleanup up adequately.

- Sandblast Waste Material Samples: Total metals analysis results revealed the presence of chromium at 261 ppm and 207 ppm[40]. These levels exceed the Method A Soil Cleanup Levels for Unrestricted Land Uses of WAC 173-340-900[4] for chromium VI but are below the *Cleanup Level* for chromium III. Additional metals analyses required to determine the species of chromium were not performed, so it was not established if remedial action was actually required. Analysis of the samples using the Toxic Characteristic Leaching Procedure (TCLP) found no detectable (less that 0.1 ppm) chromium[41]. Sandblast grit piles were identified as being in the following locations:

    - South of the warehouse in a low area that has since been filled,
    - Southeast corner of the unpaved area, south of the facility, and about 10 yards from the irrigation ditch,
    - East section of the facility on BNSF property,
    - Southwest corner of the unpaved area (sampled by the DOE).

In 1992, the DOE completed a Site Hazard Assessment for the site and determined that the site would rank a "1", where 1 represents the highest relative risk and 5 the lowest[28]. The ranking indicated that the facility posed a high potential threat to human health and the environment relative to other sites ranked at that time.

2.2 Previous Agreed Order No. DE 03 TCPCR-5877

On December 5, 2003 Mr. Bud Owens entered into Agreed Order No. DE 03 TCPCR-5877 with the State of Washington, Department of Ecology[27] to perform eight specific activities at the facility. These consisted of:

1. Mr. Owens shall develop a Scope of Work and Work Plan for a Remedial Investigation/Feasibility Study (RI/FS). The scope of Work and Work Plan shall contain all of the elements outlined in WAC 173-340-350, -355, and -357. The RI/FS shall be designed to determine the horizontal and vertical extent and magnitude of all hazardous substances released at the site, including metals and volatile organics.
2. Upon Ecology approval of the Scope of Work, Mr. Owens shall implement this Work Plan and prepare a Draft RI/FS that complies with WAC 173-340-350 through 370 for Ecology review and public comment.
3. Upon Ecology approval of the Draft RI/FS and incorporation of public comment, Mr. Owens shall deliver three copies of the Final RI/FS incorporation Ecology's comments to Ecology for review and approval.
4. In accordance with WAC 173-340-820, Mr. Owens shall submit to Ecology for review and approval a Sampling and Analysis Plan with the Work Plan.

5. In accordance with WAC 173-340-810, Mr. Owens Shall submit to Ecology for review a Worker Safety and Health Plan with the Work Plan.
6. In accordance with WAC 173-340-600, Mr. Owens shall submit to Ecology for review and approval a Public Participation Plan.
7. Mr. Owens shall submit sampling data in accordance with Environmental Information Management (EIM) guidelines.
8. The work required under the Order shall be completed in such a manner to meet the schedule prescribed in the Agreed Order.

To fulfill Activity #1 required by *Agreed Order*, Mr. Owens retained Technico Environmental Services (TES), Kennewick, WA to develop a Scope of Work and Work Plan for a Remedial Investigation/Feasibility Study (*Work Plan*). TES produced three documents[35,36,37] to fulfill Activity #1, which are on file at the Central Regional Office of the DOE. The elements for the *Work Plan* are briefly described in Sections 2.1 through 2.4 of this report.

2.3 Work Plan for Comet Trailer Facility

TES produced the *Work Plan For Comet Trailer Facility, January 13, 2004* (*Work Plan*). This document provides facility background information and identifies three possible sources of contamination to be investigated at the facility under the Agreed Order.

The three possible sources of contamination consist of:

1. Sampling Area #1: the bottom of the catch basin located in the northeast section of the property.
2. Sampling Area #2: the south of the paved parking lot.
3. Sampling Area #3: east of the ditch on Burlington Northern property.

2.3.1 Amendment 1 to the Work Plan

TES produced the *Amendment 1 to the Work Plan, July 28, 2004.* This document amended the *Work Plan* to address four specific areas of interest which include:

1. Area One: Sandblasting grit on Burlington Northern Santa Fe Railway (BNSF) Land. Sandblast grit sampling and analysis data would be obtained from BNSF and compared to Method A Cleanup Levels (*Cleanup Levels*).
2. Area Two: Paved area with building. A catch basin would be sampled and analyzed in accordance with the *Work Plan* and the analytical results would be compared to the *Cleanup Levels*. Groundwater samples would be collected from existing monitoring wells and analyzed for solvents.
3. Area Three: Wastewater ditch. The need for additional work in the wastewater ditch will be evaluated based upon the analytical results for the sandblast grit waste.
4. Area Four: Land south of the building. Sandblast grit waste would be located and sampled. Analytical results would be compared to the Cleanup Levels. If the analytical results indicate the waste required remediation, the material would be transported to a landfill or hazardous waste facility, depending on classification of the waste. If the waste volume was determined to be less than 3 cubic yards, three samples would be collected. If the quantity exceeded 35 cubic yards, five to seven samples would be collected.

2.3.2 Amendment 2 to the Work Plan

TES produced the *Amendment 2 to the Work Plan, August 12, 2004*. This document identifies sampling areas, analytes and laboratory methods according to the following table taken from this amendment:

Table 1. Amendment 2 Sampling Areas, Analytes & Laboratory Methods.

Area	Description	Analyte	Method
One	Sand Blasting Grit on BNSP Land	Total Chrome	6010 B
		Cr +6	Extraction ASA Mono 9, 20 - 4.3
		Cr +3	Calculated from Total and Cr +6
		Pb	6010 B
Two	Catch Basin	Solvents	EPA 8260
		Total Chrome	6010 B
		Cr +6	Extraction ASA Mono 9, 20 - 4.3
		Cr +3	Calculated from Total and Cr +6
		Pb	6010 B
Three	Wastewater Ditch	None	
Four	Owens Land South of Building Sand Blasting Grit	Total Chrome	6010 B
		Cr +6	Extraction ASA Mono 9, 20 - 4.3
		Cr +3	Calculated from Total and Cr +6
		Pb	6010 B

2.4 Additional Requirements for Comet Trailer Facility

Area Five: During performance of *Work Plan* sampling activities during August 2004, TES discovered free petroleum product in a groundwater monitoring well located southwest of the building[38]. For the purposes of this document, Sage designated this area of soil and groundwater contamination as "Area 5".

Upon learning of the discovery, the DOE issued a letter requiring that further investigation be performed to address groundwater contamination discovered during sampling activities[29]. The letter indicated that "the petroleum release must be addressed independently and this requires one of the following to occur: either an amendment can be made to the Agreed Order or a new Agreed Order can be drafted" and "the document must be finalized before work is to be conducted".

Since the Agreed Order had not been amended, nor had a new Agreed Order been drafted, Sage requested permission from the DOE to "perform soil remediation *as soon as possible* without amending the existing Agreed Order" on December 1, 2009[15]. Sage obtained permission from the DOE to perform soil remediation, without amending the existing Agreed Order, on December 7, 2009[30].

3.0 Previous Remedial Investigation Activities

3.1 Area One: Sandblasting Grit on B.N.S.F. Land

In accordance with the amended Work Plan, Sandblast grit sampling and analysis data was obtained from BNSF[1]. Sampling was performed by GeoEngineers, Inc. of Tacoma, WA. This document identifies five sampling locations in each of two areas (Grit Pile #1 and Grit Pile #2 on the *Site Plan* map). GeoEngineers submitted the samples to North Creek Analytical, Inc. of Bothell, WA for RCRA metals. The analytical results are summarized in Table 2.

Table 2. NCA Analytical Results for Area One Sandblast Grit Samples

Location	Sample ID	Cr (mg/Kg)	As (mg/Kg)	Se (mg/Kg)	Ag (mg/Kg)	Cd (mg/Kg)	Ba (mg/Kg)	Pb (mg/Kg)	Hg (mg/Kg)
Grit Pile #1	SS-01-032003	41.9	3.28	<0.562	<0.500	<0.562	136	12.8	<0.200
	SS-02-032003	42.5	2.50	<0.556	<0.500	<0.556	138	8.84	<0.200
	SS-03-032003	39.8	2.88	<0.625	<0.500	0.724	135	7.98	<0.200
	SS-04-032003	41.2	2.80	<0.575	<0.500	<0.575	137	12.2	<0.200
	SS-05-032003	41.0	2.73	0.668	<0.500	<0.625	142	8.90	<0.200
Grit Pile #2	SS-06-032003	8.74	0.667	<0.568	<0.500	<0.568	19.4	7.37	<0.200
	SS-07-032003	36.2	3.09	<0.595	<0.500	<0.595	100	13.6	<0.200
	SS-08-032003	7.75	0.890	<0.562	<0.500	<0.562	27.3	4.10	<0.200
	SS-09-032003	36.1	3.14	<0.595	<0.500	<0.595	98.1	12.7	<0.200
	SS-10-032003	37.4	2.86	<0.500	<0.500	<0.500	96.1	14.2	<0.200

Red Font indicates that concentration exceeds Method A Cleanup Levels of WAC 173-340-740
Green Font indicates that concentration does not exceed Method A Cleanup Levels of WAC 173-340-740
Orange Font indicates that type of Chromium (III or VI) must be determined to determine Cleanup Level.
Blue Font indicates that Method A Cleanup Levels of WAC 173-340-740 are not established.
Cyan Font indicates values represent soil concentrations that are expected to be protective at any MTCA site and are provided for use in eliminating hazardous substances from further consideration under WAC 173-340-7493 (2)(a)(i)
mg/Kg = parts per million (ppm); µg/L = parts per billion (ppb); NA = Sample not analyzed

As reported in their *Comet Trailer Sampling Results* report[38], TES collected one (1) sample of sandblast grit from the BNSF property. In a table summarizing analytical results for samples collected per the *Work Plan*, TES reported the analytical results for this sandblast grit sample to be:

- Total Chromium at a concentration of 8.19 mg/Kg,
- Chromium VI at a concentration of 0.09 mg/Kg,
- Chromium III at a concentration of 8.1 and
- Total lead at a concentration of 4.81 mg/Kg.

Comparison of the analytical results with the *Method A Soil Cleanup Levels* of WAC 173-340-740 (Cleanup Levels) indicated no Chromium or lead concentrations requiring remedial action.

3.2 Area Two: Paved Area With Building

In accordance with the amended *Work Plan*, TES collected sludge from the Catch Basin located north of the existing building on August 18, 2004. As reported in their *Comet Trailer Sampling Results* report[38], TES reported that analysis of the Catch Basin Sludge sample found:

- Total Chromium at a concentration of 64.2 mg/Kg,
- No detectable (less than 0.08 mg/Kg) Chromium VI,
- Chromium III at a concentration of 64.2,
- Total lead at a concentration of 2.3 mg/Kg and
- No detectable Volatile Organic Compounds (VOC's).

Comparison of the analytical results with the *Cleanup Levels* indicated no remedial action was required at the Catch Basin sampling locations.

TES also collected samples from three (3) groundwater monitoring wells in accordance with the amended *Work Plan*. As reported in their *Comet Trailer Sampling Results* report[38], TES reported that analysis of the groundwater samples found:

- No detectable Volatile Organic Compounds (VOC's),
- Total Chromium at concentrations ranging from less than 0.001 mg/L up to 0.002 mg/L,
- No detectable (less than 0.01 mg/L) Chromium VI,
- No detectable (less than 0.01 mg/L) Chromium III and
- No detectable Petroleum Hydrocarbons (by analytical method HCID).

Comparison of the analytical results with the Cleanup Levels indicated no remedial action was required at the groundwater sampling locations.

3.3 Area Three: Wastewater Ditch

In accordance with the amended Work Plan[36], the Wastewater Ditch was not sampled since analysis of sandblast grit found no contaminants exceeding the *Cleanup Levels*.

3.4 Area Four: Land South of the Building

3.4.1 Sandblast Grit

In accordance with the amended Work Plan[36,37], TES collected two (2) samples from sandblast grit located south of the building on August 18, 2004. As reported in their *Comet Trailer Sampling Results* report[38], analysis of the sandblast grit samples found:

- Total Chromium at concentrations ranging from 5.52 mg/Kg up to 7.86 mg/Kg,
- No detectable (less than 0.08 mg/Kg) Chromium VI,
- Chromium III at concentrations ranging from 5.52 mg/Kg up to 7.86 mg/Kg and
- Total lead at concentrations ranging from 2.08 mg/Kg up to 2.86 mg/Kg.

Comparison of the analytical results with the *Cleanup Levels* indicated no Chromium or lead concentrations requiring remedial action. The letter also stated that Mr. Owens will remove all the sand blast grit encountered during the work and dispose of it at a permitted landfill.

Although the amended *Work Plan* required collection of a minimum of three (3) samples from sandblast grit located south of the building[36], TES only collected two (2) samples from the sandblast grit[38].

Sage met on-site with Mr. Doug Owens to ascertain the location of sandblast grit piles to facilitate collection of the third sample required by the amended *Work Plan*. On June 14, 2012, Sage collected four (4) samples (CT-0112-SND-1 through CT-0112-SND-4) of soil from areas identified as having been previously occupied by sandblast grit piles. These sampling locations are shown by Figure 5. Sage submitted the samples to Friedman & Bruya, Inc. (FBI), Seattle, WA and selected two samples (CT-0112-SND-2 & CT-0112-SND-3) from an area we deemed most likely to have been occupied by sandblast grit pile, to be composited at the FBI laboratory. FBI analysis of the composite sample found:

- Total Chromium at a concentration of 16.1 mg/Kg,
- Total Lead at a concentration of 13.8 mg/Kg and
- No detectable (less than 5 mg/Kg) Chromium VI.

Comparison of the FBI analytical results (Appendix A) with the *Cleanup Levels*[4] found no Chromium or Lead concentrations requiring remedial action.

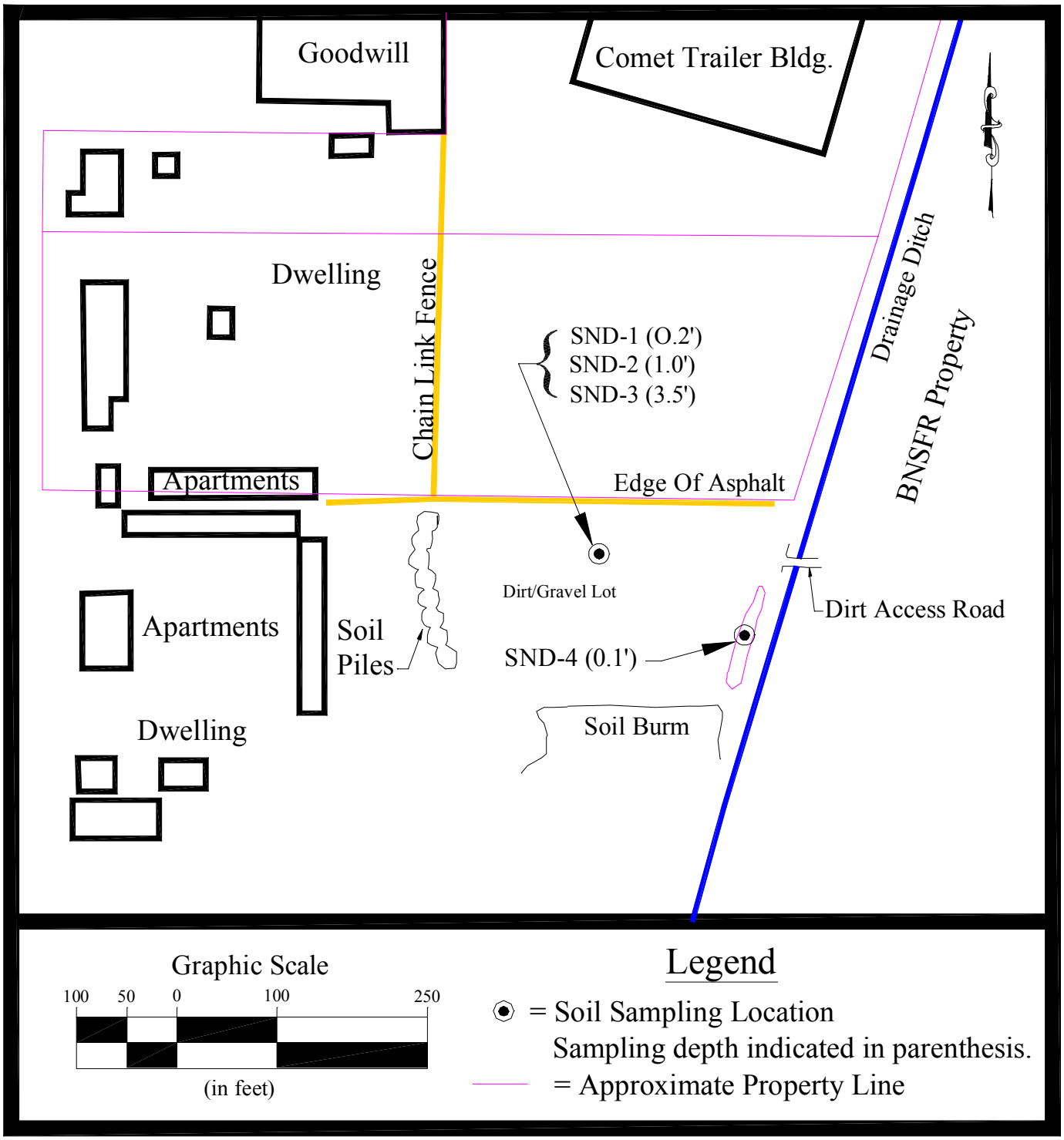


Figure 5. Previous Sandblast Grit Sampling Locations

3.5 Area Five: Petroleum Contaminated Soil & Groundwater

3.5.1 Characterization of Petroleum Hydrocarbon Contamination

Kleinfelder, Inc. (KI) directed installation of five (5) groundwater monitoring wells (MW-1 through MW-5) on the subject site during March of 1995[9]. The wells were installed by Cascade Drilling, Inc. Monitoring well locations are shown by Figure 6.

During sampling activities conducted during August 18, 2004, TES discovered approximately four (4) inches of Diesel #2 floating on groundwater within "Well 1", which hereafter identified within this RI/FS as "MW-3" (KI Well ID # ABZ363).

On October 7, 2004 TES collected a sample of the petroleum and submitted it to CCI Analytical Laboratories, Inc. of Everett, WA for analysis to determine the nature of the product by modified methods NWTPH-Gx and NWTPH-Dx. Based up review of the chromatograms, CCI believed the product to consist of Diesel #2[39].

Mr. Owens retained Sage to conduct limited free product removal and site characterization activities during October of 2005. Mr. Owens informed Sage that the area was historically used as an independent historical bulk heating oil storage location operated by Leonardo Trucking to support retail sale of heating oil. Sage initially removed 15 ounces of Light Non-Aqueous Phase Liquid (LNAPL) from MW-3[10]. Follow-up inspection found 0.02 feet of LNAPL in the well, so Sage inserted an oliophilic/hydrophobic pad into the water table to remove residual LNAPL from the groundwater surface. Five subsequent inspections performed between November 30, 2005 through February 14, 2006 found no measurable quantity of LNAPL in the well.

To characterize the extent petroleum impacted soil and groundwater, Sage installed a total of 29 test pits between November 9, 2005 through January 10, 2006. To determine if remedial action may be required, Sage compared the analytical results to the *Method A Groundwater and Soil Cleanup Levels of WAC 173-340-720 & 740* (Cleanup Levels). Based upon field observations and FBI independent laboratory analyses, the inferred lateral extent of petroleum impacted soil and groundwater was limited to the area shown by Figure 7.

Test pits exhibiting the potential for LNAPL accumulation were allowed to remain open for observation and oliophilic/hydrophobic pads were placed on the groundwater surface to collect and remove any LNAPL present from December 8, 2005 to January 23, 2006, prior to backfilling. Sage used a total of 50 pads during this time period and estimates the total quantity of removed diesel to be less than 25 fluid ounces, including the LNAPL concurrently removed from MW-3.

To confirm the nature of LNAPL present in the well, Sage collected as sample of the material and submitted it to FBI for forensic analysis on July 30, 2008. Analysis by Capillary Gas Chromatography using a Flame Ionization Detector found "a middle distillate such as diesel fuel or heating oil" that had "undergone substantial biological degradation"[11]. Additional analysis indicated that if the product was used as road fuel, it was produced prior to October 1, 1993, when the EPA mandated the limit of sulfur to 0.05 percent.

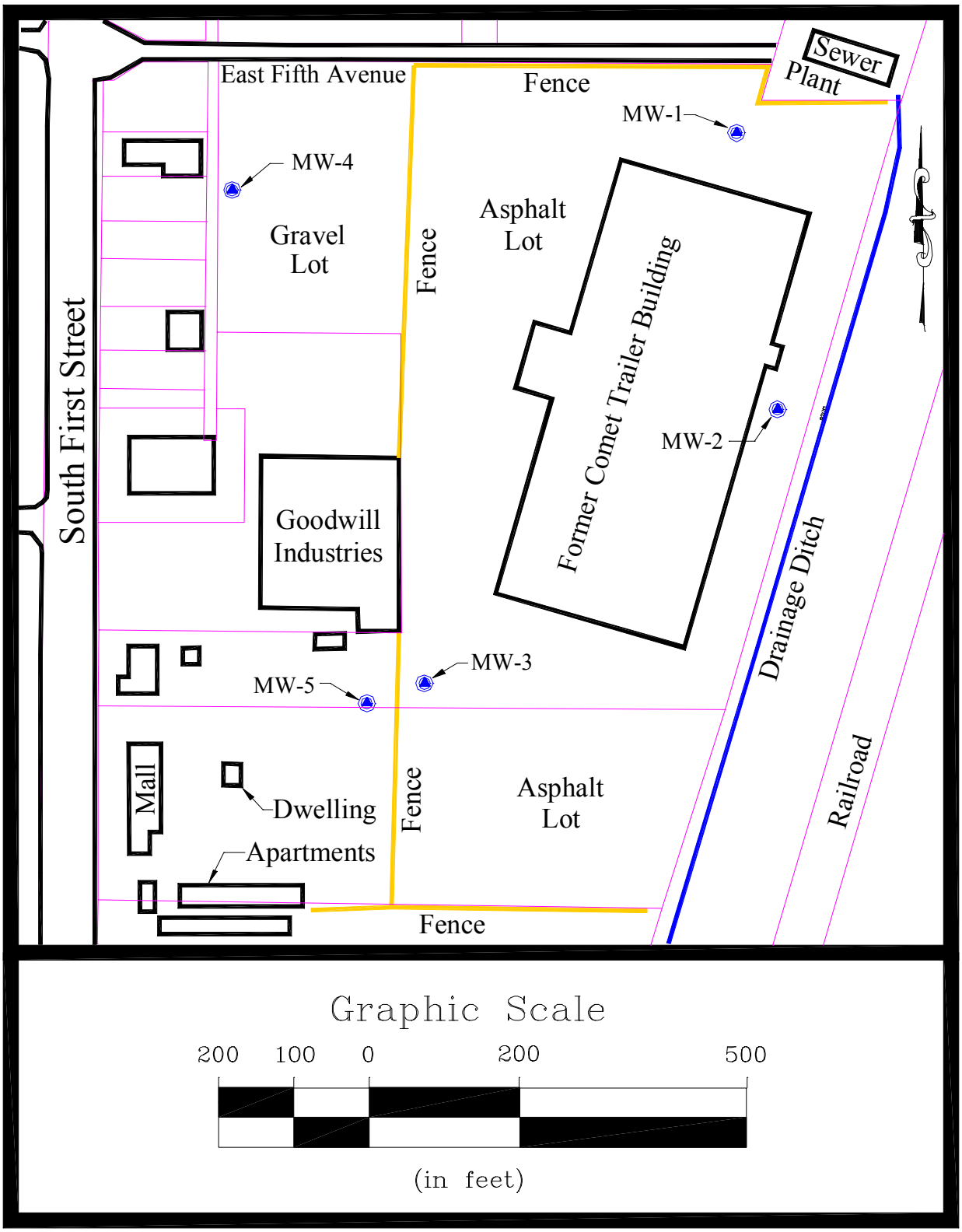


Figure 6. Locations of Initial Groundwater Monitoring Wells

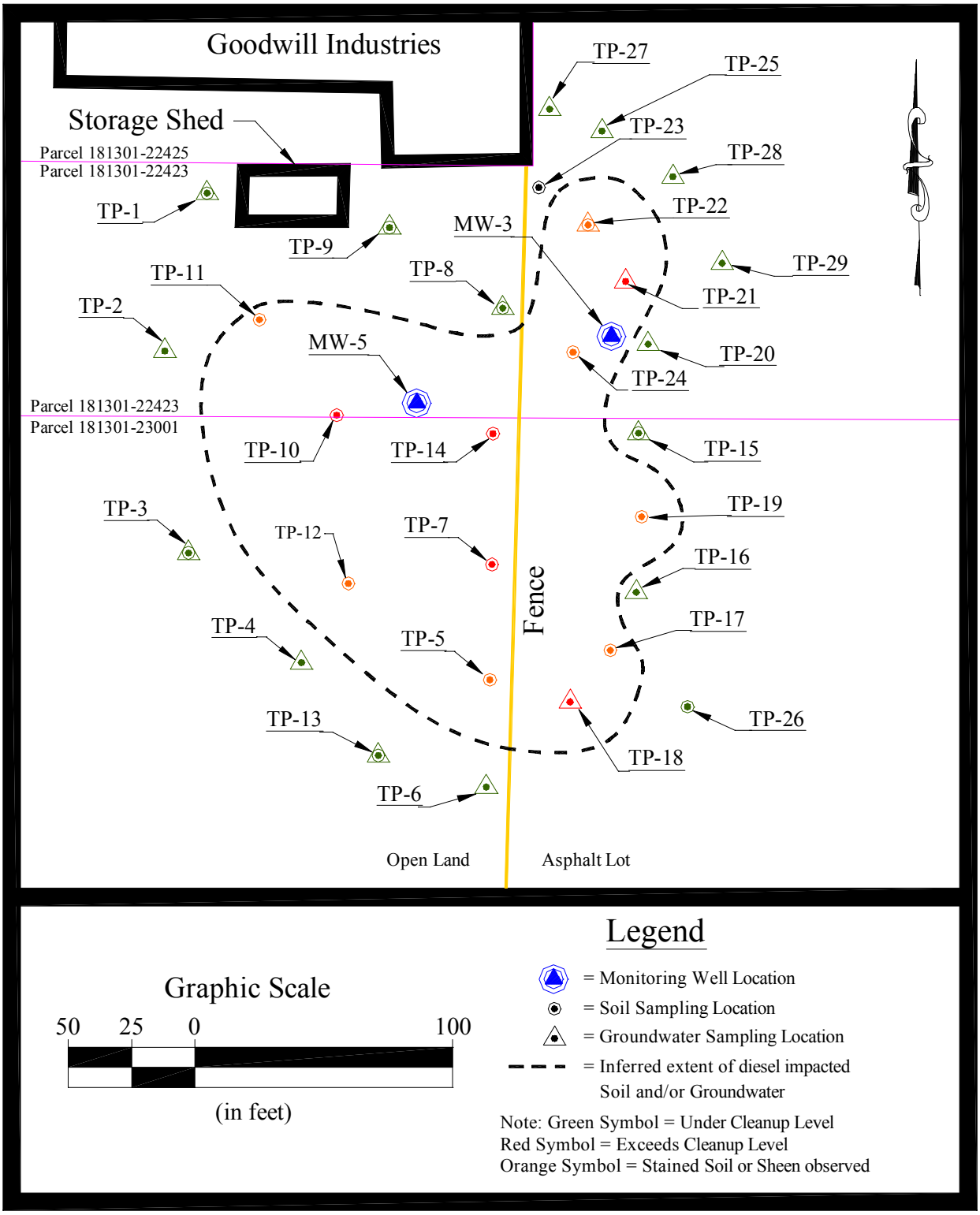
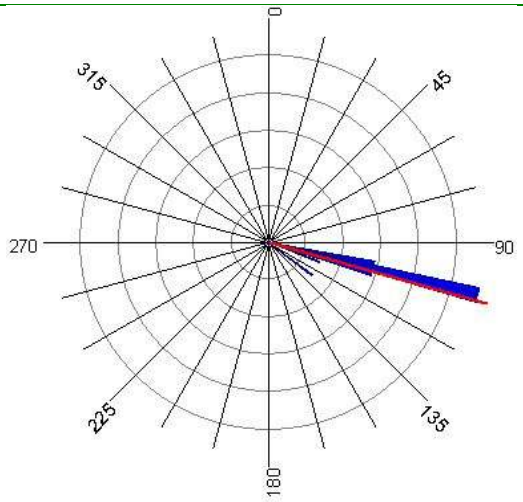


Figure 7. Extent of Petroleum Impacts Inferred from Initial Characterization Activities.

3.5.2 Groundwater Gradient Characterization

Sage periodically checked for the presence of Light Non-Aqueous Phase Liquid (petroleum product), and collected Depth To Water (DTW) measurements, using a Solinst 122 interface probe[10,11,12,13,14]. Using well survey and DTW measurements, Sage calculated the groundwater gradient for each monitoring event. A summary of groundwater flow direction calculations for the immediate vicinity of Area #5 is presented in Table 3. The mean (average) bearing of flow direction was E 16 S, or 106 in the azimuth scale at a gradient of 0.002 ft/ft.

Table 3. Summary of Initial Groundwater Monitoring Flow Direction Data

Date	Calculated Gradient	Rose Diagram of Flow Direction
11/22/05	110	
12/26/05	105	
01/23/06	104	
07/30/08	101	
09/02/08	105	
09/25/08	102	
10/27/08	101	
12/04/08	126	
01/09/09	106	
02/05/09	103	
03/11/09	102	
05/01/09	103	
07/13/09	105	
08/28/09	106	

Note: North = 0º, East = 90º, South = 180º, West = 270º.
Red line in Rose Diagram shows Mean Flow Direction

The water levels appeared to represent the uppermost portion of an unconfined water-bearing unit. In MW-3 the groundwater surface was found to lie at depths ranging from 2.16 to 3.73 feet below top of casing in the well. In MW-5 the groundwater surface was found to lie at depths ranging from 2.64 to 3.73 feet below top of casing in the well. For the area near the plume of diesel contamination, the groundwater was observed to fluctuate up to approximately one and one-half (1.5) feet.

Of note, the observed water table elevation in MW-3 often exceeded the elevation of the top of the well screen in MW-3. Since the water table did not intersect the well screen during the duration of this project, free product measurements were commonly not representative of actual conditions in the vicinity of MW-3.

During the free product removal/ site characterization phase of the project, Sage removed a total of approximately 518 ounces (4 gallons) of petroleum from the groundwater surface.

3.5.3 Soil Remediation Activities

To reduce impacts to groundwater, Comet Trailer chose to excavate accessible diesel impacted soil and temporarily store it on site. Sage formally requested permission from Ecology to perform soil remediation without amending the existing Agreed Order on December 1, 2009[15]. Sage obtained approval from Ecology to initiate soil remediation activities on December 7, 2009[30].

Upon receiving approval from the Department of Ecology, Hi-Point Excavation LLC (HPE) of Yakima excavated approximately 5280 cubic yards of diesel impacted soil on January 2 - February 24, 2010[16]. Approximately 3,000 cubic yards of apparently clean overburden soil was excavated and stockpiled on-site for use as backfill material. HPE transported impacted soil to a temporary storage area, located on the northwestern portion of the property. To facilitate complete removal of impacted soil, MW3 and MW5 were removed completely by excavation.

Sage collected soil samples from within the remedial excavation for field screening and/or laboratory analysis to determine the adequacy of soil remediation activities. Sage submitted twenty-two (22) soil samples and one (1) groundwater sample to Friedman & Bruya, Inc. (FBI), Seattle, WA for independent laboratory analysis to characterize the final remedial excavation. Sage collected twelve (12) samples of the apparently clean overburden for characterization to evaluate its suitability for use as remedial excavation backfill.

FBI analysis of remedial excavation characterization soil samples found no detectable diesel or motor oil range petroleum hydrocarbons. Comparison of the FBI analytical results with the *Method A Soil Cleanup Levels of WAC 173-340-740* indicated that no additional impacted soil removal is required at the release location. However, FBI analysis of the groundwater sample found diesel range petroleum hydrocarbons at a concentration of 52,000 µg/L and motor oil range petroleum hydrocarbons at a concentration of 2,600 µg/L. Comparison of the FBI analytical results with the *Method A Groundwater Cleanup Levels of WAC 173-340-720* indicated that remedial action was required to reduce diesel and motor oil range petroleum hydrocarbons to acceptable concentrations. Analysis of the twelve (12) overburden soil stockpiles found no detectable diesel and/or motor oil range petroleum hydrocarbons. Based upon the FBI analyses, the overburden soil was suitable for use as excavation backfill.

After installing three (3) additional monitoring wells, Sage conducted one year of quarterly groundwater sampling on August 12, 2010[18], November 8, 2010[19], February 15, 2011[20] and May 12, 2011[21]. FBI analysis of the groundwater samples found no diesel and/or motor oil range petroleum hydrocarbons at concentrations exceeding the *Method A Groundwater Cleanup Levels* of WAC 173-340-720 in any of the samples.

Comet Trailer chose to independently treat petroleum impacted soil, generated during soil remediation activities, on the northwestern portion of the property using the "landfarming" method[17]. Sage observed that the impacted soil stockpile has been spread to a thickness of approximately one and one-half (1.5) feet in depth. The client informed Sage that they had aerated the soil using a caterpillar ripper and watered it using a water truck.

To evaluate the adequacy of soil treatment activities, Sage collected seventeen (17) soil samples from soil on the northwestern portion of the property. Sage submitted the samples to Friedman & Bruya, Inc. (FBI) for analysis using method NWTPH-Dx. The FBI analyses found:

- Diesel range petroleum hydrocarbons at concentrations ranging from 450 mg/Kg up to 4,400 mg/Kg and
- No detectable (less than 250 mg/Kg) motor oil range petroleum hydrocarbons.

Treatment of soil was discontinued and the treated soil was transported to the southern portion of the property.

4.0 Current Agreed Order No. DE 1193

Agreed Order No. DE 03 TCPCR-5877 was signed by the late Mr. Bud Owens and was replaced by Agreed Order No. DE 11193, to identify Bud Owens Family Limited Partnership as the Potentially Liable Person (PLP) required to conduct a Remedial Investigation and Feasibility Study for the Comet Trailer Corp Site. Agreed Order No. DE 11193 is included as Appendix B.

5.0 Remedial Investigation

Sage followed the Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) in the *Final Remedial Investigation Work Plan*[23] to ensure sample collection, handling, and analysis would result in data of sufficient quantity and quality to plan and evaluate remedial actions at the site and to ensure proper planning and implementation of sampling activities, as well as to gather sufficient data to facilitate determination of appropriate cleanup levels for the site. Sage personnel licenses and certificates are included as Appendix W.

5.1 AREA ONE: Sandblast Grit on B.N.S.F. Land

Sage inspected Area One for evidence of sandblast grit piles on June 22, 2015. No evidence of sandblast grit was observed. Since stockpiles or residues of sandblast waste materials were not found, the *Work Plan*[23] included collection and analysis of:

- five (5) surface soil samples (CT-0115-S1 through CT-0115-S5) collected randomly from Area One and
- five (5) samples (CT-0115-S6 through CT-0115-S10) collected in the area of the former grit waste pile locations identified by GeoEngineers in 2003[1], which were not sampled at that time.

To determine the random sampling locations, Sage overlaid Area One with a grid as shown by Figure 8. The overlay consisted of 100 grids measuring 25' X 25' each. Sage utilized an internet based random integer generator to generate 10 random numbers which were used to designate sampling locations (See Appendix C). The random numbers were consecutively assigned to unique sample identification numbers, as shown by Table 4. Samples were collected as near to the center of their assigned grid as possible, using portable GPS. Since impacts from previous sandblast grit piles are more likely at the soil surface, the samples were collected from the upper three inches of soil.

As prescribed in the *Work Plan*[23], Sage collected the soil samples on December 16, 2015. The CT-0115-S5 sampling location was chosen randomly as the location to collect a duplicate sample (CT-0115- S11) for Total Lead, Total Chromium and Hexavalent Chromium. The Area One soil sampling locations are shown by Figure 8.

Sage submitted the samples to FBI and Fremont Analytical for independent laboratory analysis. The analytical results are attached as Appendix D. The five (5) samples exhibiting the highest concentration of Chromium (CT-0115-S2, S6, S7, S9 & S10) were analyzed for Hexavalent Chromium. A summary of analytical data for Area One soil samples is presented in Table 4.

Sage used a direct comparison of the laboratory analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] (Appendix E) to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area One.

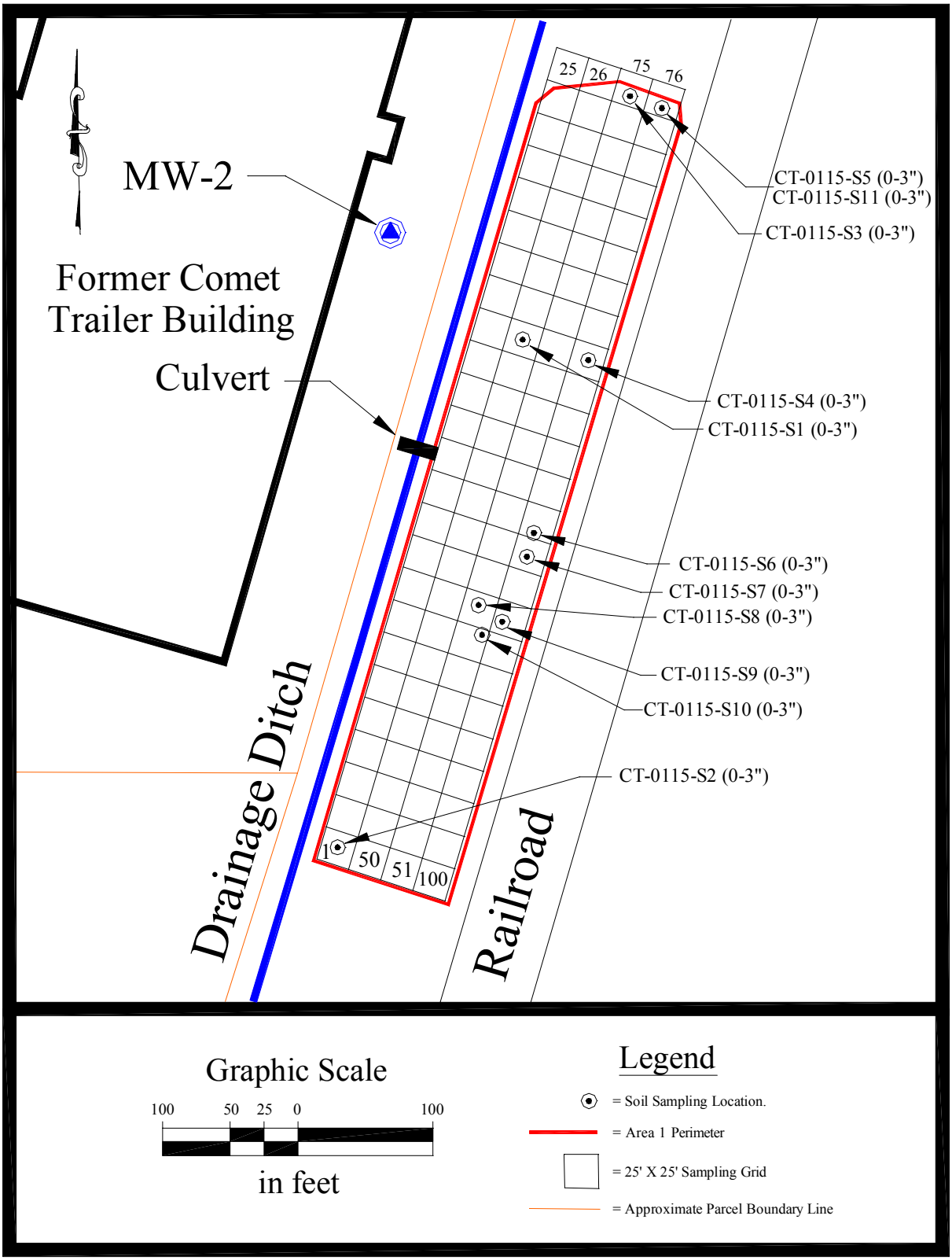


Figure 8. Soil Sampling Locations for Area One.

Table 4. Summary of Analytical Data for Area One Samples					
Sample ID Number	Random Grid Number	Depth (inches)	Total Lead Mg/Kg	Total Chromium Mg/Kg	Hexavalent Chromium Mg/Kg
Method A Soil Cleanup Level			250	2000	19
CT-0115-S1	34	0 to 3	7.82	12.1	--
CT-0115-S2	1	0 to 3	6.95	17.4	<0.637
CT-0115-S3	75	0 to 3	7.54	10.0	--
CT-0115-S4	84	0 to 3	16.5	12.9	--
CT-0115-S5	76	0 to 3	24.4	9.59	<0.652
CT-0115-S6	76	0 to 3	12.7	15.2	<0.671
CT-0115-S7	NA	0 to 3	7.45	15.4	<0.650
CT-0115-S8	NA	0 to 3	8.79	14.5	--
CT-0115-S9	NA	0 to 3	8.60	15.3	<0.697
CT-0115-S10	NA	0 to 3	9.09	15.0	<0.635
CT-0115-S11*	NA	0 to 3	22.8	10.6	<0.650
* Indicates the sample is a duplicate collected at the CT-0115-S5 location analyzed for Total Pb, Total Cr and Hexavalent Chromium. NA= Not Applicable.					

5.2 AREA TWO: Paved Area with Building

Work regarding catch basins and the storm water drainage system at the site was limited to mapping and describing catch basin construction, inspection for indications of piping direction and exploring for an additional outfall into the drainage ditch on the northeast portion of the site. The *Work Plan*[23] did not include sampling of the catch basins.

Sage observed a total of eight (8) catch basins within Area 2 on April 23, 2017. Catch Basin locations (CB-1 through CB-8) are shown by Figure 9. Each catch basin was constructed of concrete walls and floor, measuring approximately twenty (20) inches by twenty-four (24) inches. A steel grate covered each catch basin. Observed piping consisted of PVC. A summary of Catch Basin observations is presented as Table 5. CB-1 through CB-3 appeared to discharge toward Storm Water Discharge #1, an 8 inch PVC pipe located on the northeast portion of the property, as shown by Figure 9. CB-4 through CB-8 appeared to discharge toward Storm Water Discharge #2, a 12 inch PVC pipe located on the southeast portion of the property, as shown by Figure 9.

Table 5. Summary of Catch Basin Observations				
Catch Basin ID	Depth to Bottom (inches)	Depth to Water (inches)	Influent Pipe Size/From Direction	Effluent Pipe Size/Toward Direction
CB-1	37	36	8” WSW	8” E
CB-2	32	31	8” WSW	8” ENE
CB-3	48	33	None	8” ENE
CB-4	44	38	None	12” SE
CB-5	48	37	12” NW	12” SSW
CB-6	44	40	12” NNE & 6” ESE	12” SE
CB-7	26	21	12” NW	12” SE
CB-8	48	37	12” NW	12” SE

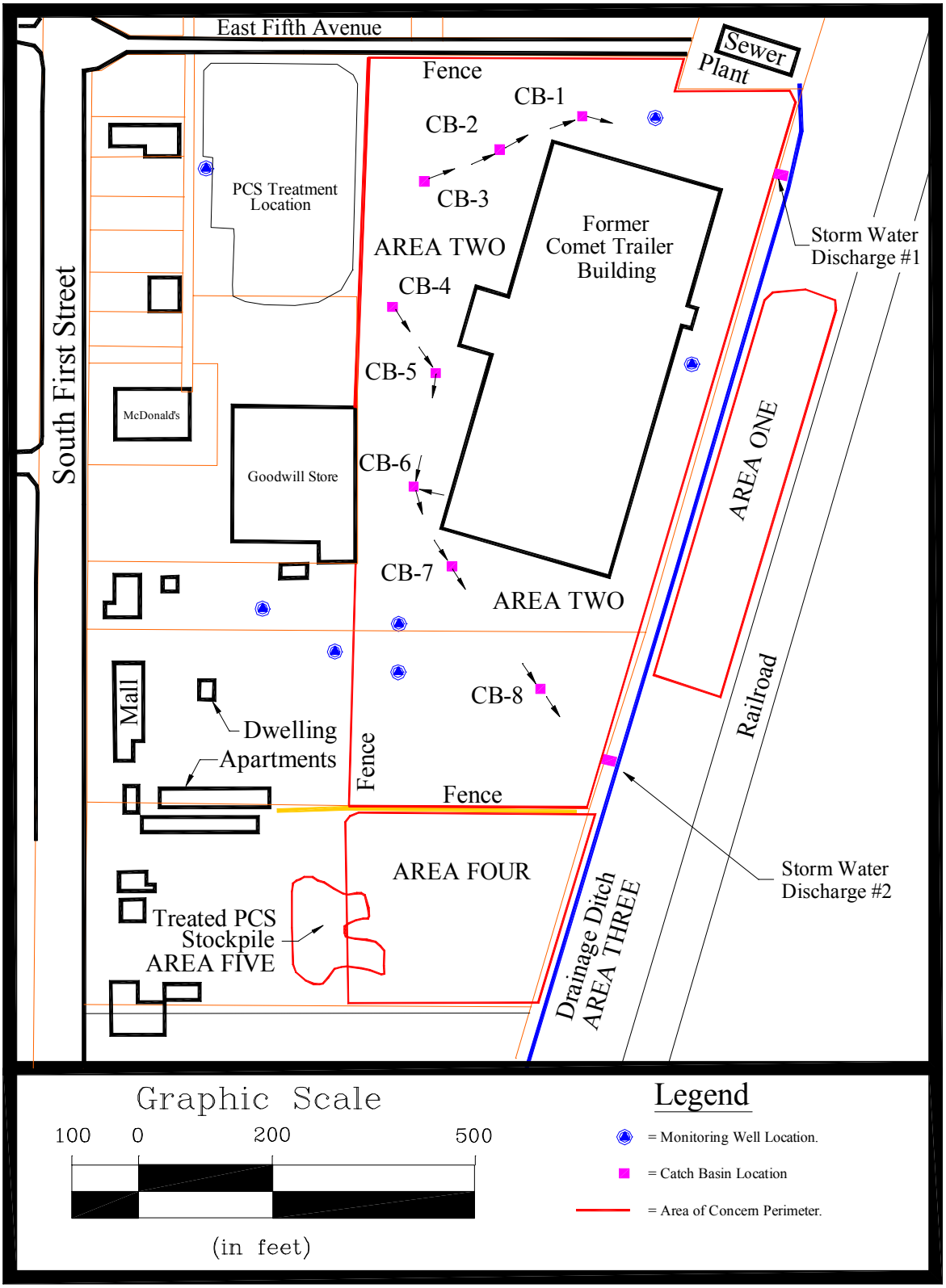


Figure 9. Catch Basin Locations Showing Influent & Effluent Directions

5.3 AREA THREE: Wastewater Ditch

Work regarding the Wastewater Ditch was limited to exploring for an additional outfall into the drainage ditch on the northeast portion of the site. Sage's exploration found one (1) eight inch PVC discharge pipe (Storm Water Discharge #1) at the location shown by Figure 9. The *Work Plan*[23] did not include sampling of the drainage ditch.

5.4 AREA FOUR: Land South of the Building

Sage inspected Area Four for evidence of sandblast grit piles on June 22, 2015. Since stockpiles or residues of sandblast waste materials were not found, the *Work Plan*[23] included collection and analysis of:

- Ten (10) random soil samples (CT-0115-S13 through S17 & S19 through S23) analyzed for Total Lead by Method 200.8,
- Ten (10) random soil samples (CT-0115-S13 through S17 & S19 through S23) analyzed for Total Chromium by Method 200.8,
- Five (5) soil samples, exhibiting the highest concentration of Chromium (CT-0115-S13, S14, S15, S21 & S23), analyzed for Hexavalent Chromium by Method 7196.

To determine random sampling locations, Sage overlaid Area Four with a grid as shown by Figure 10. The overlay consisted of 150 grids measuring 25' X 25' each. Sage utilized an internet based random integer generator to generate 10 random numbers which were used to designate sampling locations (See Appendix C). The random numbers were consecutively assigned to unique sample identification numbers, as shown by Table 6. Samples were collected as near to the center of their assigned grid as possible, using handheld GPS. Since impacts from previous sandblast grit piles are likely at the soil surface, samples were collected from the upper three inches of soil.

As prescribed in the *Work Plan*[23], Sage collected the soil samples on December 16, 2015. The CT-0115-S17 sampling location was chosen randomly as the location to collect a duplicate sample (CT-0115- S18) for Total Lead, Total Chromium and Hexavalent Chromium. The Area Four soil sampling locations are shown by Figure 10.

Sage submitted the samples to FBI and Fremont Analytical for independent laboratory analysis. The analytical results are attached as Appendix D. As mentioned above, the five (5) samples exhibiting the highest concentration of Chromium (S13, S14, S15, S21 & S23) were analyzed for Hexavalent Chromium. A summary of analytical data for Area One soil samples is presented in Table 6.

Sage used a direct comparison of the analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] (Appendix E) to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area Four.

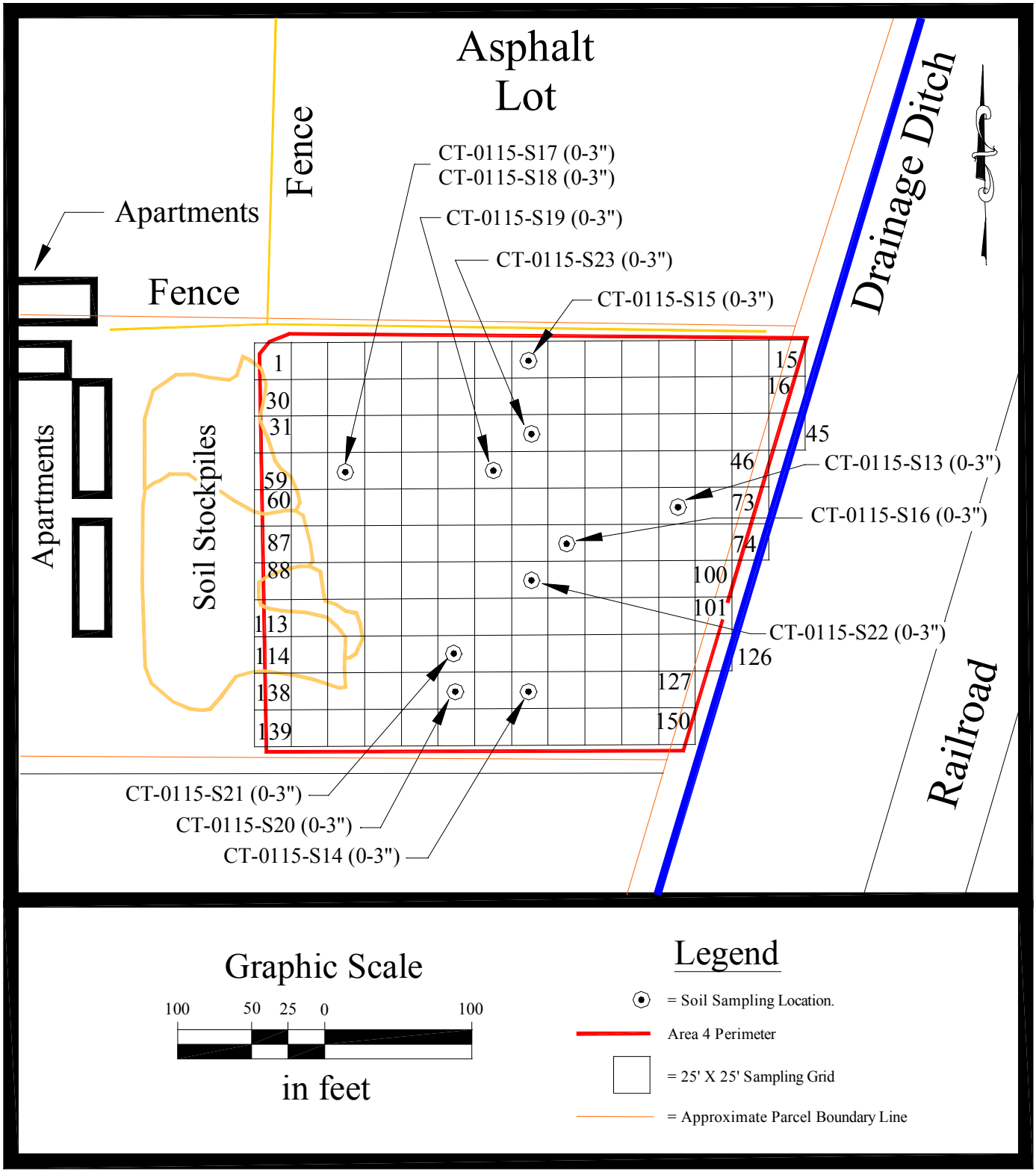


Figure 10. Soil Sampling Locations for Area Four.

Table 6. Summary of Analytical Data for Area Four Samples					
Sample ID Number	Random Grid Number	Depth (inches)	Total Lead Mg/Kg	Total Chromium Mg/Kg	Hexavalent Chromium Mg/Kg
Method A Soil Cleanup Level			250	2000	19
CT-0115-S13	71	0 to 3	11.7	16.1	<0.603
CT-0115-S14	131	0 to 3	7.02	12.2	<0.644
CT-0115-S15	8	0 to 3	14.5	10.9	<0.572
CT-0115-S16	79	0 to 3	11.3	5.54	--
CT-0115-S17	57	0 to 3	27.2	7.17	<0.603
CT-0115-S18*	57	0 to 3	28.5	6.44	<0.600
CT-0115-S19	53	0 to 3	19.0	5.00	--
CT-0115-S20	133	0 to 3	67.2	6.42	--
CT-0115-S21	119	0 to 3	15.8	11.0	<0.634
CT-0115-S22	95	0 to 3	30.4	5.54	--
CT-0115-S23	38	0 to 3	9.70	12.5	<0.563
* Indicates the sample is a duplicate of CT-0115-S17 analyzed for Total Pb, Total Cr and Hexavalent Chromium.					

5.5 AREA FIVE: Petroleum Contaminated Soil & Groundwater

5.5.1 Treated Soil Stockpile

Sage inspected the treated soil stockpile area on June 22, 2015. Sage observed that additional imported material appeared to be added to the site, which consisted of soil including concrete fragments, wood and scrap metal. Imported soil was excluded from sampling activities covered under the scope of work in the *Work Plan*[23]. Sage sketched the perimeter of these materials on an aerial photo, as shown by Figure 11. Although the surface of area is variable (ranging from 0' to 4' thick), due to effects of dumping truck loads adjacent to each other, Sage estimated that the average thickness of treated soil is approximately two feet. Using the field sketch, Sage digitized the perimeter of the treated soil stockpile and calculated the area it occupied to be approximately 14,840 square feet. Sage calculated the estimated volume of soil to be: 14,840 ft^2 X 2 ft = 29,680 ft^3. Converting cubic feet to cubic yards: 29,680 ft^3 X (1 yd^3/27 ft^3) = 1,099 yds^3.

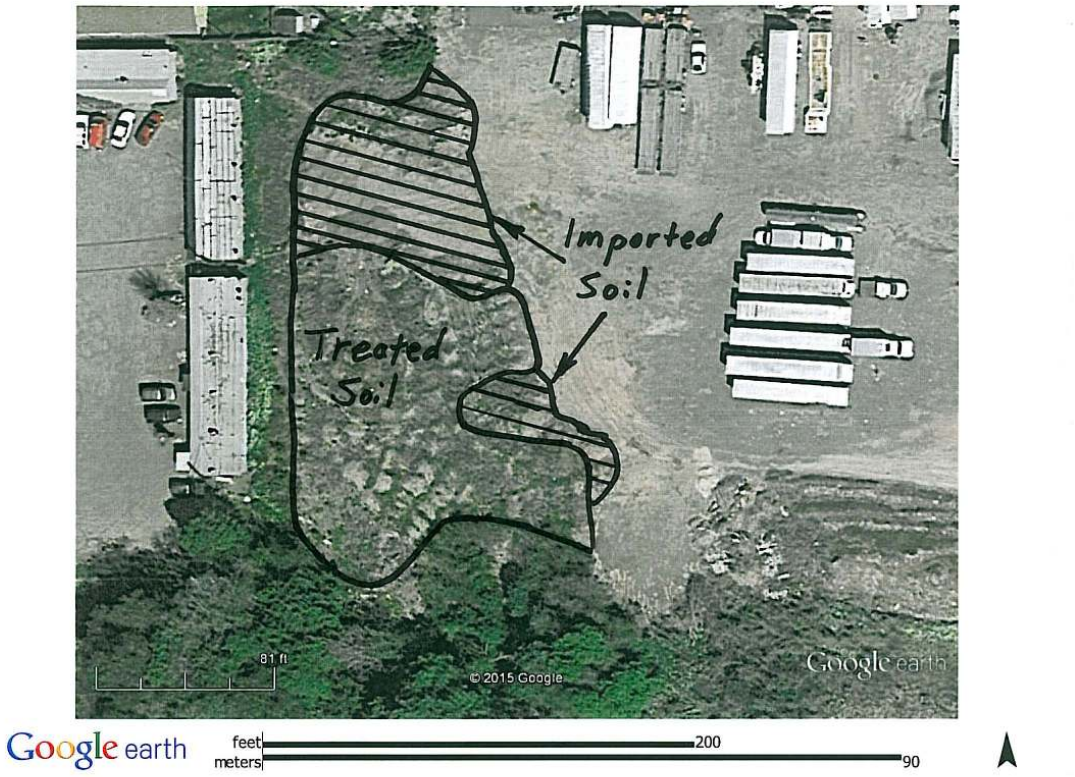


Figure 11. Treated Soil Stockpile Area observed on June 22, 2015.

The *Work Plan*[23] required determination of twenty (20) random sampling locations. To determine random sampling locations, Sage overlaid the Area Five Stockpile of Treated PCS with a grid as shown by Figure 12. The overlay consisted of 153 grids measuring 10' X 10' each. Sage utilized an internet based random integer generator to generate 20 random numbers which were used to designate sampling locations (See Appendix C). The random numbers were consecutively assigned to unique sample identification numbers, as shown by Table 7.

Since selected samples will be analyzed for BTEX, the upper six inches of soil will be excluded from sampling. To determine sampling depths, the thickness of the soil stockpile beneath the upper six inches will be estimated in the field, during sampling activities, and the sampling depth will be calculated using the following equation:

Sample Depth = 6 inches + (Estimated Thickness – 6 inches)(0.n)

To determine "n", Sage utilized the internet based random integer generator to generate 20 random numbers (see Appendix C), ranging from 1 to 9 which were consecutively assigned to unique sample identification numbers, as shown by Table 7. The calculated sampling depth is also included in Table 9.

The CT-0115-SP34 sampling location was chosen to collect field duplicate sample CT-0115-SP35 and the CT-0115-SP45 sampling location was chosen to collect field duplicate sample CT-0115-SP46.

On December 15, 2015, Sage collected twenty-two (22) soil samples (CT-0115-SP25 through SP46) at the locations shown by Figure 12. Samples were collected as near to the center of their assigned grid as possible, using handheld GPS, in accordance with the *Work Plan*[23].

Sage submitted the samples to FBI for laboratory analysis. Initially, all samples were analyzed using NWTPH-Dx. Three (3) of the samples (CT-0115-SP28, SP41 &SP44) exhibited diesel range petroleum hydrocarbons at concentrations ranging from 92 ppm up to 200 ppm. The analytical data reports are included as Appendix F. The analytical results are summarized in Table 7. Based upon the NWTPH analysis results, samples were selected for additional analysis as follows:

- Five (5) soil samples (CT-0115-SP28, SP31, SP37, SP 41 & SP44) were analyzed for BTEX by Method 8021B and
- Five (5) soil samples (CT-0115-SP28, SP31, SP37, SP41 & SP44) were analyzed for CPAH's (including naphthalene) by Method 8270D SIM.

Since the analyses found only low concentrations of diesel range petroleum hydrocarbons in the three samples mentioned above, Extractable Petroleum Hydrocarbons (EPH) analysis was determined to be unnecessary and written approval was obtained from Ecology to forego the analyses[31] prescribed in the *Work Plan*[23]. The FBI data reports for the additional analyses are included in Appendix F. The additional results are summarized by Table 8. Very low concentrations of CPAH's were detected in only one sample (CT-0115-SP37).

To evaluate the adequacy of treatment, Sage used a direct comparison of the analytical results with the *Method A Soil Cleanup Levels of WAC-173-340-740* (Cleanup Levels) and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42]. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no additional remediation is required for the Area Five treated soil stockpile.

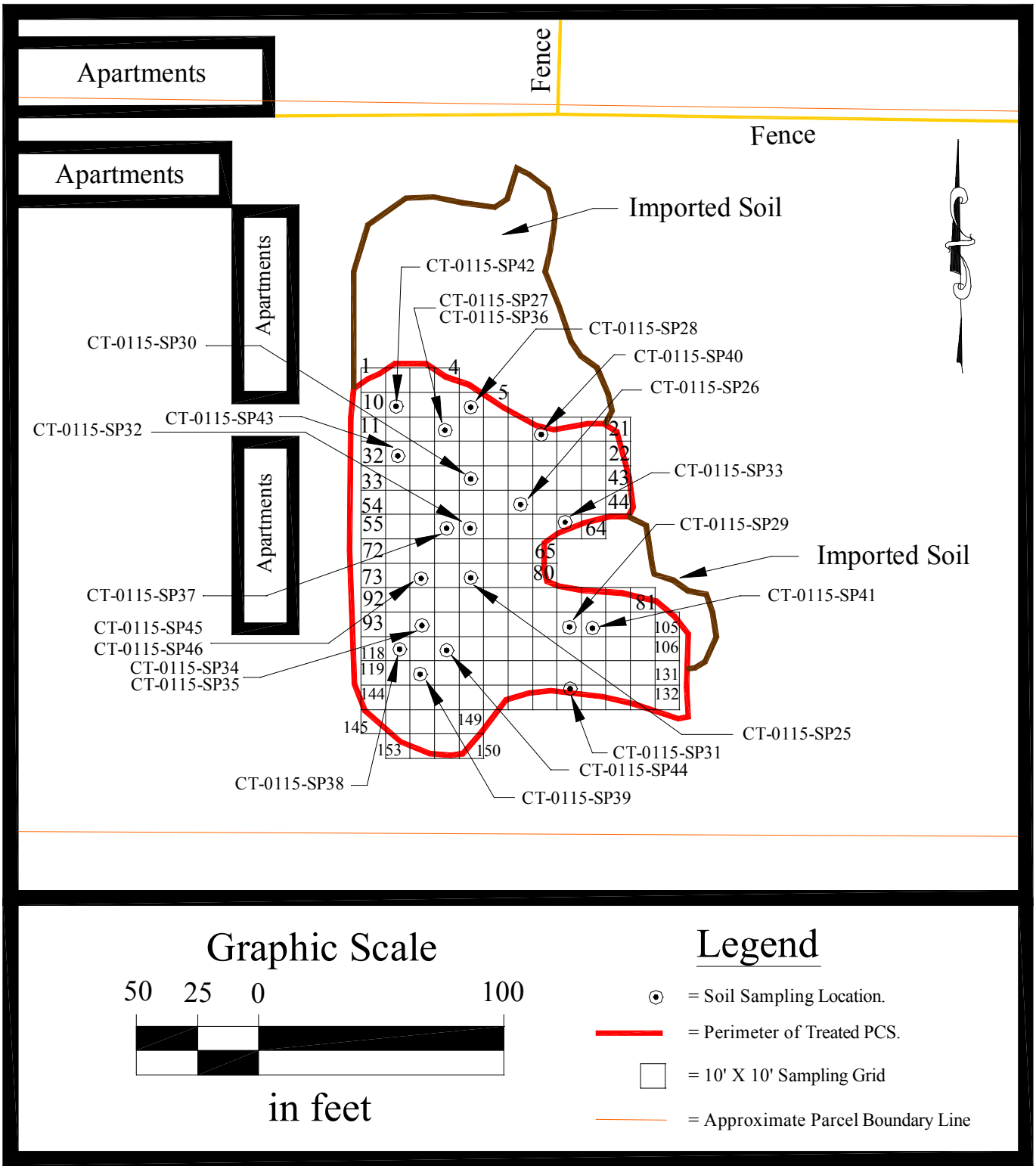


Figure 12. Sampling Locations for the Stockpile of Treated PCS.

Table 7. Summary of Sampling & NWTPH-Dx Analyses for Area Five – Treated PCS

Sample ID Number	Random Grid Number	Value of "n"	Estimated Stockpile Depth (ft.)	Calculated Sampling Depth (inches)	Diesel Range Hydrocarbons (ppm)	Motor Oil Range Hydrocarbons (ppm)
Method A Soil Cleanup Level					2000	2000
CT-0115-SP25	77	2	1.0	7.2	<50	<250
CT-0115-SP26	48	2	2.0	9.6	<50	<250
CT-0115-SP27	14	3	1.0	8.4	<50	<250
CT-0115-SP28	6	5	5.0	33	200	<250
CT-0115-SP29	101	3	3.0	15	<50	<250
CT-0115-SP30	37	2	3.0	12	<50	<250
CT-0115-SP31	136	6	3.0	24	<50	<250
CT-0115-SP32	59	3	3.0	15	<50	<250
CT-0115-SP33	63	1	3.5	9.6	<50	<250
CT-0115-SP34	95	6	2.0	16.8	<50	<250
CT-0115-SP35*	95	6	2.0	16.8	<50	<250
CT-0115-SP36	14	2	1.0	7.2	<50	<250
CT-0115-SP37	58	7	2.5	22.8	<50	<250
CT-0115-SP38	117	9	0.7	7.8	<50	<250
CT-0115-SP39	121	7	1.5	14.4	<50	<250
CT-0115-SP40	18	8	2.5	25.2	<50	<250
CT-0115-SP41	102	5	3.5	24	92	<250
CT-0115-SP42	9	5	1.5	12	<50	<250
CT-0115-SP43	31	8	1.5	15.6	<50	<250
CT-0115-SP44	115	2	2.5	10.8	150	<250
CT-0115-SP45	75	5	3.0	21	<50	<250
CT-0115-SP46*	75	5	3.0	21	<50	<250

* indicates the sample is a field duplicate of the previous sample.
ppm = parts per million or mg/Kg.

Table 8. Summary of Additional Analyses for Area Five – Treated PCS

Compound:	SP28 (ppm)	SP31 (ppm)	SP37 (ppm)	SP41 (ppm)	SP44 (ppm)	Cleanup Level (ppm)
Benzene	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
Toluene	<0.02	<0.02	<0.02	<0.02	<0.02	7
Ethylbenzene	<0.02	<0.02	<0.02	<0.02	<0.02	6
Total Xylenes	<0.06	<0.06	<0.06	<0.06	<0.06	9
Naphthalene	<0.01	<0.01	<0.01	<0.01	<0.01	5
Acenaphthylene	<0.01	<0.01	<0.01	<0.01	<0.01	NA
Acenaphthene	<0.01	<0.01	<0.01	<0.01	<0.01	9.79E+01
Fluorene	<0.01	<0.01	<0.01	<0.01	<0.01	1.01E+02
Phenanthrene	<0.01	<0.01	0.02	<0.01	<0.01	NA
Anthracene	<0.01	<0.01	0.01	<0.01	<0.01	2.27E+03
Fluoranthene	<0.01	<0.01	0.083	<0.01	<0.01	6.31E+02
Pyrene	<0.01	<0.01	0.098	<0.01	<0.01	6.55E+02
Benz(a)anthracene	<0.01	<0.01	0.042	<0.01	<0.01	8.58E-01
Chrysene	<0.01	<0.01	0.084	<0.01	<0.01	9.55E+01
Benzo(a)pyrene	<0.01	<0.01	0.054	<0.01	<0.01	2.33E+00
Benzo(b)flouranthene	<0.01	<0.01	0.15	<0.01	<0.01	2.95E+00
Benzo(k)flouranthene	<0.01	<0.01	0.035	<0.01	<0.01	2.95E+01
Indeno(1,2,3-cd)pyrene	<0.01	<0.01	0.055	<0.01	<0.01	8.32E+00
Dibenz(a,h)anthracene	<0.01	<0.01	0.012	<0.01	<0.01	4.29E-01
Benzo(g,h,i) perylene	<0.01	<0.01	0.051	<0.01	<0.01	NA

Note Sample ID preceded with "CT-0115-" in this report.
NA = Not Available in *CLARC, Soil – Method B and Method A)*[42]., ppm = ppm = parts per million or mg/Kg.

5.5.2 Installation of an Additional Groundwater Monitoring Well

Construction of additional groundwater monitoring wells was limited to one (1) well (MW-9), installed within the perimeter of the petroleum remediation excavation perimeter, at the location shown by Figure 13. The purpose of the additional groundwater monitoring well installation was to:

- evaluate soil conditions remaining at the floor of the former remedial excavation and
- expand the capture zone of potential groundwater contaminants potentially remaining in groundwater.

The well was installed on November 9, 2015 in accordance with the *Minimum Standards for Construction and Maintenance of Wells,* Chapter 173-160 WAC[2]. Drilling tools were steam cleaned before drilling operations commenced. The new 2-inch PVC monitoring well (MW #9) was installed using an 8" hollow stem auger, to a depth of 12.7 feet. Ten feet of 10-slot threaded PVS screen (0.010 inch openings) with a PVC well cap was installed in the annulus at depths between 2.5 and 12.5 feet BGS. The annulus was filled with 10 X 20 silica sand filter pack at depths between 1.5 and 12.5 feet BGS. Bentonite chip sealant was used to fill the annulus at depths between 1.0 feet and 1.5 feet BGS. An above ground steel monument was set in a one foot thick concrete base which was placed directly atop the bentonite seal. A locking well cap was installed atop the PVC casing, and a lock placed on the monument. Drill cuttings were placed in a barrel pending receipt of analytical results of a soil sample collected during the drilling process. Sage's *Drilling Report* documents well construction and stratigraphy and is attached as Appendix G.

Sage developed the well using a new disposable bailer in conjunction with a peristaltic pump to surge the well contents and purge suspended sediment from the well. The well was developed until visible suspended sediment was nearly absent. Approximately 75 gallons of water was removed during well development activities on November 10-11, 2015. Well development purge water was placed in a 55-gallon drum for temporary storage, pending results of analyses of groundwater samples subsequently collected from the well. Disposal of drill cuttings and water purged during well development and well purging activities is discussed in Section 5.6 of this report.

5.5.3 Evaluation of Soil within Remedial Excavation Perimeter

During MW-9 drilling activities discussed above, one (1) soil sample (CT-0115-SB47) was collected at a depth ranging from 5.5 to 7.0 BGS using a split barrel sampler in accordance with the *Work Plan*[23]. The soil sampling location is shown by Figure 13. The soil sample was submitted to FBI for the following analytical laboratory methods:

- Diesel and Heavy Oil Range Organics by NWTPH-Dx,
- BTEX by Method 8021B,
- CPAH's (including naphthalene) by Method 8270D SIM

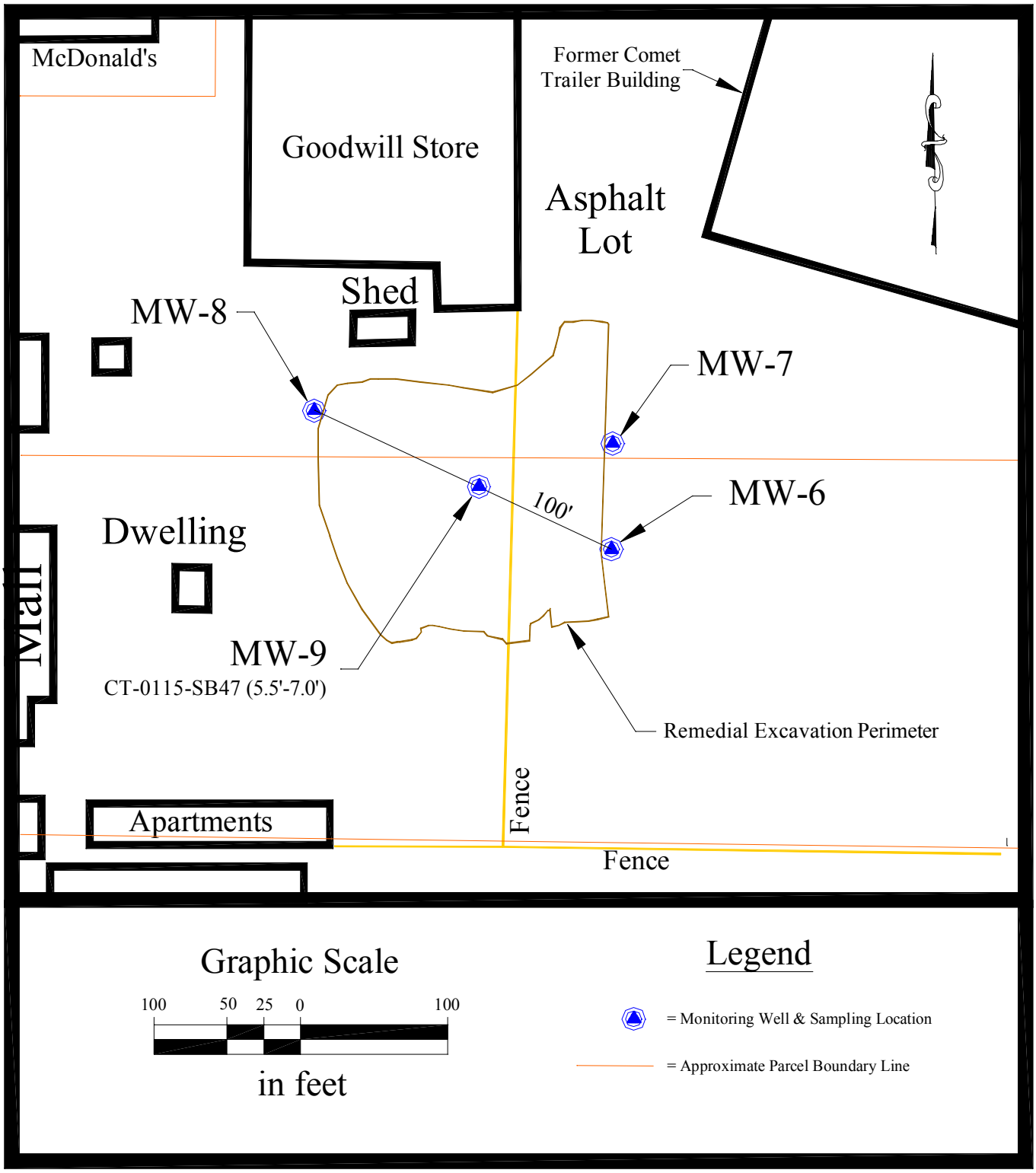


Figure 13. MW-9 Installation & CT-0115-SB47 Sampling Location

The FBI analytical data report is included as Appendix H and summarized by Table 9. Direct comparison of the analytical results with the *Method A Soil Cleanup Levels of WAC-173-340-740* (Cleanup Levels) and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no additional remediation is required within the Area Five remedial excavation.

Table 9. Summary of CT-0115-SB47 Analytical Results

Compound:	SB47 (ppm)	Cleanup Level (ppm)
Diesel Range Petroleum Hydrocarbons	170	2,000
Motor Oil Range Petroleum Hydrocarbons	<250	2,000
Benzene	<0.02	0.03
Toluene	<0.02	7
Ethylbenzene	<0.02	6
Total Xylenes	<0.06	9
Naphthalene	<0.01	5
Acenaphthylene	<0.01	NA
Acenaphthene	<0.01	9.79E+01
Fluorene	<0.01	1.01E+02
Phenanthrene	<0.01	NA
Anthracene	<0.01	2.27E+03
Fluoranthene	<0.01	6.31E+02
Pyrene	<0.01	6.55E+02
Benz(a)anthracene	<0.01	8.58E-01
Chrysene	<0.01	9.55E+01
Benzo(a)pyrene	<0.01	2.33E+00
Benzo(b)flouranthene	<0.01	2.95E+00
Benzo(k)flouranthene	<0.01	2.95E+01
Indeno(1,2,3-cd)pyrene	<0.01	8.32E+00
Dibenz(a,h)anthracene	<0.01	4.29E-01
Benzo(g,h,i) perylene	<0.01	NA

Note: Sample ID preceded with "CT-0115-" in this report.
NA = Not Available in *CLARC, Soil – Method B and Method A)*[42]
ppm = parts per million or mg/Kg.

5.5.4 Groundwater Monitoring Program

Sage performed groundwater monitoring activities for six (6) consecutive quarterly sampling events at Area 5 wells (MW-6 through MW #9) located in the immediate vicinity of the petroleum remediation excavation location[22]. Quarterly groundwater monitoring activities were performed on 11/17/15, 02/22/16, 05/23/16, 08/22/16, 11/15/16 and 02/20/17. Groundwater sampling locations are shown by Figures 14 through 20, respectively (see Pages 38 through 44). Water level measurements, well purging and groundwater sampling activities were performed in accordance with the *Work Plan*[23]. Disposal of water purged during sampling activities is discussed in Section 5.6 of this report. Sage observed no Light Non-Aqueous Phase Liquid (LNAPL) in any of the wells during field activities.

5.5.4.1 Groundwater Sample Analyses

Groundwater samples from each well were submitted to FBI for analysis using the following methods:

- Diesel and Heavy Oil Range Organics by NWTPH-Dx,
- BTEX by Method 8021B,
- CPAH's (including naphthalene) by Method 8270D SIM

QA/QC samples for each sampling event were limited to:

- One field duplicate analyzed for Diesel and Heavy Oil Range Organics by NWTPH-Dx,
- One field duplicate analyzed for BTEX by Method 8021B and
- One field duplicate analyzed for CPAH's (including naphthalene) by Method 8270D SIM
- One travel blank analyzed for BTEX by Method 8021B (if detected in any sample).

Field duplicate sampling locations were rotated consecutively for each quarterly sampling event for the first four quarters. However, since petroleum hydrocarbons were only found in MW-9 during the first four (4) quarters, duplicate samples were limited to the MW-9 sampling location during the fifth and sixth quarters.

A summary of sampling and analytical information is presented by Table 10. Sampling locations are shown by Figure 14 through 20. First quarter Field Sampling Documentation is included as Appendix I. FBI analytical data reports for first quarter samples are included as Appendix J. Second quarter Field Sampling Documentation is included as Appendix K. FBI analytical data reports for first quarter samples are included as Appendix L. Third quarter Field Sampling Documentation is included as Appendix M. FBI analytical data reports for first quarter samples are included as Appendix N. Fourth quarter Field Sampling Documentation is included as Appendix O. FBI analytical data reports for fourth quarter samples are included as Appendix P. Fifth quarter Field Sampling Documentation is included as Appendix Q. FBI analytical data reports for fifth quarter samples are included as Appendix R. Sixth quarter Field Sampling Documentation is included as Appendix S. FBI analytical data reports for Sixth quarter samples are included as Appendix T. Seventh event Field Sampling Documentation is included as Appendix U. FBI analytical data reports for the Seventh event samples are included as Appendix V.

Review of the analytical data for project groundwater monitoring samples detected no diesel, heavy oil, BTEX or CPAH's in samples collected from MW6, MW7 or MW8 throughout the course of the project (see Table 10). However, diesel and/or heavy oil was detected in MW9 during the first two quarters of the monitoring program, as well as the sixth quarter. No BTEX or CPAH's were found in MW9 throughout the project. Diesel and motor oil range petroleum hydrocarbon concentrations were found to exceed the *Method A Groundwater Cleanup Levels of WAC 173-340-720* in MW-9 only during the Second Quarter Groundwater Monitoring event (See Table 10). FBI analysis of MW9 samples during the Second Quarter event found:

- Diesel range petroleum hydrocarbons at a concentration of 1,000 µg/L and
- Motor Oil range petroleum hydrocarbons at a concentration of 890 µg/L.

Direct comparison the analytical results (Appendices J, L, N, P, R, T & V) with *Method A Groundwater Cleanup Levels of WAC 173-340-720*[5] indicates we have subsequently obtained over four consecutive quarters of analytical results compliant with these Cleanup Levels.

Table 10. Summary of Analytical Results for Groundwater Monitoring at the Former Comet Trailer Facility

Site Well ID	Quarter	Date	Sample ID	Benzene (ppb)	Toluene (ppb)	Ethyl Benzene (ppb)	Total Xylenes (ppb)	Diesel Range (ppb)	Motor Oil Range (ppb)	Naphthalene (ppb)	Benz(a) anthracene (ppb)	Chrysene (ppb)	Benzo(a) pyrene (ppb)	Benzo(b fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Indeno(1,2,3-cd) pyrene (ppb)	Dibenz(a,h) anthracene (ppb)
		Method A Groundwater Cleanup Level:		5	1000	700	1000	500	500	160	*Method B Groundwater Cleanup Levels* not determined due to consistent lack of target compound detections.						
MW-6	1	11/17/2015	CT-0115-1-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	1	11/17/2015	CT-0115-1-GW10*	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
MW-7	1	11/17/2015	CT-0115-1-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW10**	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
MW-8	1	11/17/2015	CT-0115-1-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW10***	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
MW-9	1	11/17/2015	CT-0115-1-GW9	<1	<1	<1	<3	290	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW9	<1	<1	<1	<3	**1000**	**890**	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW9	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW9	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW10****	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW9	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW10****	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW9	<1	<1	<1	<3	370	280	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW10****	<1	<1	<1	<3	450	420	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	7	09/11/2017	CT-0115-7-GW9	--	--	--	--	<50	<250	--	--	--	--	--	--	--	--
	7	09/11/2017	CT-0115-7-GW10****	--	--	--	--	<50	<250	--	--	--	--	--	--	--	--

* = Duplicate sample collected from MW-6
** = Duplicate sample collected from MW-7
*** = Duplicate sample collected from MW-8
**** = Duplicate sample collected from MW-9

5.5.4.2 Groundwater Gradient Monitoring

Upon installation of MW-9, Sage retained Survey Technical Services, Inc. of Prosser, WA to determine horizontal and vertical position of top of casing of groundwater monitoring wells relative to temporary bench mark. As discussed above, Sage checked for the presence of Light Non-Aqueous Phase Liquid (LNAPL), and collected Depth to Water (DTW) measurements, using a Solinst 122 interface probe during each event. No petroleum product was indicated by the interface probe in the groundwater monitoring wells during this project. The water levels appear to represent the uppermost portion of an unconfined water-bearing unit. A summary of groundwater monitoring well data collected during the project is presented in Table 11.

Review of the groundwater data found the groundwater table to be very shallow and the general groundwater flow direction trends from northwest toward southeast (see Figures 14 - 20). However, Sage observed groundwater gradients indicative of groundwater mounding in the area of the previous remedial excavation perimeter during the sampling events of February of 2016 and 2017 (see Figures 15 and 19). This appears to be due to successive heavy winter precipitation in the valley areas and we experienced extremely muddy conditions during these sampling events due to high runoff. It is during these groundwater mounding events that diesel and motor oil range petroleum hydrocarbon concentration levels appeared to be at their highest.

On November 17, 2015, the groundwater surface was found to lie at depths ranging from 5.42 to 7.61 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.009 ft/ft from the northeast to the southwest, bearing between N 138° E and N 152° E respectfully, as shown by Figure 14.

On February 22, 2016, the groundwater surface was found to lie at depths ranging from 5.04 to 7.28 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.018 ft/ft, bearing between N 12° E in the northern portion of the remedial excavation, to 0.017 ft/ft bearing N 123° E in the southern portion of the remedial excavation, as shown by Figure 15.

On May 23, 2016, the groundwater surface was found to lie at depths ranging from 5.37 to 7.56 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.009 ft/ft from the northeast to the southwest, bearing between N 138° E and N 152° E respectfully, as shown by Figure 16.

On August 22, 2016, the groundwater surface was found to lie at depths ranging from 5.56 to 7.81 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.009 ft/ft from the northeast to the southwest, bearing between N 144° E and N 154° E respectfully, as shown by Figure 17.

On November 15, 2016, the groundwater surface was found to lie at depths ranging from 5.21 to 7.39 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.008 ft/ft from the northeast to the southwest, bearing between N 128° E and N 149° E respectfully, as shown by Figure 18.

On February 20, 2017, the groundwater surface was found to lie at depths ranging from 4.99 to 7.21 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft, bearing between N 48° E in the northern portion of the remedial excavation, to 0.009 ft/ft bearing N 140° E in the southern portion of the remedial excavation, as shown by Figure 19.

On September 11, 2017, the groundwater surface was found to lie at depths ranging from 5.13 to 7.39 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.002 ft/ft, bearing between N 136° E in the northern portion of the remedial excavation, to 0.009 ft/ft bearing N 153° E in the southern portion of the remedial excavation, as shown by Figure 20.

Table 11. Summary of Groundwater Monitoring Well Data at the Former Comet Trailer Facility

Site Well ID	WSDOE ID	Date	Northing (ft)	Easting (ft)	Elevation (ft)	BHD (ft)	Casing Stickup (ft)	Screen TOC (ft)	Screen Base (ft)	DTW (TOC) (ft)	SWL Elevation (ft)
MW-6	BCB696		3412.53	5481.23	101.30	14.7	2.6	4.7	14.7		
		11/17/2015								5.95	95.35
		2/22/2016								5.68	95.62
		5/23/2016								5.91	95.39
		8/22/2016								6.09	95.21
		11/15/2016								5.67	95.63
		2/20/2017								5.46	95.84
		9/11/17								5.67	95.63
MW-7	BCB697		3484.73	5481.95	101.33	14.7	2.5	4.2	14.2		
		11/17/2015								5.42	95.91
		2/22/2016								5.04	96.29
		5/23/2016								5.37	95.96
		8/22/2016								5.56	95.77
		11/15/2016								5.21	96.12
		2/20/2017								4.99	96.34
		9/11/17								5.13	96.20
MW-8	BCB698		3506.79	5278.56	103.96	14.7	2.5	4.4	14.4		
		11/17/2015								7.61	96.35
		2/22/2016								7.28	96.68
		5/23/2016								7.56	96.40
		8/22/2016								7.81	96.15
		11/15/2016								7.39	96.57
		2/20/2017								7.21	96.75
		9/11/17								7.39	96.57
MW-9	BIZ231		3448.12	5389.06	102.56	14.7	2.7	5.2	12.5		
		11/17/2015								6.55	96.01
		2/22/2016								5.24	97.32
		5/23/2016								6.50	96.06
		8/22/2016								6.72	95.84
		11/15/2016								6.31	96.25
		2/20/2017								5.94	96.62
		9/11/17								6.27	96.29

Note: Measurements relative to Temporary Bench Mark

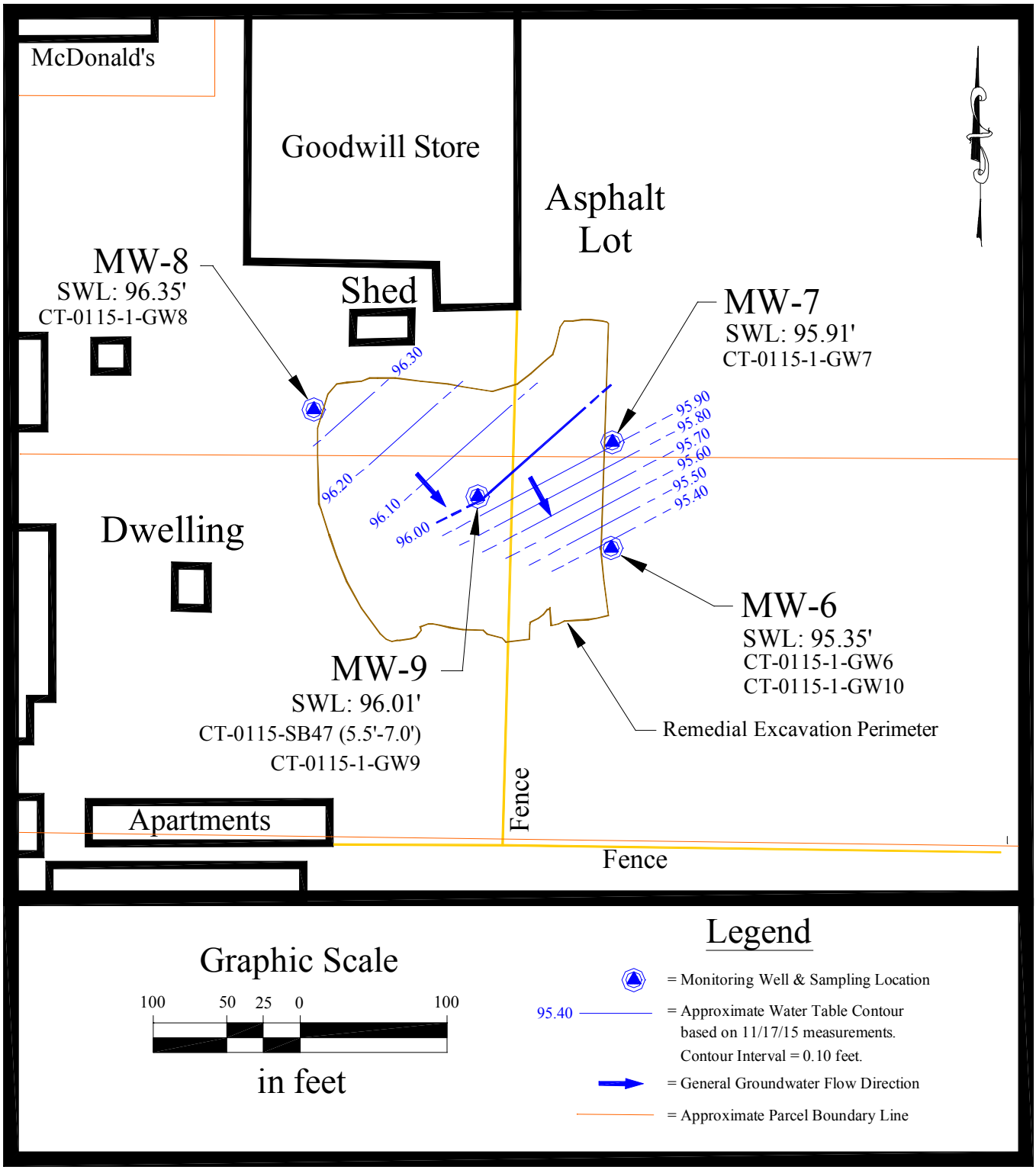


Figure 14. Groundwater Sampling Locations and Groundwater Gradient on 11/17/15

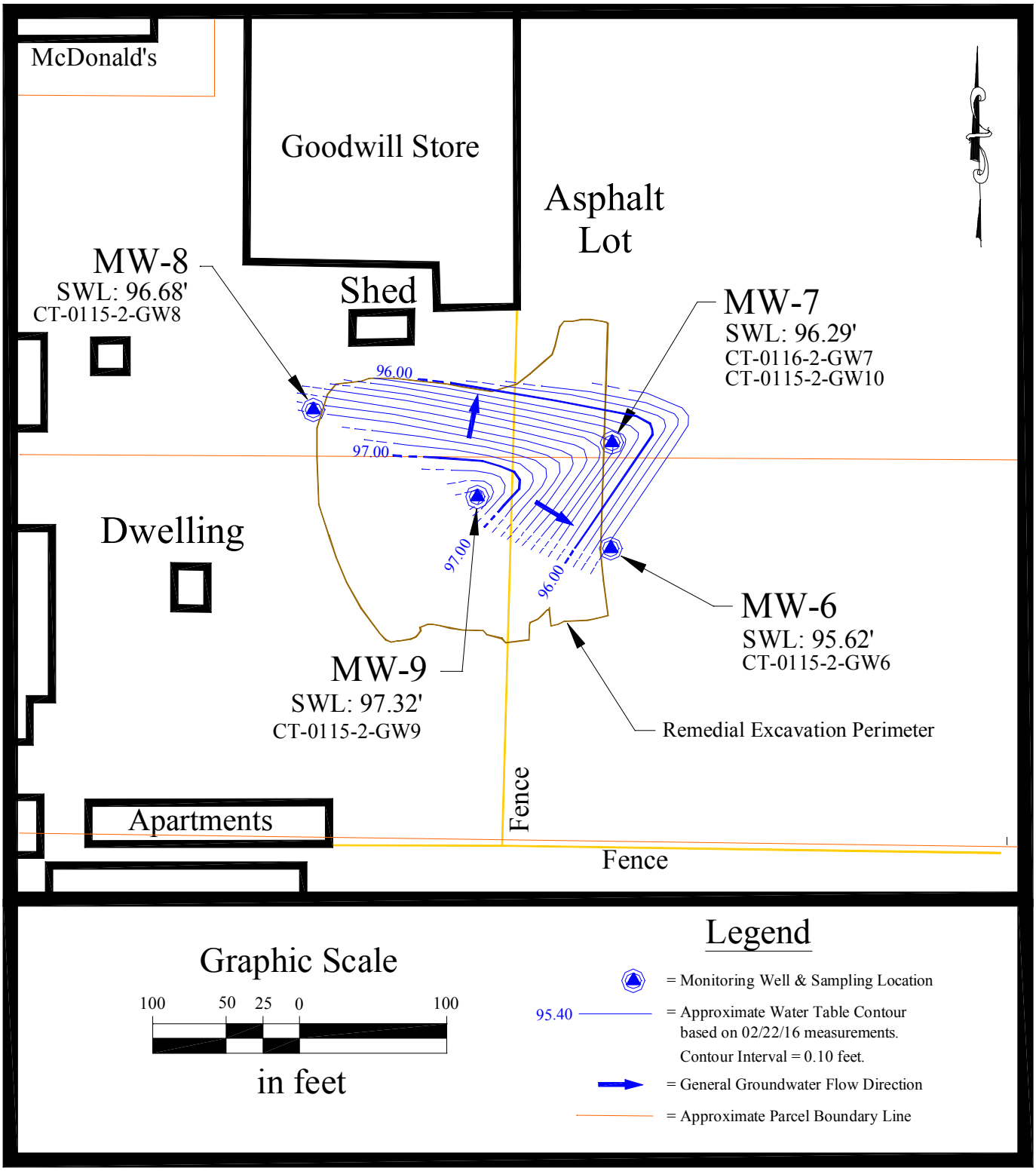


Figure 15. Groundwater Sampling Locations and Groundwater Gradient on 02/22/16

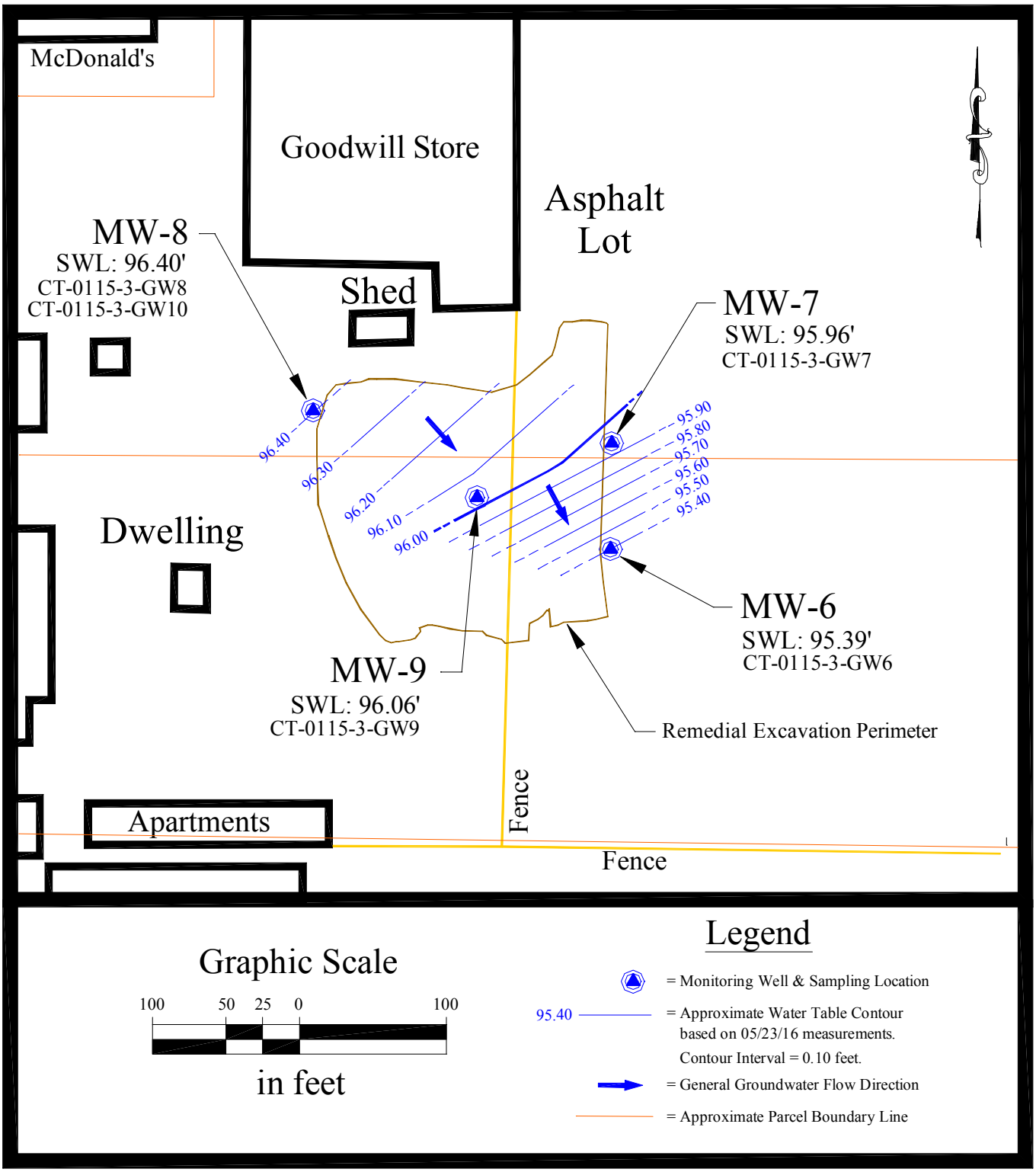


Figure 16. Groundwater Sampling Locations and Groundwater Gradient on 05/23/16

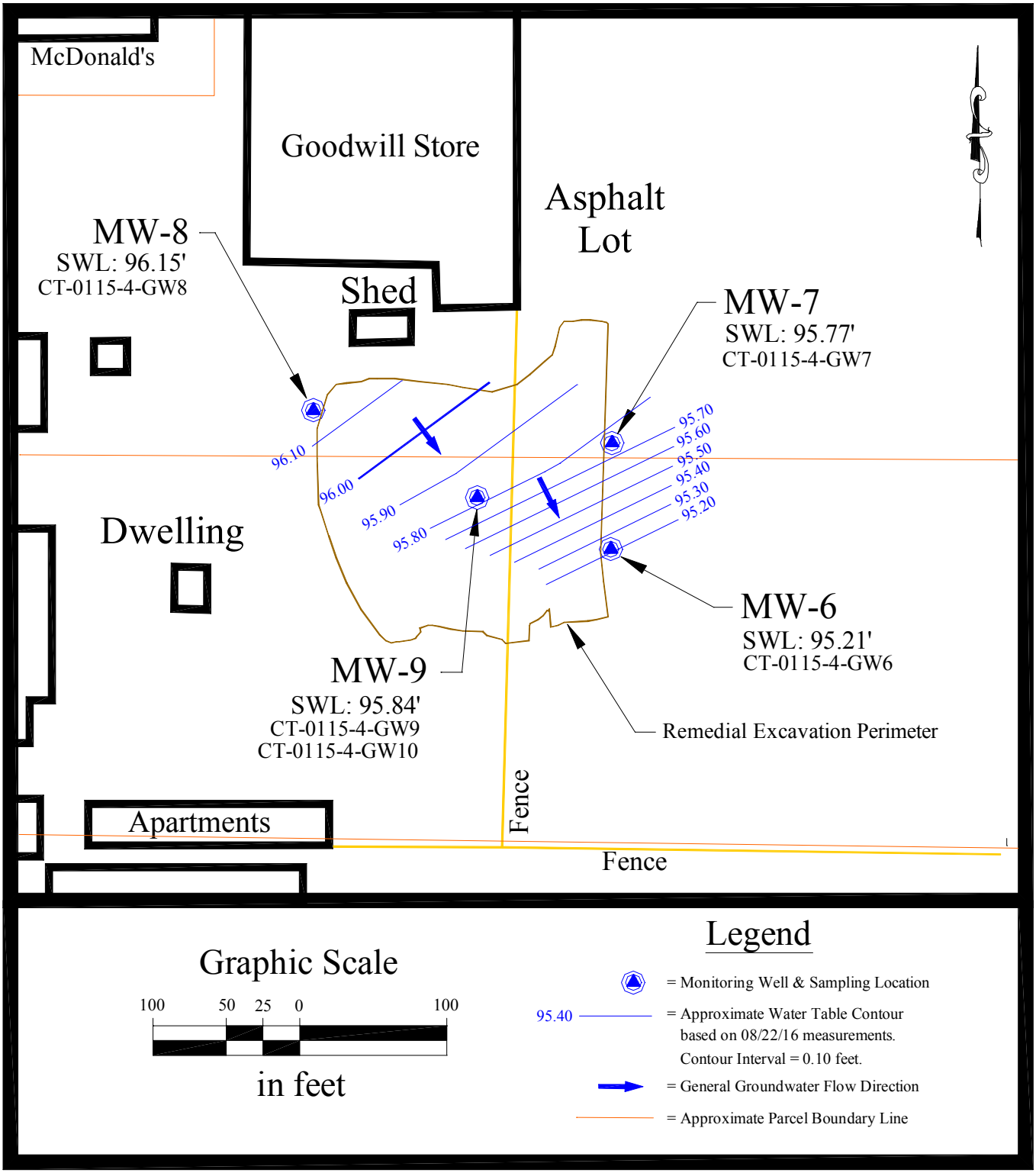


Figure 17. Groundwater Sampling Locations and Groundwater Gradient on 08/22/16

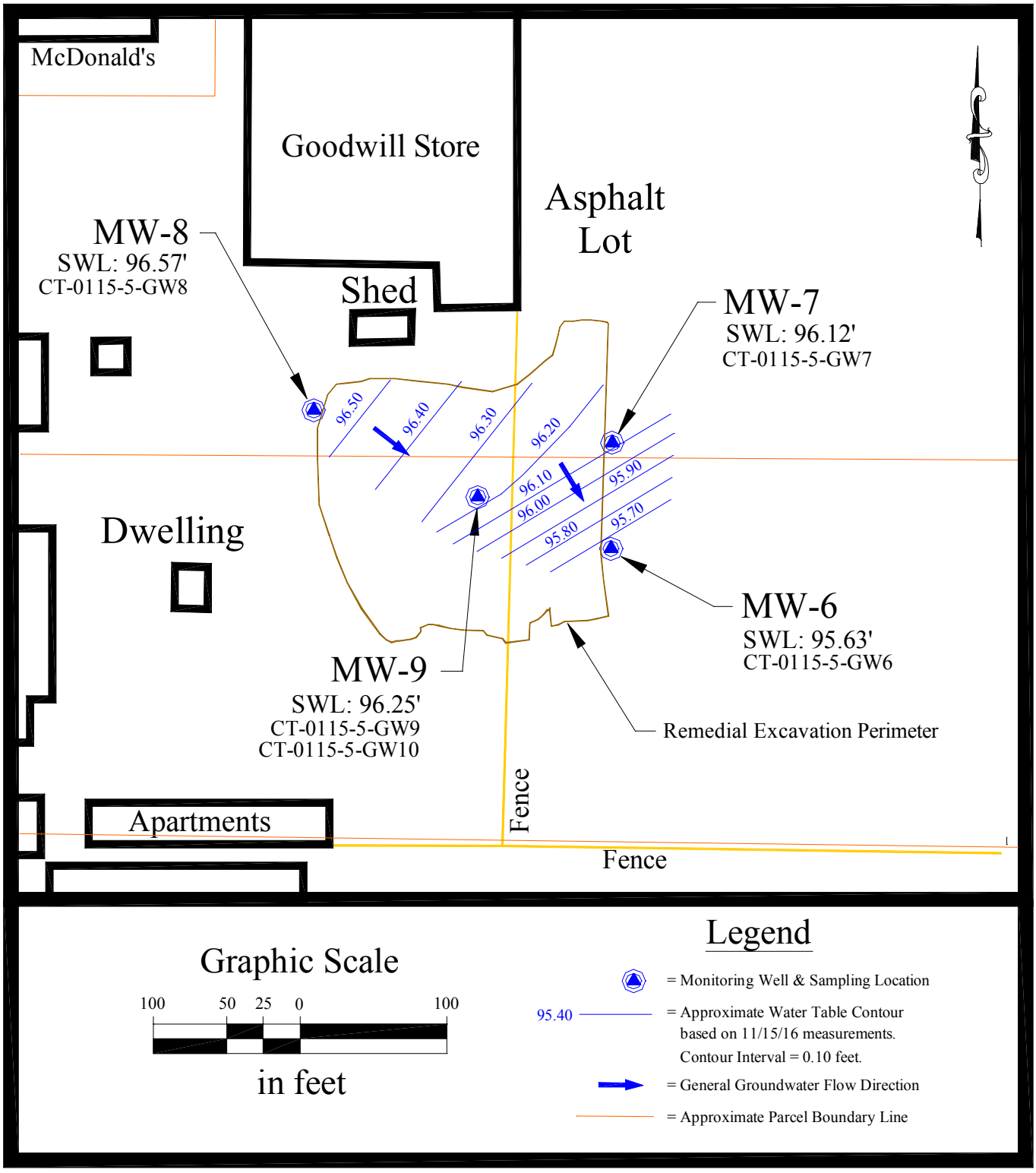


Figure 18. Groundwater Sampling Locations and Groundwater Gradient on 11/15/16

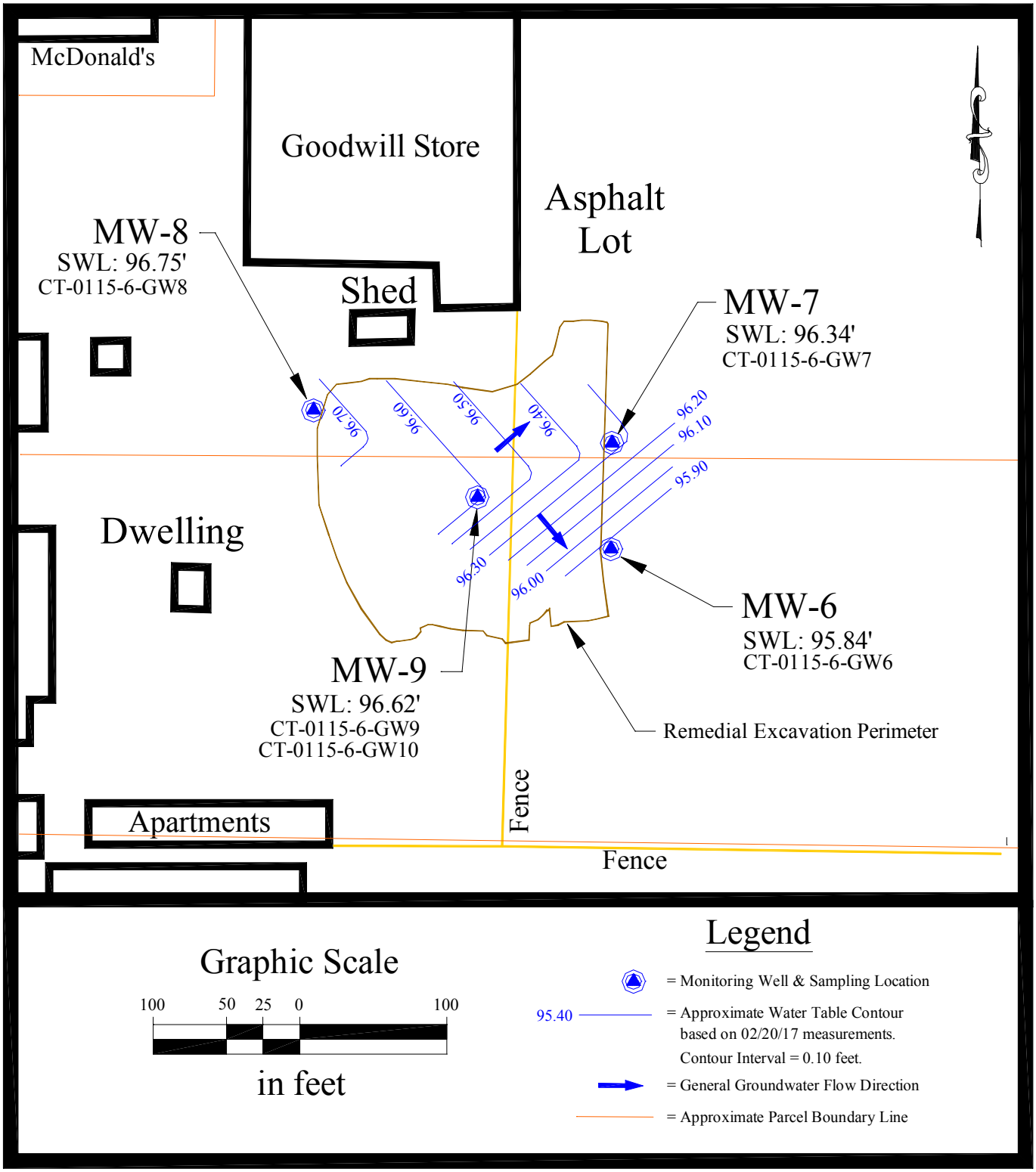


Figure 19. Groundwater Sampling Locations and Groundwater Gradient on 02/20/17

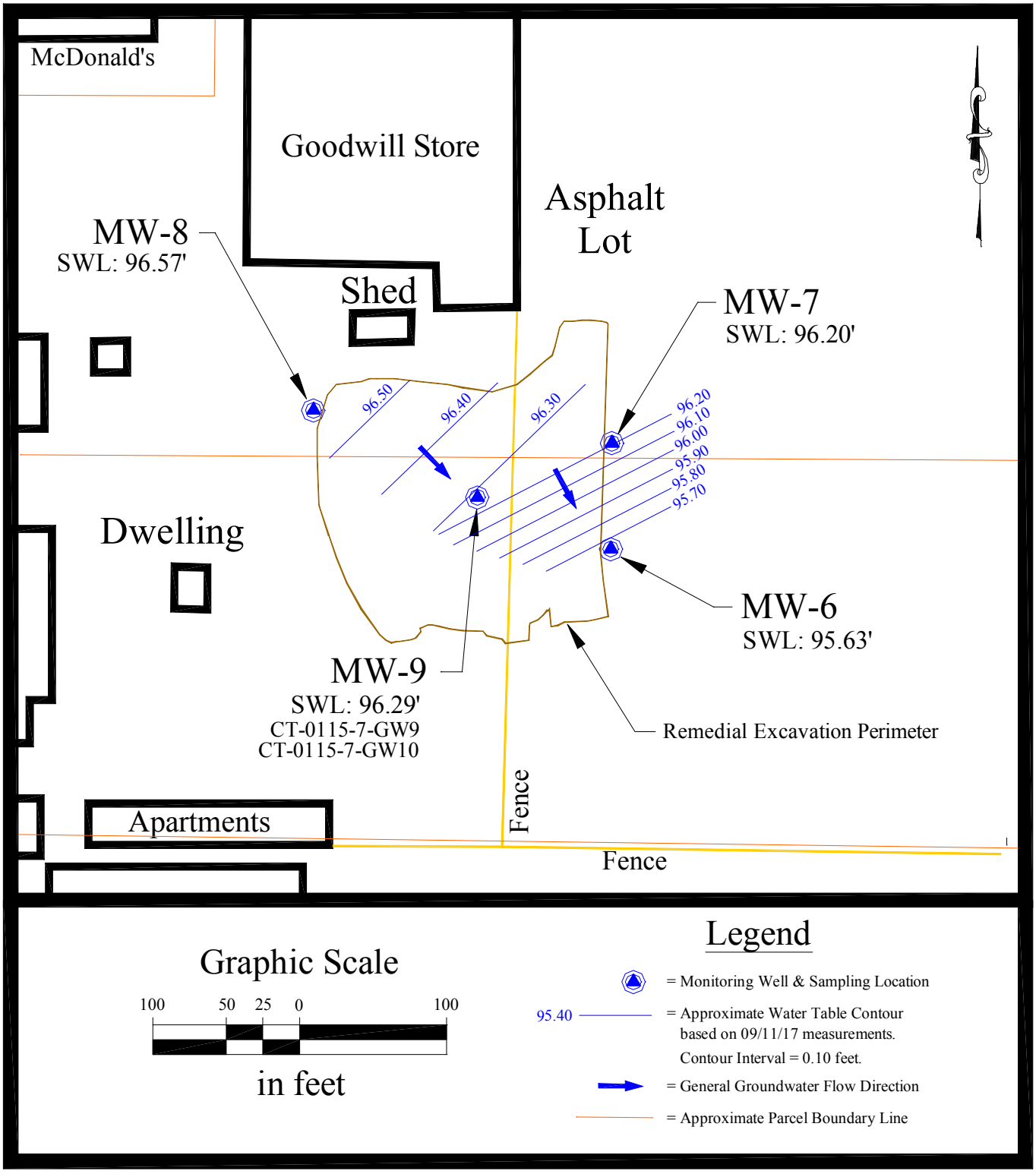


Figure 20. Groundwater Sampling Locations and Groundwater Gradient on 09/11/17

5.6 Disposal of Project Generated Wastes

5.6.1 AREA 5 Drill Cuttings

As discussed in Section 5.5.3 of this report, one (1) soil sample (CT-0115-SB47) was collected during MW-9 drilling activities. Analytical results for this sample were used to determine disposition of soil generated during the drilling process. The FBI analytical data report is included as Appendix H and summarized by Table 9. Direct comparison of the analytical results with the *Method A Soil Cleanup Levels of WAC-173-340-740* (Cleanup Levels) and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] found no target compounds in excess of the Cleanup Levels. Upon receiving approval from the WSDOE Project Coordinator[32], Sage placed soil generated during the drilling process on the Area 5 treated soil stockpile.

5.6.2 Disposal of Well Purge Water from MW6 – MW8

Sage collected purge water generated during groundwater sampling activities discussed in Section 5.5.4 of this report. Analytical results for groundwater samples were used to determine appropriate methods of disposal for water purged during well development and well purging activities. Review of the analytical data for project groundwater monitoring samples detected no diesel, heavy oil, BTEX or CPAH's in samples collected from MW6, MW7 or MW8 throughout the course of the project (see Table 10). A total of approximately 96.8 gallons of purge water were generated from MW-6 through MW-8 during the project (see Table 12). Upon obtaining approval from the WSDOE Project Coordinator[32,33], Sage disposed of this purge water on the ground surface, near the fence, south of the subject area on January 19, 2016 and April 27, 2017.

Table 12. Summary of Project Monitoring Well Purge Water

Date Generated	MW6 (gallons)	MW7 (gallons)	MW8 (gallons)	MW9 (gallons)
11/12/15	5	5	6	75
02/22/16	6	6	5	7
05/23/16	6	6	6	7
08/22/16	6	6	7	7
11/15/16	4.4	4.5	3.8	5.5
02/20/17	4.3	5.5	4.3	5.9
09/11/17	--	--	--	10
Total	31.7	33	32.1	117.4

5.6.3 Disposal of Well Purge Water from MW9

Diesel and/or heavy oil was detected in MW9 during the first two quarters of the monitoring program, as well as the sixth quarter monitoring event. No BTEX or CPAH's were found in MW9 throughout the project. Diesel and motor oil range petroleum hydrocarbon concentrations were found to exceed the *Method A Groundwater Cleanup Levels of WAC 173-340-720* in MW-9 only during the Second Quarter Groundwater Monitoring event (See Table 10).

A total of approximately 117.4 gallons of purge water were generated from MW-9 during the project (see Table 12). Upon obtaining approval from the WSDOE Project Coordinator[32,33] and Mr. Todd Laroche of the City of Selah Waste Water Treatment Plant (SWWTP)[24,25], Sage disposed of this purge water at the SWWTP on January 19, 2016 and April 28, 2017. Sage disposed of purge water generated on September 11, 2017 on the ground surface, near the fence, south of the subject area.

6.0 Conclusions & Recommendations

6.1 Area One: Sandblast Grit On B.N.S.F. Land

Sage performed Area One sampling and analysis activities as prescribed by the *Work Plan*[23]. Area One sampling and analysis activities are discussed in Section 5.1 of this report. Sage used a direct comparison of the analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area One. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of Area One.

6.2 Area Two: Paved Area With Building

Work regarding catch basins and the storm water drainage system at the site was limited to mapping and describing catch basin construction, inspection for indications of piping direction and exploring for an additional outfall into the drainage ditch on the northeast portion of the site. Sage completed these activities as documented in Section 5.2 of this report.

6.3 Area Three: Wastewater Ditch

Work regarding the Wastewater Ditch was limited to exploring for an additional outfall into the drainage ditch on the northeast portion of the site. Sage completed these activities as documented in Section 5.2 and 5.3 of this report.

6.4 Area Four: Land South of the Building

Sage performed Area Four sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Four sampling and analysis activities are discussed in Section 5.4 of this report. Sage used a direct comparison of the analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area Four. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of Area Four.

6.5 Area Five: Petroleum Contaminated Soil & Groundwater

6.5.1 Treated Soil Stockpile

Sage performed Area Five *Treated Soil Stockpile* sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Five *Treated Soil Stockpile* sampling and analysis activities are discussed in Section 5.5.1 of this report. Sage used a direct comparison of the analytical results (Appendix F) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required for the Area Five *Treated Soil Stockpile*. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of the Area Five *Treated Soil Stockpile*.

6.5.2 Remedial Excavation Area Soil

Sage performed Area Five *Remedial Excavation Area Soil* sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Five *Remedial Excavation Area Soil* sampling and analysis activities are discussed in Section 5.5.2 & 5.5.3 of this report. Sage used a direct comparison of the analytical results (Appendix H) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required for the Area Five *Remedial Excavation Area Soil*. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of the Area Five *Remedial Excavation Area Soil*.

6.5.3 Remedial Excavation Area Groundwater

Sage performed Area Five *Remedial Excavation Area Groundwater* sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Five *Remedial Excavation Area Groundwater* sampling and analysis activities are discussed in Section 5.5.4 of this report.

Review of the analytical data for project groundwater monitoring samples detected no diesel, heavy oil, BTEX or CPAH's in samples collected from MW6, MW7 or MW8 throughout the course of the project (see Table 10). However, diesel and/or heavy oil was detected in MW9 during the first two quarters of the monitoring program, as well as the sixth quarter. No BTEX or CPAH's were found in MW9 throughout the project. Diesel and motor oil range petroleum hydrocarbon concentrations were found to exceed the *Method A Groundwater Cleanup Levels of WAC 173-340-720*[5] in MW-9 only during the Second Quarter Groundwater Monitoring event (See Table 10).

FBI analysis of MW9 samples during the Second Quarter event found:

- Diesel range petroleum hydrocarbons at a concentration of 1,000 µg/L and
- Motor Oil range petroleum hydrocarbons at a concentration of 890 µg/L.

Sage used a direct comparison of the analytical results (Appendices J, L, N, P, R & T) with the *Method A Groundwater Cleanup Levels of WAC-173-340-720*[5] to determine if groundwater remediation is required. The comparison indicates we have obtained five consecutive quarters of analytical results compliant with these Cleanup Levels. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of the Area Five *Remedial Excavation Area Groundwater*.

To prevent potential future groundwater contaminants from using existing groundwater monitoring wells as preferential migration pathways, Sage recommends retaining a licensed well driller to abandon all site groundwater monitoring wells in accordance with the *Minimum Standards for Construction and Maintenance of Wells,* Chapter 173-160 WAC[2].

7.0 References

1. Burlington Northern Santa Fe Railway, Bruce A. Sheppard, July 30, 2004, Written Communication.

2. Chapter 173-160 WAC *Minimum Standards for Construction and Maintenance of Wells,* December 19, 2008

3. Chapter 173-303 WAC - *Dangerous Waste Regulations,* October 5, 2007.

4. Chapter 173-340 WAC - *Model Toxics Control Act,* October 12, 2007.

5. Chapter 173-340 WAC - *Model Toxics Control Act Cleanup Regulation,* Amended February 12, 2001.

6. *Guidance on Sampling and Data Analysis Methods,* Washington State Department of Ecology-Toxic Cleanup Program, January 1995.

7. Hallard B. Kiinison and Jack E Sceva, *Effects of Hydraulic and Geologic Factors on Streamflow of the Yakima River Basin Washington,* Geological Survey Water-Supply Paper 1595, 1963.

8. *Hydrogeologic Framework of Sedimentary Deposits in Six Structural Basins, Yakima River Basin, Washington*., U.S Geological Survey, Reston, Virginia, 2006.

9. *Resource Protection Well Reports*, Kleinfleder, Inc, March 13, 1995.

10. Sage Earth Sciences, Inc., February 24, 2006 *Limited Free Product Removal & Site Characterization Report*

11. Sage Earth Sciences, Inc., September 30, 2008 *Groundwater Gradient Monitoring Report*

12. Sage Earth Sciences, Inc., February 17, 2009 *Groundwater Gradient Monitoring Report*

13. Sage Earth Sciences, Inc., June 8, 2009 *Groundwater Gradient Monitoring Report*

14. Sage Earth Sciences, Inc., September 15, 2009 *Groundwater Gradient Monitoring Report*

15. Sage Earth Sciences, Inc., Krystal Rodriquez, Written Letter, December 1, 2009.

16. Sage Earth Sciences, Inc., April 9, 2010 *Independent Remedial Action Report*

17. Sage Earth Sciences, Inc., November 17, 2010 *Soil Treatment Cell Sampling Report*

18. Sage Earth Sciences, Inc., September 21, 2010 *Groundwater Monitoring Report*

19. Sage Earth Sciences, Inc., December 10, 2010 *Groundwater Monitoring Report*

20. Sage Earth Sciences, Inc., February 23, 2011 *Third Quarter Groundwater Monitoring Report*

21. Sage Earth Sciences, Inc., May 24, 2011 *Fourth Quarter Groundwater Monitoring Report*

22. Sage Earth Sciences, Inc., *Revised Field Work for Agreed Order No. DE 11193* letter to Matt Durkee – WSDOE-CRO, April 17, 2015.

23. Sage Earth Sciences, Inc., *Final Remedial Investigation Work Plan - Agreed Order No. DE 11193*, October 16, 2015.

24. Selah Wastewater Treatment Plant, Todd Laroche, Verbal Communication, January 14, 2016.

25. Selah Wastewater Treatment Plant, Todd Laroche, Verbal Communication, April 27, 2017.

26. State of Washington, Department of Ecology, J. French, Certified Letter, August 19, 1991.

27. State of Washington, Department of Ecology, *Model Agreed Order No. DE 03 TCPCR*-5877, December5, 2003.

28. State of Washington, Department of Ecology, R. Swackhamer, Written Letter, February 12, 1992.

29. State of Washington, Department of Ecology, Krystal Rodriguez, Certified Letter, February 24, 2005.

30. State of Washington, Department of Ecology, Brianne Plath, Written Letter, December 7, 2009.

31. State of Washington, Department of Ecology, Matt Durkee, Email Communication, December 18, 2015.

32. State of Washington, Department of Ecology, Kyle Parker, Email Communication, December 28, 2015.

33. State of Washington, Department of Ecology, Kyle Parker, Email Communication, March 13, 2017.

34. *Statistical Guidance for Ecology Site Managers,* Washington State Department of Ecology – Toxics Cleanup Program, August 1992, 92-54.

35. Technico Environmental Services, Inc. January 13, 2004, *Work Plan For Comet Trailer Facility.*

36. Technico Environmental Services, Inc. August 3, 2004, *Amendment 1 Work Plan.*

37. Technico Environmental Services, Inc. August 13, 2004, *Amendment 2.*

38. Technico Environmental Services, Inc. October 4, 2004, *Comet Trailer Sampling Results.*

39. Technico Environmental Services, Inc. December 8, 2004, *Comet Trailer Characterization of Free Product.*

40. Washington State Department of Ecology, Environmental Investigations and Laboratory Services, Manchester Laboratory, R. Knox, Written Letter, April 16, 1991.

41. Washington State Department of Ecology, Manchester Environmental Laboratory, C. Smith, Written Report, May 7, 1991

42. Washington State Department of Ecology web site: https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*, March 24, 2017.

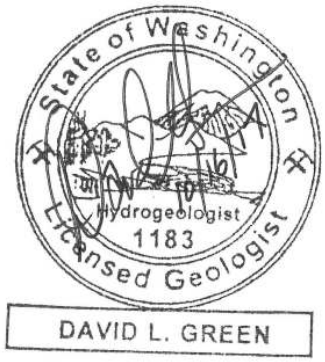
Remedial Investigation/Feasibility Study

Comet Trailer Corp Site - Facility No. 503
501 South First Street
Selah, WA 98942
Agreed Order No. DE 11193

Prepared For:

Bud Owens Limited Family Partnership
P.O. Box 129
Selah, WA 98942

Prepared By:



SAGE Earth Sciences, Inc.
1396 Lombard Loop Rd.
Wapato, WA 98951

October 16, 2017

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GUIDE TO ACRONYMS

AST	Above-ground Storage Tank
BGS	Below Ground Surface
BNSF	Burlington Northern-Santa Fe Railroad
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
Cleanup Levels	*Method A Groundwater and Soil Cleanup Levels of WAC-173-340-740 or* *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*
CPAH	Carcinogenic Polycyclic Aromatic Hydrocarbons
DOE	State of Washington, Department of Ecology
DTW	Depth To Water
EPH	Extractable Petroleum Hydrocarbons
FBI	Friedman & Bruya, Inc.
GPS	Global Positioning System
HPE	Hi-Point Excavation LLC
KI	Kleinfelder, Inc.
LNAPL	Light Non-Aqueous Phase Liquid
MW	Monitoring Well
PCS	Petroleum Contaminated Soil
PPM	Parts Per Million or mg/Kg or mg/L
RI/FS	Remedial Investigation/Feasibility Study
SWWTP	Selah Waste Water Treatment Plant
TES	Technico Environmental Services
USCS	Unified Soil Classification System
VOC	Volatile Organic Compound
Work Plan	Work Plan for a Remedial Investigation/Feasibility Study

1.0 Background Summary

1.1 Site Location

The Comet Trailer facility is located at 501 South First Street, Selah, WA. It is situated within the W 1/2 of the NW 1/4, Section 01, Township 13 North, Range 18 East, Willamette Meridian. Project activities were conducted on Yakima Tax Parcel Numbers: 181301-22423 & 181301-23001. The approximate site latitude is 46° 38' 46.1" and the approximate longitude is 120° 31' 42.9". Figure 1 shows the location of parcels associated with this Remedial Investigation/Feasibility Study (RI/FS).

1.2 Site Description & Adjacent Land Use

The facility is currently owned by:

Bud Owens Limited Family Partnership
P.O. Box 129
Selah, WA 98942
(509) 697-7264

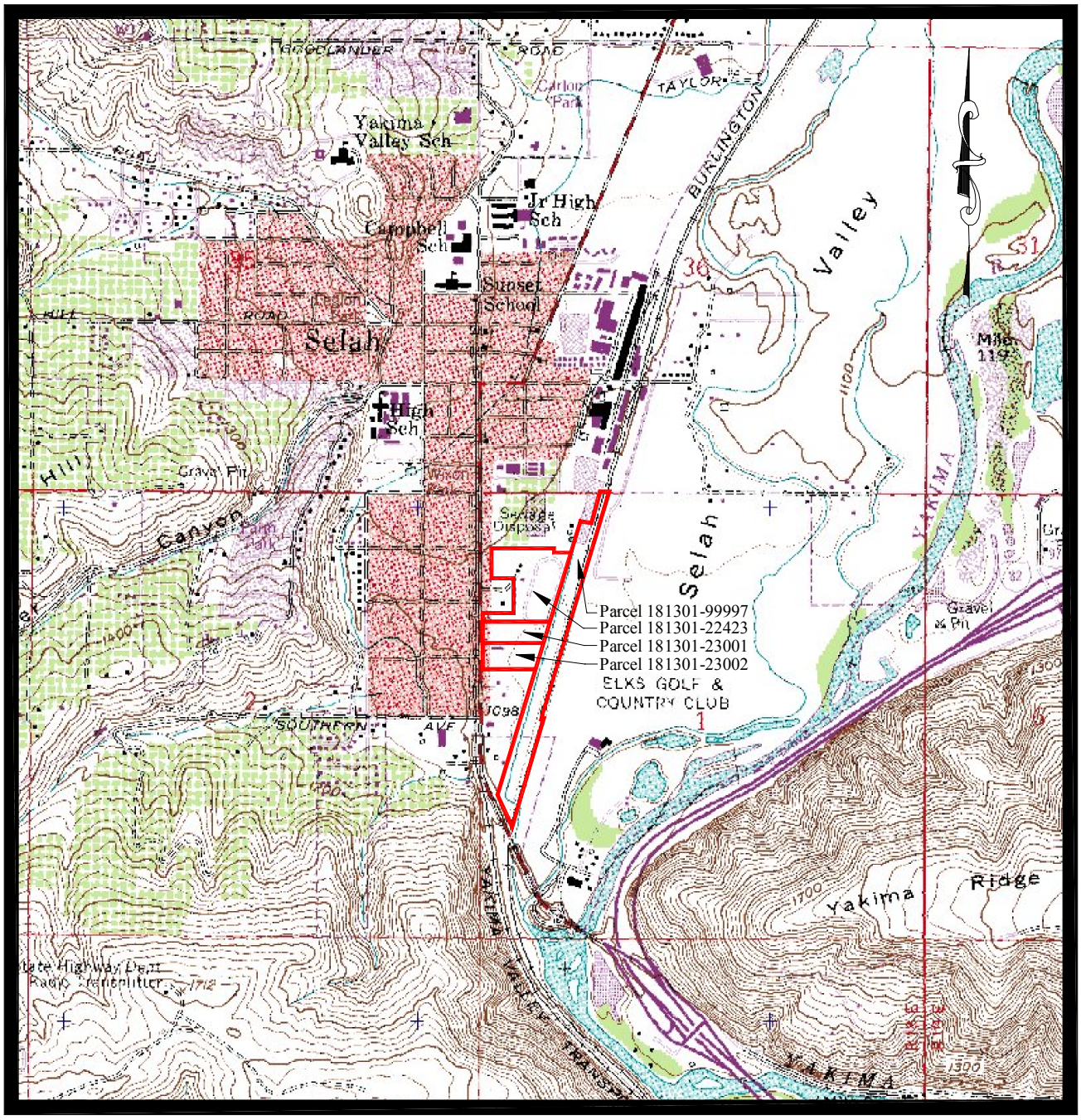
The State of Washington, Department of Ecology (DOE) Site Manager is:

Kyle Parker
WA State Department of Ecology
Toxics Cleanup Program / Central Regional Office
1250 W. Alder Street, Union Gap, WA 98903
Direct (509) 454-7833

As shown by Figure 2, the eastern portion of Parcel Number 181301-22423 is occupied by the former Comet Trailer manufacturing building, which was occupied by the following commercial businesses during Sage's field activities: Tree Top & Ross Plant Ingredient Division Warehouse, Graham Packaging and Yakama Juice. The area surrounding the building was covered by asphalt surface. The northwestern portion of this parcel was occupied by a gravel parking lot. The southwestern portion of this parcel was occupied by a storage buildings and a residential dwelling. These western areas were separated from the asphalted area by fencing.

The eastern portion of Parcel Number 181301-23001 was occupied by an asphalt parking and equipment storage area. The western portion of this parcel was occupied by a strip mall, an apartment complex and a residential dwelling.

Goodwill Industries and small commercial businesses lie west of the northern portion of Parcel Number 181301-22423. South First Street lies immediately west of the Parcel Number 181301-23001 and the southern portion of Parcel Number 181301-22423.



Graphic Scale

Contour Interval - 20 Feet

Figure 1. Site Location Map

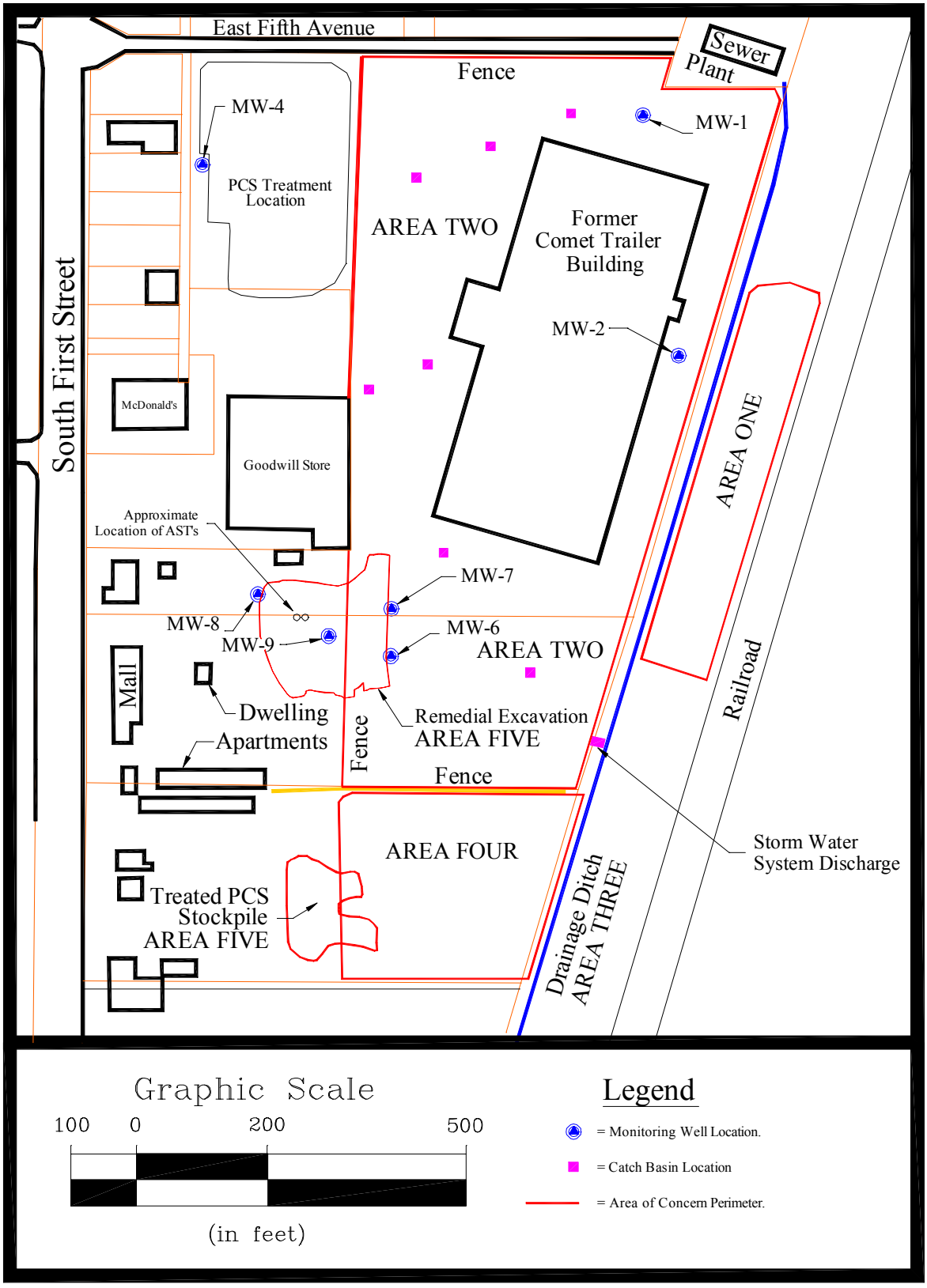


Figure 2. Property Use and Areas of Concern

The local topography slopes gently southeast. A drainage ditch, which discharges effluent from the municipal sewer treatment plant, lies immediately east of the subject parcels. The drainage ditch discharges into the Yakima River, which lies approximately three-tenths of a mile southeast of the site.

1.3 Site History

The late Mr. Bud Owens was a former owner of Comet Trailer, which operated a truck trailer manufacturing business on parcel 181301-22423 and 181301-23001 from 1984-1995. In the course of trailer manufacturing activities, trailers and/or their components were sandblasted prior to painting. Mr. Owens placed spent sandblast media on property south of the manufacturing facility and on property east of the site leased from Burlington Northern-Santa Fe Railroad (BNSF) property.

Mr. Owens also operated a heating oil sales and delivery business. The business utilized two (2) Above-ground Storage Tanks (AST's) of unknown size from parcels 181301-22423 and/or 181301-23001 to support the sale of heating oil. The approximate location of the AST's is shown by Figure 2.

1.4 Geology and Hydrogeology

Selah is located near the northwest margin of the Yakima Fold Province of the Columbia River Plateau, which is lithologically composed of Columbia River Basalts and interbedded sediments of the Ellensburg Formation[7]. This province is characterized by anticlinal ridges and synclinal valleys that generally trend east-west forming drainage basins. Selah is located within the Selah sub-basin of the Upper Yakima River Basin, as shown by Figure 3 and Figure 4. The Selah sub-basin is bounded on the north by the Umtanum Anticline and on the South by Yakima Ridge, both of which are anticlinal ridges composed of Columbia River Basalts and the interbedded Ellensburg Formation[8]. Basalt in the central portion of the sub-basin is overlain by up to several hundred feet of Ellensburg Formation sediments.

The site lies approximately three-tenths of a mile northwest of the Yakima River. The Yakima River flows south-southwest through the Selah basin, from the Yakima River Canyon to Selah Gap, which is a narrow gap in Yakima Ridge cut by the Yakima River during uplifting of the ridge. The Yakima River has deposited unconsolidated gravels, small boulders, primarily basaltic, and flood silts derived from rocks upstream in the Yakima River, as well as the Wenas and Selah Creek drainages. Surface water from the area west of the Yakima River is drained by Wenas Creek. Groundwater recharge is supplied by precipitation, snow runoff and irrigation water diverted from the Naches River by the Naches-Selah Canal.

During previous excavation and drilling activities at the site, subsurface materials observed consisted of: medium brown, slightly pebbly, clayey silt[16]. This soil unit is classified as "ML" according to the Unified Soil Classification System (USCS). Soil located near, and east of the fence also exhibited poorly sorted, river gravels up to approximately six inches in diameter underlying the silt. The surface of the gravel unit lies at depths ranging from six feet Below

Ground Surface (BGS) and extends to a depth of at least thirteen feet BGS[18]. This soil unit is classified as "GP" according to the USCS.

Previous hydrogeologic investigations at the subject site, discussed in Section 3.5.2 of this *RI/FS*, found the uppermost portion of a very shallow unconfined water-bearing unit at depths ranging from approximately 2 to 4 feet below top of casing wells near the plume of diesel contamination (known as "Area 5" in this *RI/FS*). The groundwater was observed to seasonally fluctuate up to approximately one and one-half (1.5) feet.

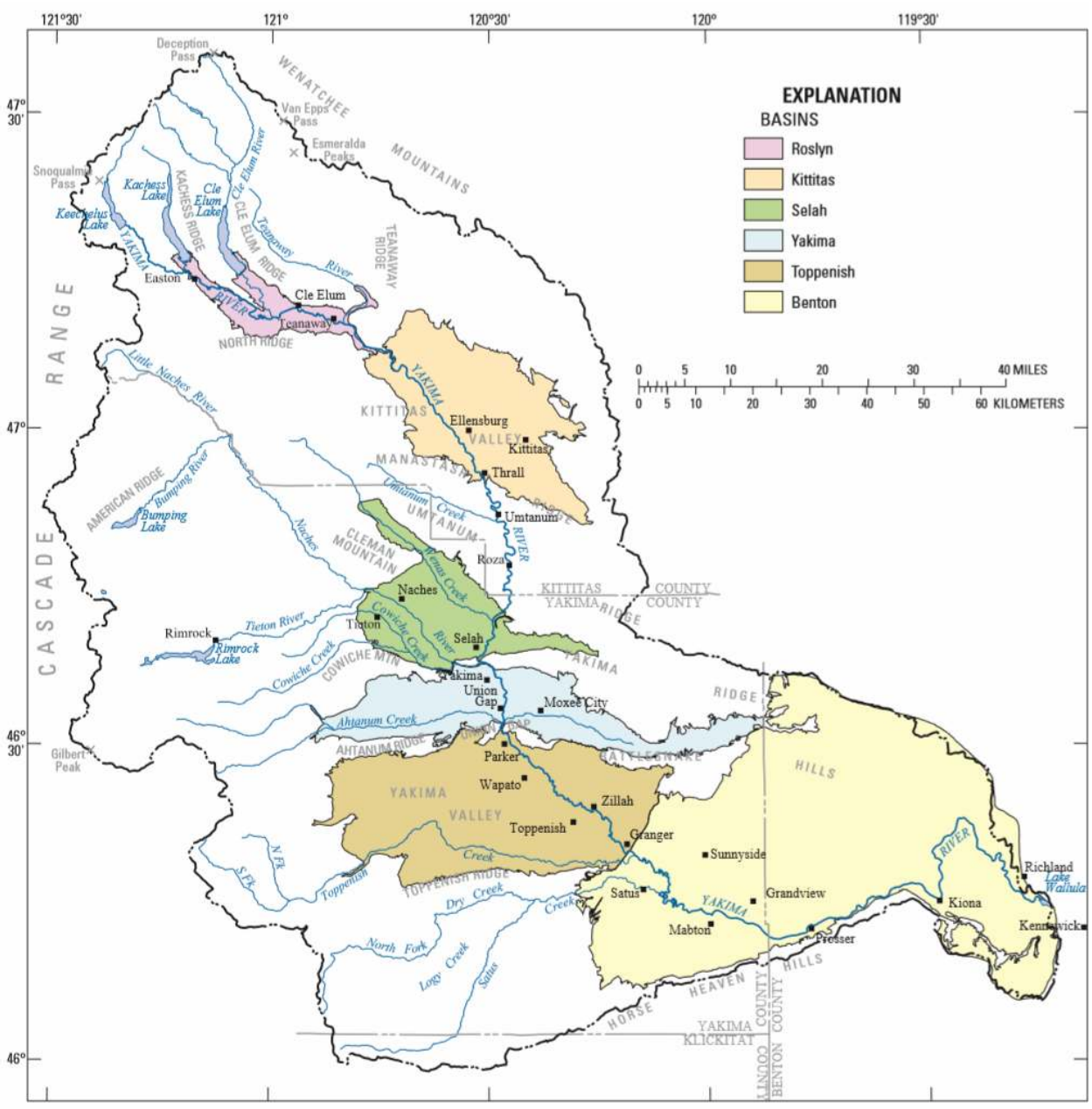


Figure 3. Basins in the Yakima River Drainage[8].

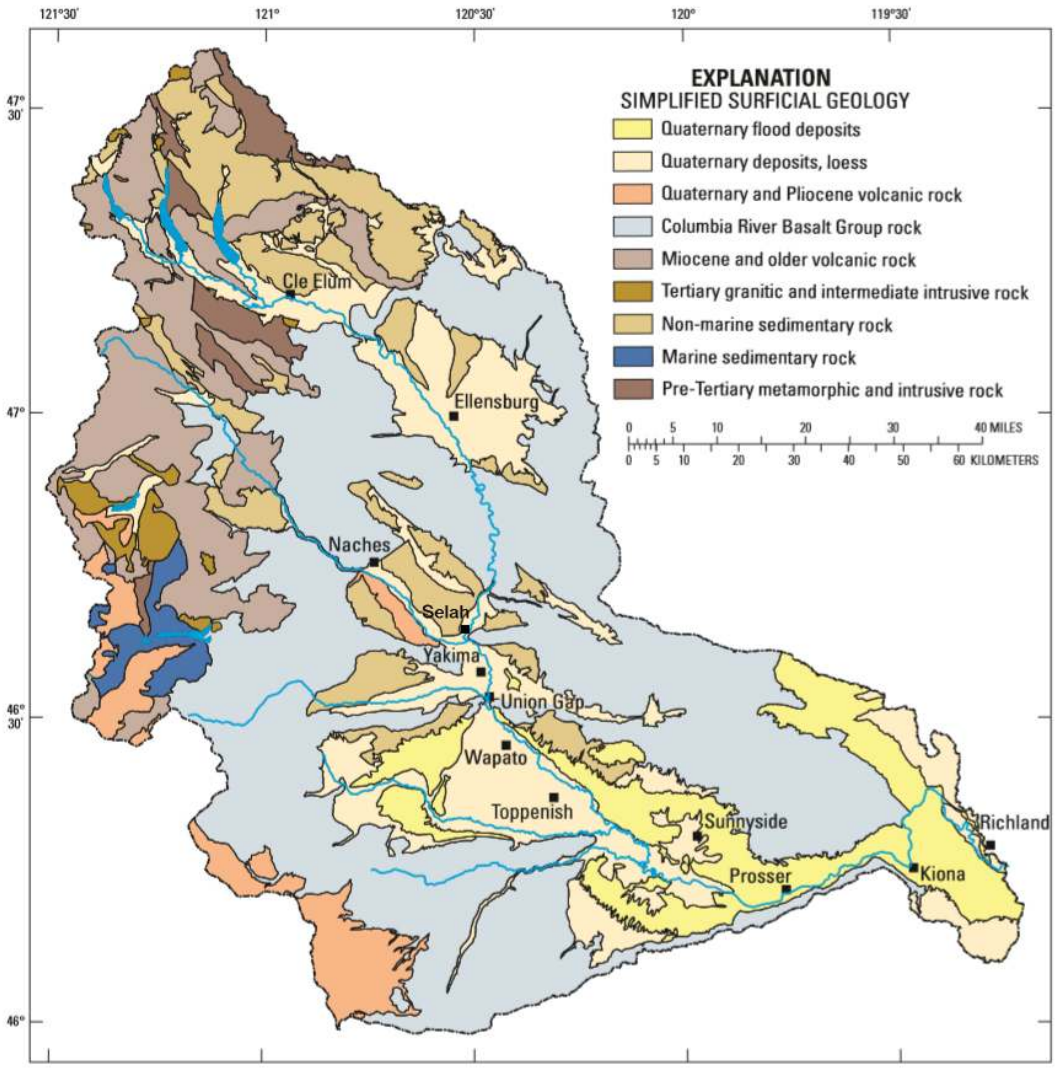


Figure 4. Simplified Surficial Geologic Map of the Yakima River Drainage[8].

2.0 Previous Agreed Order & Work Plan

2.1 Initial Investigation

On March 11 and May 13 1991, the State of Washington, Department of Ecology (DOE) conducted an initial investigation at the Comet Trailer facility[26]. Due to the nature of business at the Comet Trailer facility, the DOE collected samples of sandblast waste and sludge from a catch basin on the north end of the site. The catch basins were connected to a storm drain system which entered a nearby storm water drain which eventually flows to the Yakima River. A summary of the DOE findings is presented below.

- Catch Basin Sludge Samples: Samples collected from the catch basin were analyzed for volatile organics and total metals, which found the following compounds were detected: trichlorofluromethane, toluene, styrene, ethylbenzene and xylenes[26]. The DOE required the facility to: cease discharge from the catch basins, manage sludge from the sampled catch basin as "Dangerous Waste" per Chapter 173-303 WAC[3], collect and designate samples from the remaining catch basins and verify through sampling and analysis that the catch basin system had been cleanup up adequately.

- Sandblast Waste Material Samples: Total metals analysis results revealed the presence of chromium at 261 ppm and 207 ppm[40]. These levels exceed the Method A Soil Cleanup Levels for Unrestricted Land Uses of WAC 173-340-900[4] for chromium VI but are below the *Cleanup Level* for chromium III. Additional metals analyses required to determine the species of chromium were not performed, so it was not established if remedial action was actually required. Analysis of the samples using the Toxic Characteristic Leaching Procedure (TCLP) found no detectable (less that 0.1 ppm) chromium[41]. Sandblast grit piles were identified as being in the following locations:

    - South of the warehouse in a low area that has since been filled,
    - Southeast corner of the unpaved area, south of the facility, and about 10 yards from the irrigation ditch,
    - East section of the facility on BNSF property,
    - Southwest corner of the unpaved area (sampled by the DOE).

In 1992, the DOE completed a Site Hazard Assessment for the site and determined that the site would rank a "1", where 1 represents the highest relative risk and 5 the lowest[28]. The ranking indicated that the facility posed a high potential threat to human health and the environment relative to other sites ranked at that time.

2.2 Previous Agreed Order No. DE 03 TCPCR-5877

On December 5, 2003 Mr. Bud Owens entered into Agreed Order No. DE 03 TCPCR-5877 with the State of Washington, Department of Ecology[27] to perform eight specific activities at the facility. These consisted of:

1. Mr. Owens shall develop a Scope of Work and Work Plan for a Remedial Investigation/Feasibility Study (RI/FS). The scope of Work and Work Plan shall contain all of the elements outlined in WAC 173-340-350, -355, and -357. The RI/FS shall be designed to determine the horizontal and vertical extent and magnitude of all hazardous substances released at the site, including metals and volatile organics.
2. Upon Ecology approval of the Scope of Work, Mr. Owens shall implement this Work Plan and prepare a Draft RI/FS that complies with WAC 173-340-350 through 370 for Ecology review and public comment.
3. Upon Ecology approval of the Draft RI/FS and incorporation of public comment, Mr. Owens shall deliver three copies of the Final RI/FS incorporation Ecology's comments to Ecology for review and approval.
4. In accordance with WAC 173-340-820, Mr. Owens shall submit to Ecology for review and approval a Sampling and Analysis Plan with the Work Plan.

5. In accordance with WAC 173-340-810, Mr. Owens Shall submit to Ecology for review a Worker Safety and Health Plan with the Work Plan.
6. In accordance with WAC 173-340-600, Mr. Owens shall submit to Ecology for review and approval a Public Participation Plan.
7. Mr. Owens shall submit sampling data in accordance with Environmental Information Management (EIM) guidelines.
8. The work required under the Order shall be completed in such a manner to meet the schedule prescribed in the Agreed Order.

To fulfill Activity #1 required by *Agreed Order*, Mr. Owens retained Technico Environmental Services (TES), Kennewick, WA to develop a Scope of Work and Work Plan for a Remedial Investigation/Feasibility Study (*Work Plan*). TES produced three documents[35,36,37] to fulfill Activity #1, which are on file at the Central Regional Office of the DOE. The elements for the *Work Plan* are briefly described in Sections 2.1 through 2.4 of this report.

2.3 Work Plan for Comet Trailer Facility

TES produced the *Work Plan For Comet Trailer Facility, January 13, 2004* (*Work Plan*). This document provides facility background information and identifies three possible sources of contamination to be investigated at the facility under the Agreed Order.

The three possible sources of contamination consist of:

1. Sampling Area #1: the bottom of the catch basin located in the northeast section of the property.
2. Sampling Area #2: the south of the paved parking lot.
3. Sampling Area #3: east of the ditch on Burlington Northern property.

2.3.1 Amendment 1 to the Work Plan

TES produced the *Amendment 1 to the Work Plan, July 28, 2004.* This document amended the *Work Plan* to address four specific areas of interest which include:

1. Area One: Sandblasting grit on Burlington Northern Santa Fe Railway (BNSF) Land. Sandblast grit sampling and analysis data would be obtained from BNSF and compared to Method A Cleanup Levels (*Cleanup Levels*).
2. Area Two: Paved area with building. A catch basin would be sampled and analyzed in accordance with the *Work Plan* and the analytical results would be compared to the *Cleanup Levels*. Groundwater samples would be collected from existing monitoring wells and analyzed for solvents.
3. Area Three: Wastewater ditch. The need for additional work in the wastewater ditch will be evaluated based upon the analytical results for the sandblast grit waste.
4. Area Four: Land south of the building. Sandblast grit waste would be located and sampled. Analytical results would be compared to the Cleanup Levels. If the analytical results indicate the waste required remediation, the material would be transported to a landfill or hazardous waste facility, depending on classification of the waste. If the waste volume was determined to be less than 3 cubic yards, three samples would be collected. If the quantity exceeded 35 cubic yards, five to seven samples would be collected.

2.3.2 Amendment 2 to the Work Plan

TES produced the *Amendment 2 to the Work Plan, August 12, 2004*. This document identifies sampling areas, analytes and laboratory methods according to the following table taken from this amendment:

Table 1. Amendment 2 Sampling Areas, Analytes & Laboratory Methods.

Area	Description	Analyte	Method
One	Sand Blasting Grit on BNSP Land	Total Chrome	6010 B
		Cr +6	Extraction ASA Mono 9, 20 - 4.3
		Cr +3	Calculated from Total and Cr +6
		Pb	6010 B
Two	Catch Basin	Solvents	EPA 8260
		Total Chrome	6010 B
		Cr +6	Extraction ASA Mono 9, 20 - 4.3
		Cr +3	Calculated from Total and Cr +6
		Pb	6010 B
Three	Wastewater Ditch	None	
Four	Owens Land South of Building Sand Blasting Grit	Total Chrome	6010 B
		Cr +6	Extraction ASA Mono 9, 20 - 4.3
		Cr +3	Calculated from Total and Cr +6
		Pb	6010 B

2.4 Additional Requirements for Comet Trailer Facility

Area Five: During performance of *Work Plan* sampling activities during August 2004, TES discovered free petroleum product in a groundwater monitoring well located southwest of the building[38]. For the purposes of this document, Sage designated this area of soil and groundwater contamination as "Area 5".

Upon learning of the discovery, the DOE issued a letter requiring that further investigation be performed to address groundwater contamination discovered during sampling activities[29]. The letter indicated that "the petroleum release must be addressed independently and this requires one of the following to occur: either an amendment can be made to the Agreed Order or a new Agreed Order can be drafted" and "the document must be finalized before work is to be conducted".

Since the Agreed Order had not been amended, nor had a new Agreed Order been drafted, Sage requested permission from the DOE to "perform soil remediation *as soon as possible* without amending the existing Agreed Order" on December 1, 2009[15]. Sage obtained permission from the DOE to perform soil remediation, without amending the existing Agreed Order, on December 7, 2009[30].

3.0 Previous Remedial Investigation Activities

3.1 Area One: Sandblasting Grit on B.N.S.F. Land

In accordance with the amended Work Plan, Sandblast grit sampling and analysis data was obtained from BNSF[1]. Sampling was performed by GeoEngineers, Inc. of Tacoma, WA. This document identifies five sampling locations in each of two areas (Grit Pile #1 and Grit Pile #2 on the *Site Plan* map). GeoEngineers submitted the samples to North Creek Analytical, Inc. of Bothell, WA for RCRA metals. The analytical results are summarized in Table 2.

Table 2. NCA Analytical Results for Area One Sandblast Grit Samples

Location	Sample ID	Cr (mg/Kg)	As (mg/Kg)	Se (mg/Kg)	Ag (mg/Kg)	Cd (mg/Kg)	Ba (mg/Kg)	Pb (mg/Kg)	Hg (mg/Kg)
Grit Pile #1	SS-01-032003	41.9	3.28	<0.562	<0.500	<0.562	136	12.8	<0.200
	SS-02-032003	42.5	2.50	<0.556	<0.500	<0.556	138	8.84	<0.200
	SS-03-032003	39.8	2.88	<0.625	<0.500	0.724	135	7.98	<0.200
	SS-04-032003	41.2	2.80	<0.575	<0.500	<0.575	137	12.2	<0.200
	SS-05-032003	41.0	2.73	0.668	<0.500	<0.625	142	8.90	<0.200
Grit Pile #2	SS-06-032003	8.74	0.667	<0.568	<0.500	<0.568	19.4	7.37	<0.200
	SS-07-032003	36.2	3.09	<0.595	<0.500	<0.595	100	13.6	<0.200
	SS-08-032003	7.75	0.890	<0.562	<0.500	<0.562	27.3	4.10	<0.200
	SS-09-032003	36.1	3.14	<0.595	<0.500	<0.595	98.1	12.7	<0.200
	SS-10-032003	37.4	2.86	<0.500	<0.500	<0.500	96.1	14.2	<0.200

Red Font indicates that concentration exceeds Method A Cleanup Levels of WAC 173-340-740
Green Font indicates that concentration does not exceed Method A Cleanup Levels of WAC 173-340-740
Orange Font indicates that type of Chromium (III or VI) must be determined to determine Cleanup Level.
Blue Font indicates that Method A Cleanup Levels of WAC 173-340-740 are not established.
Cyan Font indicates values represent soil concentrations that are expected to be protective at any MTCA site and are provided for use in eliminating hazardous substances from further consideration under WAC 173-340-7493 (2)(a)(i)
mg/Kg = parts per million (ppm); µg/L = parts per billion (ppb); NA = Sample not analyzed

As reported in their *Comet Trailer Sampling Results* report[38], TES collected one (1) sample of sandblast grit from the BNSF property. In a table summarizing analytical results for samples collected per the *Work Plan*, TES reported the analytical results for this sandblast grit sample to be:

- Total Chromium at a concentration of 8.19 mg/Kg,
- Chromium VI at a concentration of 0.09 mg/Kg,
- Chromium III at a concentration of 8.1 and
- Total lead at a concentration of 4.81 mg/Kg.

Comparison of the analytical results with the *Method A Soil Cleanup Levels* of WAC 173-340-740 (Cleanup Levels) indicated no Chromium or lead concentrations requiring remedial action.

3.2 Area Two: Paved Area With Building

In accordance with the amended *Work Plan*, TES collected sludge from the Catch Basin located north of the existing building on August 18, 2004. As reported in their *Comet Trailer Sampling Results* report[38], TES reported that analysis of the Catch Basin Sludge sample found:

- Total Chromium at a concentration of 64.2 mg/Kg,
- No detectable (less than 0.08 mg/Kg) Chromium VI,
- Chromium III at a concentration of 64.2,
- Total lead at a concentration of 2.3 mg/Kg and
- No detectable Volatile Organic Compounds (VOC's).

Comparison of the analytical results with the *Cleanup Levels* indicated no remedial action was required at the Catch Basin sampling locations.

TES also collected samples from three (3) groundwater monitoring wells in accordance with the amended *Work Plan*. As reported in their *Comet Trailer Sampling Results* report[38], TES reported that analysis of the groundwater samples found:

- No detectable Volatile Organic Compounds (VOC's),
- Total Chromium at concentrations ranging from less than 0.001 mg/L up to 0.002 mg/L,
- No detectable (less than 0.01 mg/L) Chromium VI,
- No detectable (less than 0.01 mg/L) Chromium III and
- No detectable Petroleum Hydrocarbons (by analytical method HCID).

Comparison of the analytical results with the Cleanup Levels indicated no remedial action was required at the groundwater sampling locations.

3.3 Area Three: Wastewater Ditch

In accordance with the amended Work Plan[36], the Wastewater Ditch was not sampled since analysis of sandblast grit found no contaminants exceeding the *Cleanup Levels*.

3.4 Area Four: Land South of the Building

3.4.1 Sandblast Grit

In accordance with the amended Work Plan[36,37], TES collected two (2) samples from sandblast grit located south of the building on August 18, 2004. As reported in their *Comet Trailer Sampling Results* report[38], analysis of the sandblast grit samples found:

- Total Chromium at concentrations ranging from 5.52 mg/Kg up to 7.86 mg/Kg,
- No detectable (less than 0.08 mg/Kg) Chromium VI,
- Chromium III at concentrations ranging from 5.52 mg/Kg up to 7.86 mg/Kg and
- Total lead at concentrations ranging from 2.08 mg/Kg up to 2.86 mg/Kg.

Comparison of the analytical results with the *Cleanup Levels* indicated no Chromium or lead concentrations requiring remedial action. The letter also stated that Mr. Owens will remove all the sand blast grit encountered during the work and dispose of it at a permitted landfill.

Although the amended *Work Plan* required collection of a minimum of three (3) samples from sandblast grit located south of the building[36], TES only collected two (2) samples from the sandblast grit[38].

Sage met on-site with Mr. Doug Owens to ascertain the location of sandblast grit piles to facilitate collection of the third sample required by the amended *Work Plan*. On June 14, 2012, Sage collected four (4) samples (CT-0112-SND-1 through CT-0112-SND-4) of soil from areas identified as having been previously occupied by sandblast grit piles. These sampling locations are shown by Figure 5. Sage submitted the samples to Friedman & Bruya, Inc. (FBI), Seattle, WA and selected two samples (CT-0112-SND-2 & CT-0112-SND-3) from an area we deemed most likely to have been occupied by sandblast grit pile, to be composited at the FBI laboratory. FBI analysis of the composite sample found:

- Total Chromium at a concentration of 16.1 mg/Kg,
- Total Lead at a concentration of 13.8 mg/Kg and
- No detectable (less than 5 mg/Kg) Chromium VI.

Comparison of the FBI analytical results (Appendix A) with the *Cleanup Levels*[4] found no Chromium or Lead concentrations requiring remedial action.

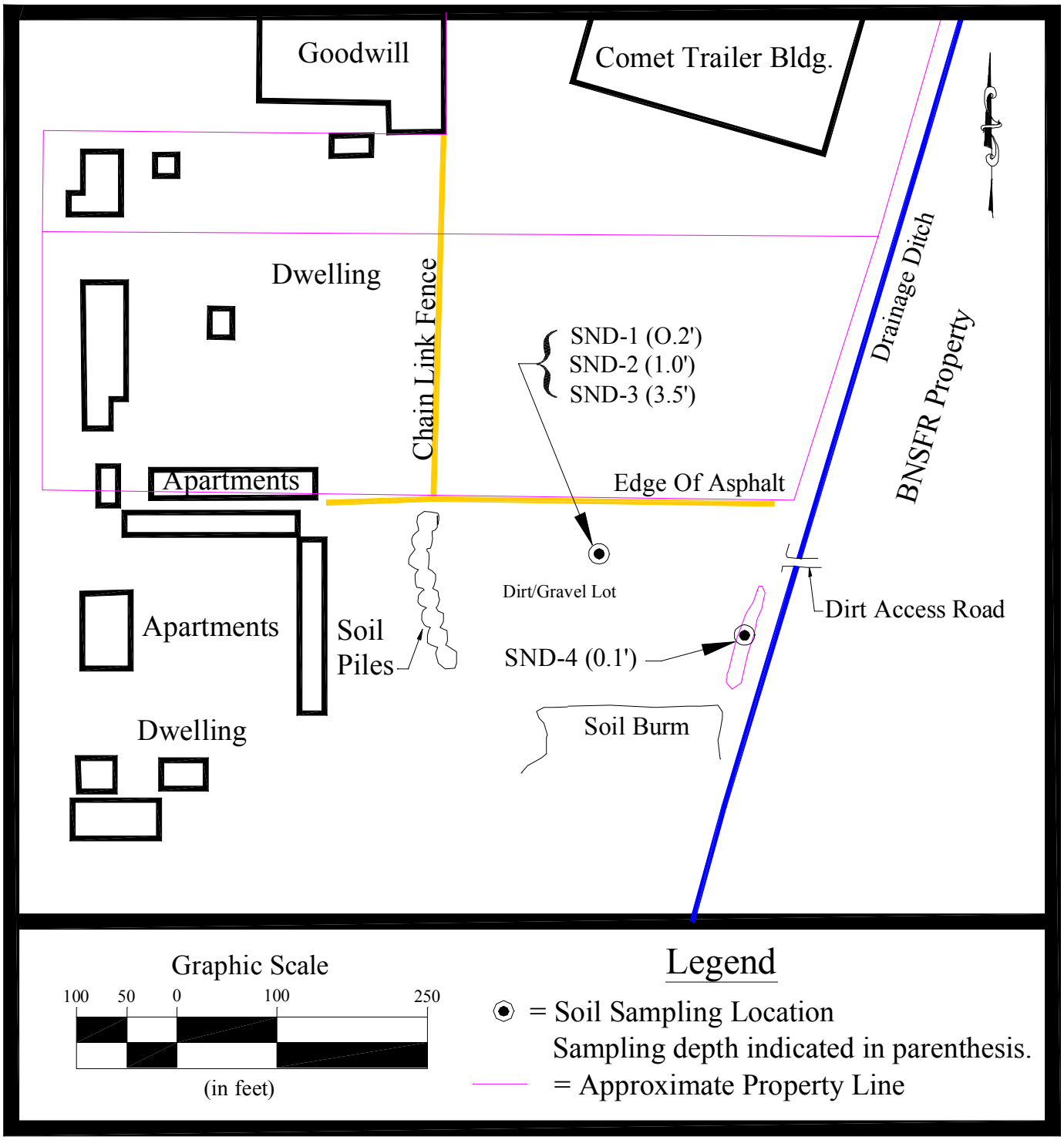


Figure 5. Previous Sandblast Grit Sampling Locations

3.5 Area Five: Petroleum Contaminated Soil & Groundwater

3.5.1 Characterization of Petroleum Hydrocarbon Contamination

Kleinfelder, Inc. (KI) directed installation of five (5) groundwater monitoring wells (MW-1 through MW-5) on the subject site during March of 1995[9]. The wells were installed by Cascade Drilling, Inc. Monitoring well locations are shown by Figure 6.

During sampling activities conducted during August 18, 2004, TES discovered approximately four (4) inches of Diesel #2 floating on groundwater within "Well 1", which hereafter identified within this RI/FS as "MW-3" (KI Well ID # ABZ363).

On October 7, 2004 TES collected a sample of the petroleum and submitted it to CCI Analytical Laboratories, Inc. of Everett, WA for analysis to determine the nature of the product by modified methods NWTPH-Gx and NWTPH-Dx. Based up review of the chromatograms, CCI believed the product to consist of Diesel #2[39].

Mr. Owens retained Sage to conduct limited free product removal and site characterization activities during October of 2005. Mr. Owens informed Sage that the area was historically used as an independent historical bulk heating oil storage location operated by Leonardo Trucking to support retail sale of heating oil. Sage initially removed 15 ounces of Light Non-Aqueous Phase Liquid (LNAPL) from MW-3[10]. Follow-up inspection found 0.02 feet of LNAPL in the well, so Sage inserted an oliophilic/hydrophobic pad into the water table to remove residual LNAPL from the groundwater surface. Five subsequent inspections performed between November 30, 2005 through February 14, 2006 found no measurable quantity of LNAPL in the well.

To characterize the extent petroleum impacted soil and groundwater, Sage installed a total of 29 test pits between November 9, 2005 through January 10, 2006. To determine if remedial action may be required, Sage compared the analytical results to the *Method A Groundwater and Soil Cleanup Levels of WAC 173-340-720 & 740* (Cleanup Levels). Based upon field observations and FBI independent laboratory analyses, the inferred lateral extent of petroleum impacted soil and groundwater was limited to the area shown by Figure 7.

Test pits exhibiting the potential for LNAPL accumulation were allowed to remain open for observation and oliophilic/hydrophobic pads were placed on the groundwater surface to collect and remove any LNAPL present from December 8, 2005 to January 23, 2006, prior to backfilling. Sage used a total of 50 pads during this time period and estimates the total quantity of removed diesel to be less than 25 fluid ounces, including the LNAPL concurrently removed from MW-3.

To confirm the nature of LNAPL present in the well, Sage collected as sample of the material and submitted it to FBI for forensic analysis on July 30, 2008. Analysis by Capillary Gas Chromatography using a Flame Ionization Detector found "a middle distillate such as diesel fuel or heating oil" that had "undergone substantial biological degradation"[11]. Additional analysis indicated that if the product was used as road fuel, it was produced prior to October 1, 1993, when the EPA mandated the limit of sulfur to 0.05 percent.

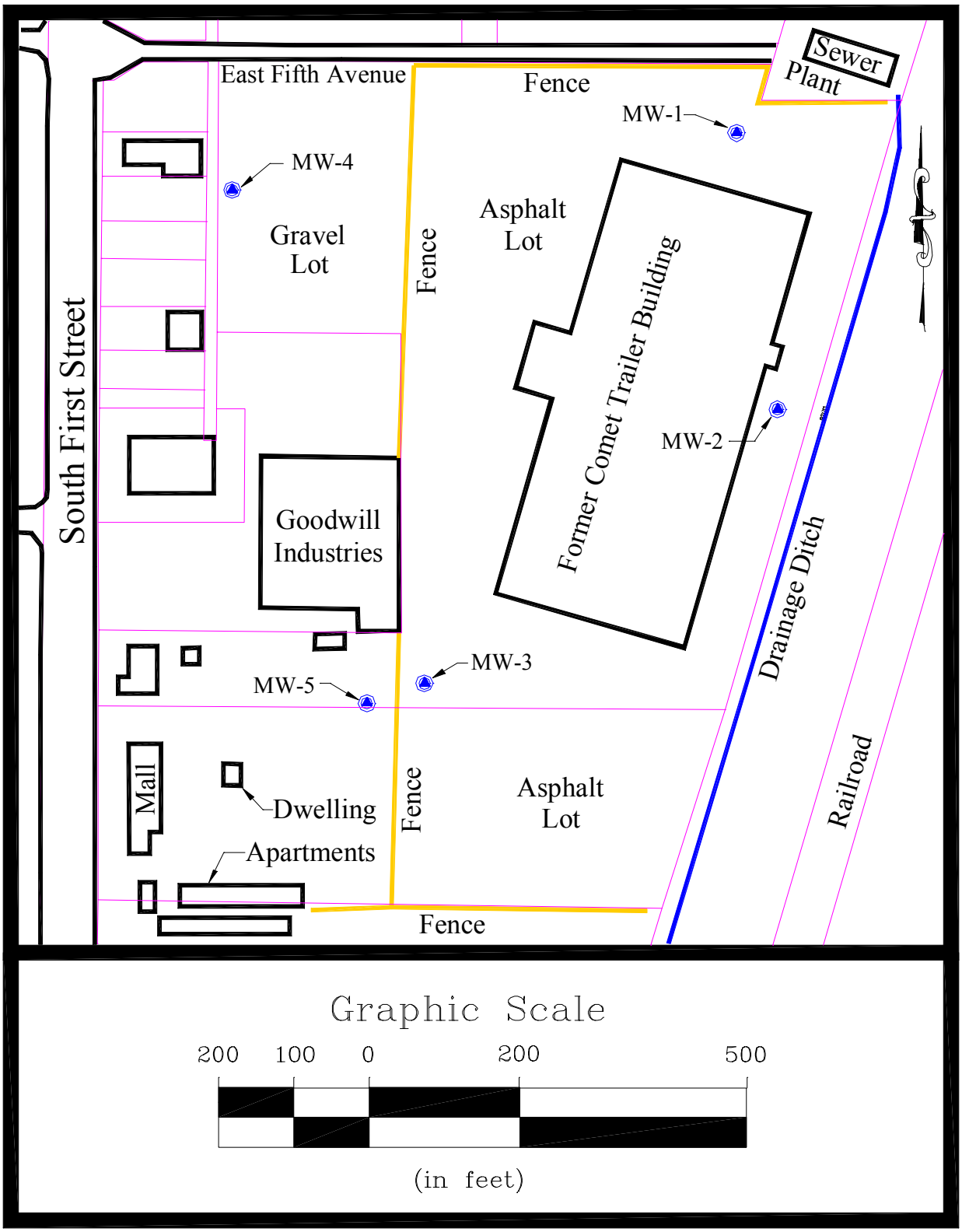


Figure 6. Locations of Initial Groundwater Monitoring Wells

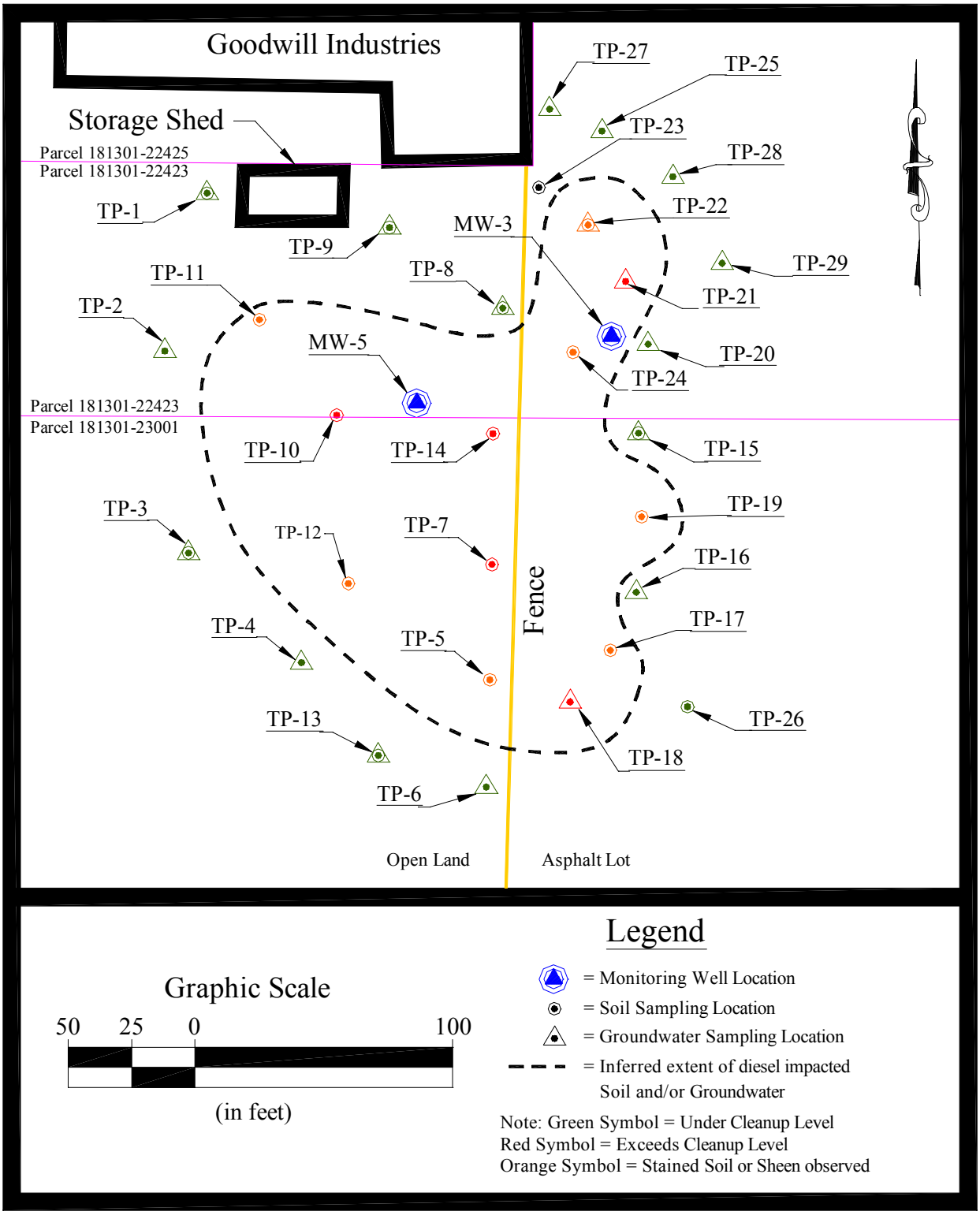
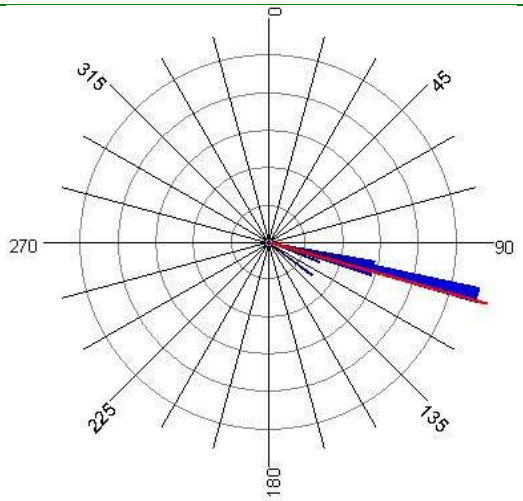


Figure 7. Extent of Petroleum Impacts Inferred from Initial Characterization Activities.

3.5.2 Groundwater Gradient Characterization

Sage periodically checked for the presence of Light Non-Aqueous Phase Liquid (petroleum product), and collected Depth To Water (DTW) measurements, using a Solinst 122 interface probe[10,11,12,13,14]. Using well survey and DTW measurements, Sage calculated the groundwater gradient for each monitoring event. A summary of groundwater flow direction calculations for the immediate vicinity of Area #5 is presented in Table 3. The mean (average) bearing of flow direction was E 16 S, or 106 in the azimuth scale at a gradient of 0.002 ft/ft.

Table 3. Summary of Initial Groundwater Monitoring Flow Direction Data

Date	Calculated Gradient	Rose Diagram of Flow Direction
11/22/05	110	
12/26/05	105	
01/23/06	104	
07/30/08	101	
09/02/08	105	
09/25/08	102	
10/27/08	101	
12/04/08	126	
01/09/09	106	
02/05/09	103	
03/11/09	102	
05/01/09	103	
07/13/09	105	
08/28/09	106	

Note: North = 0º, East = 90º, South = 180º, West = 270º.
Red line in Rose Diagram shows Mean Flow Direction

The water levels appeared to represent the uppermost portion of an unconfined water-bearing unit. In MW-3 the groundwater surface was found to lie at depths ranging from 2.16 to 3.73 feet below top of casing in the well. In MW-5 the groundwater surface was found to lie at depths ranging from 2.64 to 3.73 feet below top of casing in the well. For the area near the plume of diesel contamination, the groundwater was observed to fluctuate up to approximately one and one-half (1.5) feet.

Of note, the observed water table elevation in MW-3 often exceeded the elevation of the top of the well screen in MW-3. Since the water table did not intersect the well screen during the duration of this project, free product measurements were commonly not representative of actual conditions in the vicinity of MW-3.

During the free product removal/ site characterization phase of the project, Sage removed a total of approximately 518 ounces (4 gallons) of petroleum from the groundwater surface.

3.5.3 Soil Remediation Activities

To reduce impacts to groundwater, Comet Trailer chose to excavate accessible diesel impacted soil and temporarily store it on site. Sage formally requested permission from Ecology to perform soil remediation without amending the existing Agreed Order on December 1, 2009[15]. Sage obtained approval from Ecology to initiate soil remediation activities on December 7, 2009[30].

Upon receiving approval from the Department of Ecology, Hi-Point Excavation LLC (HPE) of Yakima excavated approximately 5280 cubic yards of diesel impacted soil on January 2 - February 24, 2010[16]. Approximately 3,000 cubic yards of apparently clean overburden soil was excavated and stockpiled on-site for use as backfill material. HPE transported impacted soil to a temporary storage area, located on the northwestern portion of the property. To facilitate complete removal of impacted soil, MW3 and MW5 were removed completely by excavation.

Sage collected soil samples from within the remedial excavation for field screening and/or laboratory analysis to determine the adequacy of soil remediation activities. Sage submitted twenty-two (22) soil samples and one (1) groundwater sample to Friedman & Bruya, Inc. (FBI), Seattle, WA for independent laboratory analysis to characterize the final remedial excavation. Sage collected twelve (12) samples of the apparently clean overburden for characterization to evaluate its suitability for use as remedial excavation backfill.

FBI analysis of remedial excavation characterization soil samples found no detectable diesel or motor oil range petroleum hydrocarbons. Comparison of the FBI analytical results with the *Method A Soil Cleanup Levels of WAC 173-340-740* indicated that no additional impacted soil removal is required at the release location. However, FBI analysis of the groundwater sample found diesel range petroleum hydrocarbons at a concentration of 52,000 µg/L and motor oil range petroleum hydrocarbons at a concentration of 2,600 µg/L. Comparison of the FBI analytical results with the *Method A Groundwater Cleanup Levels of WAC 173-340-720* indicated that remedial action was required to reduce diesel and motor oil range petroleum hydrocarbons to acceptable concentrations. Analysis of the twelve (12) overburden soil stockpiles found no detectable diesel and/or motor oil range petroleum hydrocarbons. Based upon the FBI analyses, the overburden soil was suitable for use as excavation backfill.

After installing three (3) additional monitoring wells, Sage conducted one year of quarterly groundwater sampling on August 12, 2010[18], November 8, 2010[19], February 15, 2011[20] and May 12, 2011[21]. FBI analysis of the groundwater samples found no diesel and/or motor oil range petroleum hydrocarbons at concentrations exceeding the *Method A Groundwater Cleanup Levels* of WAC 173-340-720 in any of the samples.

Comet Trailer chose to independently treat petroleum impacted soil, generated during soil remediation activities, on the northwestern portion of the property using the "landfarming" method[17]. Sage observed that the impacted soil stockpile has been spread to a thickness of approximately one and one-half (1.5) feet in depth. The client informed Sage that they had aerated the soil using a caterpillar ripper and watered it using a water truck.

To evaluate the adequacy of soil treatment activities, Sage collected seventeen (17) soil samples from soil on the northwestern portion of the property. Sage submitted the samples to Friedman & Bruya, Inc. (FBI) for analysis using method NWTPH-Dx. The FBI analyses found:

- Diesel range petroleum hydrocarbons at concentrations ranging from 450 mg/Kg up to 4,400 mg/Kg and
- No detectable (less than 250 mg/Kg) motor oil range petroleum hydrocarbons.

Treatment of soil was discontinued and the treated soil was transported to the southern portion of the property.

4.0 Current Agreed Order No. DE 1193

Agreed Order No. DE 03 TCPCR-5877 was signed by the late Mr. Bud Owens and was replaced by Agreed Order No. DE 11193, to identify Bud Owens Family Limited Partnership as the Potentially Liable Person (PLP) required to conduct a Remedial Investigation and Feasibility Study for the Comet Trailer Corp Site. Agreed Order No. DE 11193 is included as Appendix B.

5.0 Remedial Investigation

Sage followed the Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) in the *Final Remedial Investigation Work Plan*[23] to ensure sample collection, handling, and analysis would result in data of sufficient quantity and quality to plan and evaluate remedial actions at the site and to ensure proper planning and implementation of sampling activities, as well as to gather sufficient data to facilitate determination of appropriate cleanup levels for the site. Sage personnel licenses and certificates are included as Appendix W.

5.1 AREA ONE: Sandblast Grit on B.N.S.F. Land

Sage inspected Area One for evidence of sandblast grit piles on June 22, 2015. No evidence of sandblast grit was observed. Since stockpiles or residues of sandblast waste materials were not found, the *Work Plan*[23] included collection and analysis of:

- five (5) surface soil samples (CT-0115-S1 through CT-0115-S5) collected randomly from Area One and
- five (5) samples (CT-0115-S6 through CT-0115-S10) collected in the area of the former grit waste pile locations identified by GeoEngineers in 2003[1], which were not sampled at that time.

To determine the random sampling locations, Sage overlaid Area One with a grid as shown by Figure 8. The overlay consisted of 100 grids measuring 25' X 25' each. Sage utilized an internet based random integer generator to generate 10 random numbers which were used to designate sampling locations (See Appendix C). The random numbers were consecutively assigned to unique sample identification numbers, as shown by Table 4. Samples were collected as near to the center of their assigned grid as possible, using portable GPS. Since impacts from previous sandblast grit piles are more likely at the soil surface, the samples were collected from the upper three inches of soil.

As prescribed in the *Work Plan*[23], Sage collected the soil samples on December 16, 2015. The CT-0115-S5 sampling location was chosen randomly as the location to collect a duplicate sample (CT-0115- S11) for Total Lead, Total Chromium and Hexavalent Chromium. The Area One soil sampling locations are shown by Figure 8.

Sage submitted the samples to FBI and Fremont Analytical for independent laboratory analysis. The analytical results are attached as Appendix D. The five (5) samples exhibiting the highest concentration of Chromium (CT-0115-S2, S6, S7, S9 & S10) were analyzed for Hexavalent Chromium. A summary of analytical data for Area One soil samples is presented in Table 4.

Sage used a direct comparison of the laboratory analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] (Appendix E) to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area One.

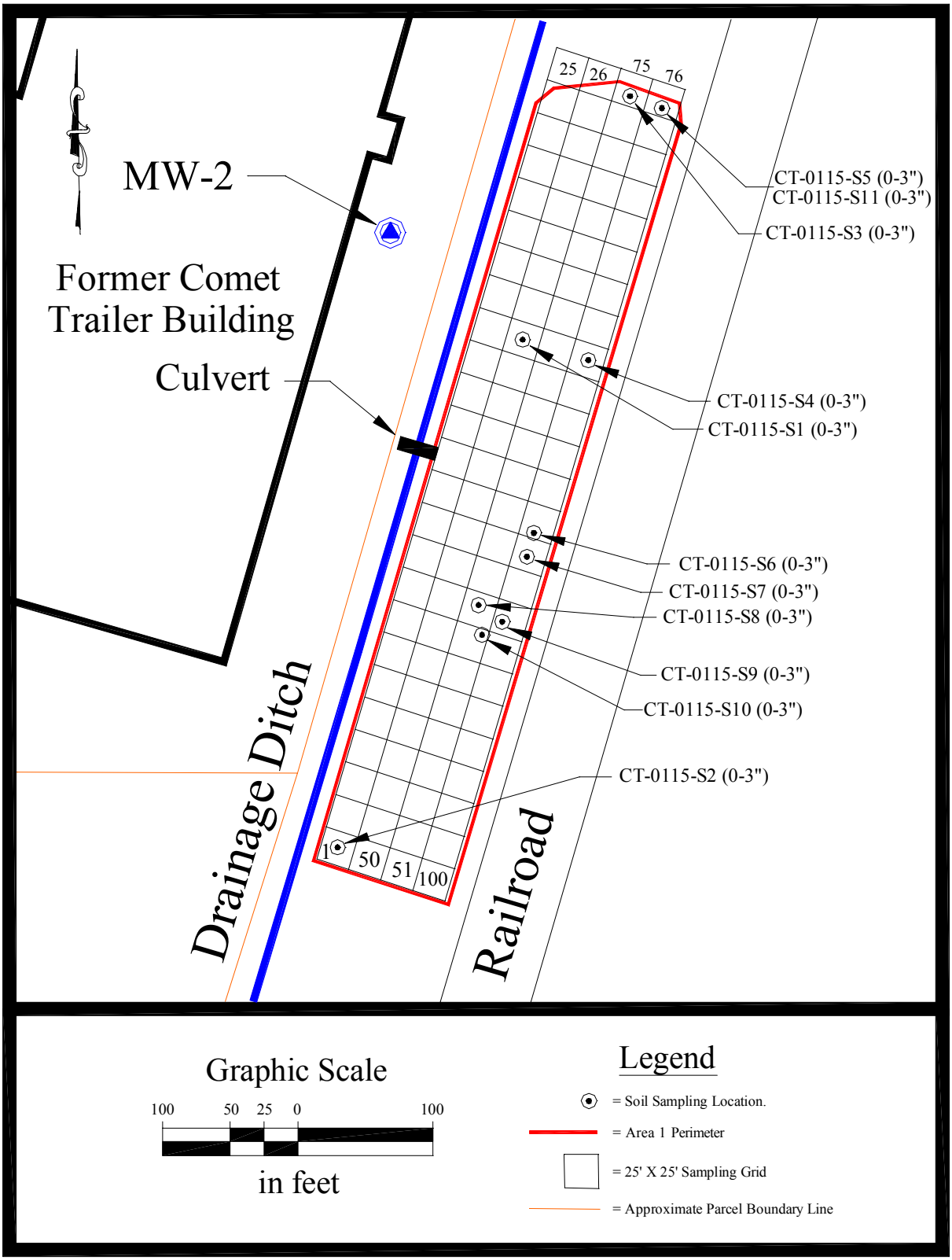


Figure 8. Soil Sampling Locations for Area One.

Table 4. Summary of Analytical Data for Area One Samples					
Sample ID Number	Random Grid Number	Depth (inches)	Total Lead Mg/Kg	Total Chromium Mg/Kg	Hexavalent Chromium Mg/Kg
Method A Soil Cleanup Level			250	2000	19
CT-0115-S1	34	0 to 3	7.82	12.1	--
CT-0115-S2	1	0 to 3	6.95	17.4	<0.637
CT-0115-S3	75	0 to 3	7.54	10.0	--
CT-0115-S4	84	0 to 3	16.5	12.9	--
CT-0115-S5	76	0 to 3	24.4	9.59	<0.652
CT-0115-S6	76	0 to 3	12.7	15.2	<0.671
CT-0115-S7	NA	0 to 3	7.45	15.4	<0.650
CT-0115-S8	NA	0 to 3	8.79	14.5	--
CT-0115-S9	NA	0 to 3	8.60	15.3	<0.697
CT-0115-S10	NA	0 to 3	9.09	15.0	<0.635
CT-0115-S11*	NA	0 to 3	22.8	10.6	<0.650
* Indicates the sample is a duplicate collected at the CT-0115-S5 location analyzed for Total Pb, Total Cr and Hexavalent Chromium. NA= Not Applicable.					

5.2 AREA TWO: Paved Area with Building

Work regarding catch basins and the storm water drainage system at the site was limited to mapping and describing catch basin construction, inspection for indications of piping direction and exploring for an additional outfall into the drainage ditch on the northeast portion of the site. The *Work Plan*[23] did not include sampling of the catch basins.

Sage observed a total of eight (8) catch basins within Area 2 on April 23, 2017. Catch Basin locations (CB-1 through CB-8) are shown by Figure 9. Each catch basin was constructed of concrete walls and floor, measuring approximately twenty (20) inches by twenty-four (24) inches. A steel grate covered each catch basin. Observed piping consisted of PVC. A summary of Catch Basin observations is presented as Table 5. CB-1 through CB-3 appeared to discharge toward Storm Water Discharge #1, an 8 inch PVC pipe located on the northeast portion of the property, as shown by Figure 9. CB-4 through CB-8 appeared to discharge toward Storm Water Discharge #2, a 12 inch PVC pipe located on the southeast portion of the property, as shown by Figure 9.

Table 5. Summary of Catch Basin Observations				
Catch Basin ID	Depth to Bottom (inches)	Depth to Water (inches)	Influent Pipe Size/From Direction	Effluent Pipe Size/Toward Direction
CB-1	37	36	8” WSW	8” E
CB-2	32	31	8” WSW	8” ENE
CB-3	48	33	None	8” ENE
CB-4	44	38	None	12” SE
CB-5	48	37	12” NW	12” SSW
CB-6	44	40	12” NNE & 6” ESE	12” SE
CB-7	26	21	12” NW	12” SE
CB-8	48	37	12” NW	12” SE

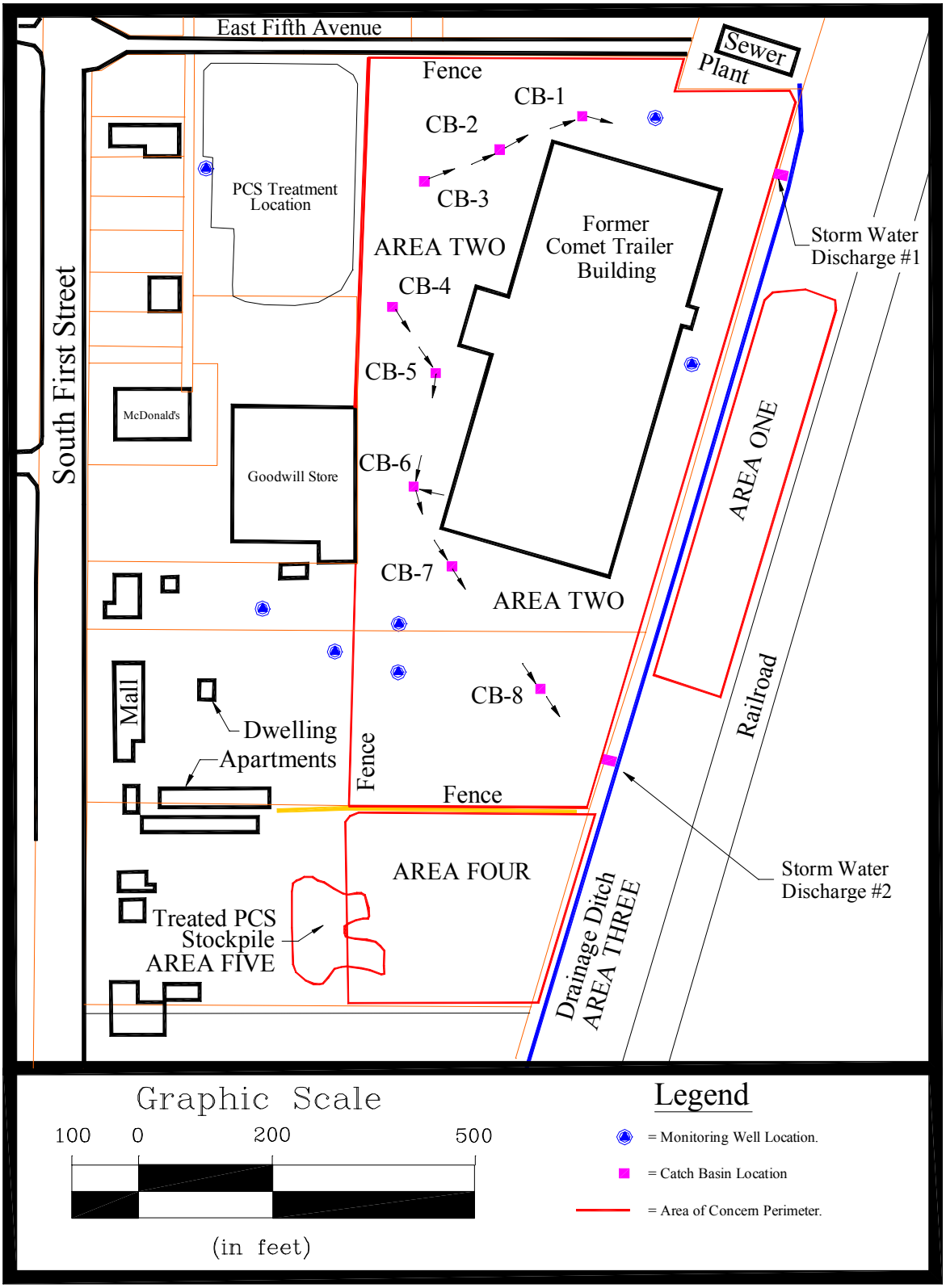


Figure 9. Catch Basin Locations Showing Influent & Effluent Directions

5.3 AREA THREE: Wastewater Ditch

Work regarding the Wastewater Ditch was limited to exploring for an additional outfall into the drainage ditch on the northeast portion of the site. Sage's exploration found one (1) eight inch PVC discharge pipe (Storm Water Discharge #1) at the location shown by Figure 9. The *Work Plan*[23] did not include sampling of the drainage ditch.

5.4 AREA FOUR: Land South of the Building

Sage inspected Area Four for evidence of sandblast grit piles on June 22, 2015. Since stockpiles or residues of sandblast waste materials were not found, the *Work Plan*[23] included collection and analysis of:

- Ten (10) random soil samples (CT-0115-S13 through S17 & S19 through S23) analyzed for Total Lead by Method 200.8,
- Ten (10) random soil samples (CT-0115-S13 through S17 & S19 through S23) analyzed for Total Chromium by Method 200.8,
- Five (5) soil samples, exhibiting the highest concentration of Chromium (CT-0115-S13, S14, S15, S21 & S23), analyzed for Hexavalent Chromium by Method 7196.

To determine random sampling locations, Sage overlaid Area Four with a grid as shown by Figure 10. The overlay consisted of 150 grids measuring 25' X 25' each. Sage utilized an internet based random integer generator to generate 10 random numbers which were used to designate sampling locations (See Appendix C). The random numbers were consecutively assigned to unique sample identification numbers, as shown by Table 6. Samples were collected as near to the center of their assigned grid as possible, using handheld GPS. Since impacts from previous sandblast grit piles are likely at the soil surface, samples were collected from the upper three inches of soil.

As prescribed in the *Work Plan*[23], Sage collected the soil samples on December 16, 2015. The CT-0115-S17 sampling location was chosen randomly as the location to collect a duplicate sample (CT-0115- S18) for Total Lead, Total Chromium and Hexavalent Chromium. The Area Four soil sampling locations are shown by Figure 10.

Sage submitted the samples to FBI and Fremont Analytical for independent laboratory analysis. The analytical results are attached as Appendix D. As mentioned above, the five (5) samples exhibiting the highest concentration of Chromium (S13, S14, S15, S21 & S23) were analyzed for Hexavalent Chromium. A summary of analytical data for Area One soil samples is presented in Table 6.

Sage used a direct comparison of the analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] (Appendix E) to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area Four.

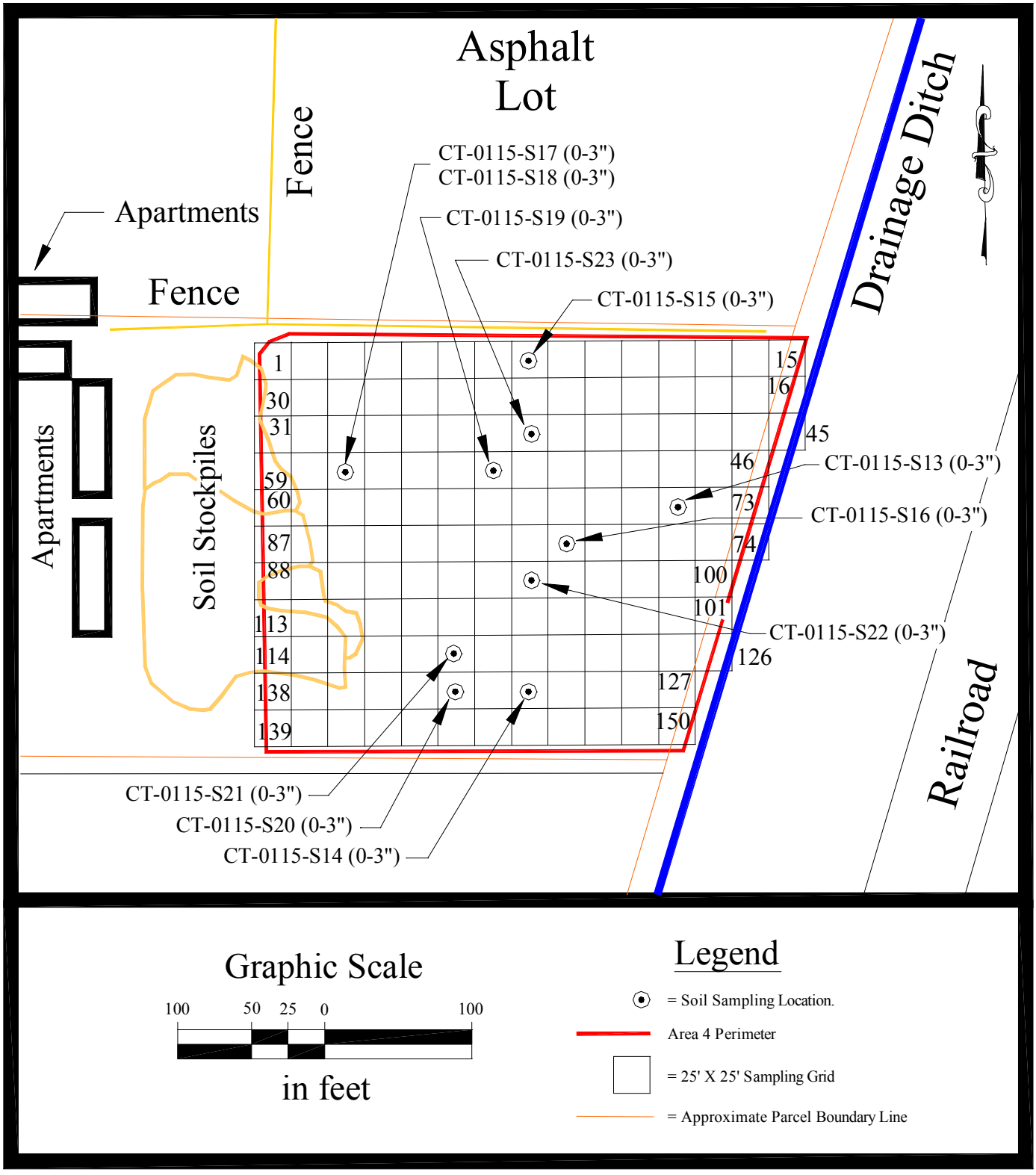


Figure 10. Soil Sampling Locations for Area Four.

Table 6. Summary of Analytical Data for Area Four Samples					
Sample ID Number	Random Grid Number	Depth (inches)	Total Lead Mg/Kg	Total Chromium Mg/Kg	Hexavalent Chromium Mg/Kg
Method A Soil Cleanup Level			250	2000	19
CT-0115-S13	71	0 to 3	11.7	16.1	<0.603
CT-0115-S14	131	0 to 3	7.02	12.2	<0.644
CT-0115-S15	8	0 to 3	14.5	10.9	<0.572
CT-0115-S16	79	0 to 3	11.3	5.54	--
CT-0115-S17	57	0 to 3	27.2	7.17	<0.603
CT-0115-S18*	57	0 to 3	28.5	6.44	<0.600
CT-0115-S19	53	0 to 3	19.0	5.00	--
CT-0115-S20	133	0 to 3	67.2	6.42	--
CT-0115-S21	119	0 to 3	15.8	11.0	<0.634
CT-0115-S22	95	0 to 3	30.4	5.54	--
CT-0115-S23	38	0 to 3	9.70	12.5	<0.563
* Indicates the sample is a duplicate of CT-0115-S17 analyzed for Total Pb, Total Cr and Hexavalent Chromium.					

5.5 AREA FIVE: Petroleum Contaminated Soil & Groundwater

5.5.1 Treated Soil Stockpile

Sage inspected the treated soil stockpile area on June 22, 2015. Sage observed that additional imported material appeared to be added to the site, which consisted of soil including concrete fragments, wood and scrap metal. Imported soil was excluded from sampling activities covered under the scope of work in the *Work Plan*[23]. Sage sketched the perimeter of these materials on an aerial photo, as shown by Figure 11. Although the surface of area is variable (ranging from 0' to 4' thick), due to effects of dumping truck loads adjacent to each other, Sage estimated that the average thickness of treated soil is approximately two feet. Using the field sketch, Sage digitized the perimeter of the treated soil stockpile and calculated the area it occupied to be approximately 14,840 square feet. Sage calculated the estimated volume of soil to be: 14,840 ft^2 X 2 ft = 29,680 ft^3. Converting cubic feet to cubic yards: 29,680 ft^3 X (1 yd^3/27 ft^3) = 1,099 yds^3.

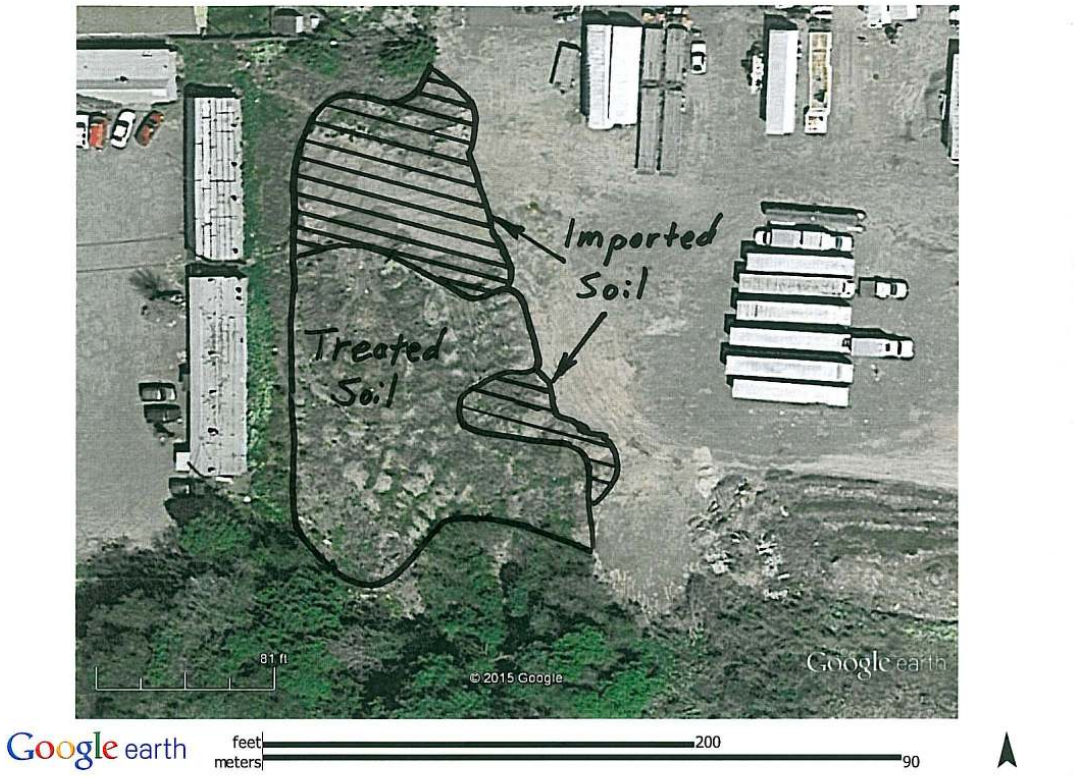


Figure 11. Treated Soil Stockpile Area observed on June 22, 2015.

The *Work Plan*[23] required determination of twenty (20) random sampling locations. To determine random sampling locations, Sage overlaid the Area Five Stockpile of Treated PCS with a grid as shown by Figure 12. The overlay consisted of 153 grids measuring 10' X 10' each. Sage utilized an internet based random integer generator to generate 20 random numbers which were used to designate sampling locations (See Appendix C). The random numbers were consecutively assigned to unique sample identification numbers, as shown by Table 7.

Since selected samples will be analyzed for BTEX, the upper six inches of soil will be excluded from sampling. To determine sampling depths, the thickness of the soil stockpile beneath the upper six inches will be estimated in the field, during sampling activities, and the sampling depth will be calculated using the following equation:

Sample Depth = 6 inches + (Estimated Thickness – 6 inches)(0.n)

To determine "n", Sage utilized the internet based random integer generator to generate 20 random numbers (see Appendix C), ranging from 1 to 9 which were consecutively assigned to unique sample identification numbers, as shown by Table 7. The calculated sampling depth is also included in Table 9.

The CT-0115-SP34 sampling location was chosen to collect field duplicate sample CT-0115-SP35 and the CT-0115-SP45 sampling location was chosen to collect field duplicate sample CT-0115-SP46.

On December 15, 2015, Sage collected twenty-two (22) soil samples (CT-0115-SP25 through SP46) at the locations shown by Figure 12. Samples were collected as near to the center of their assigned grid as possible, using handheld GPS, in accordance with the *Work Plan*[23].

Sage submitted the samples to FBI for laboratory analysis. Initially, all samples were analyzed using NWTPH-Dx. Three (3) of the samples (CT-0115-SP28, SP41 &SP44) exhibited diesel range petroleum hydrocarbons at concentrations ranging from 92 ppm up to 200 ppm. The analytical data reports are included as Appendix F. The analytical results are summarized in Table 7. Based upon the NWTPH analysis results, samples were selected for additional analysis as follows:

- Five (5) soil samples (CT-0115-SP28, SP31, SP37, SP 41 & SP44) were analyzed for BTEX by Method 8021B and
- Five (5) soil samples (CT-0115-SP28, SP31, SP37, SP41 & SP44) were analyzed for CPAH's (including naphthalene) by Method 8270D SIM.

Since the analyses found only low concentrations of diesel range petroleum hydrocarbons in the three samples mentioned above, Extractable Petroleum Hydrocarbons (EPH) analysis was determined to be unnecessary and written approval was obtained from Ecology to forego the analyses[31] prescribed in the *Work Plan*[23]. The FBI data reports for the additional analyses are included in Appendix F. The additional results are summarized by Table 8. Very low concentrations of CPAH's were detected in only one sample (CT-0115-SP37).

To evaluate the adequacy of treatment, Sage used a direct comparison of the analytical results with the *Method A Soil Cleanup Levels of WAC-173-340-740* (Cleanup Levels) and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42]. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no additional remediation is required for the Area Five treated soil stockpile.

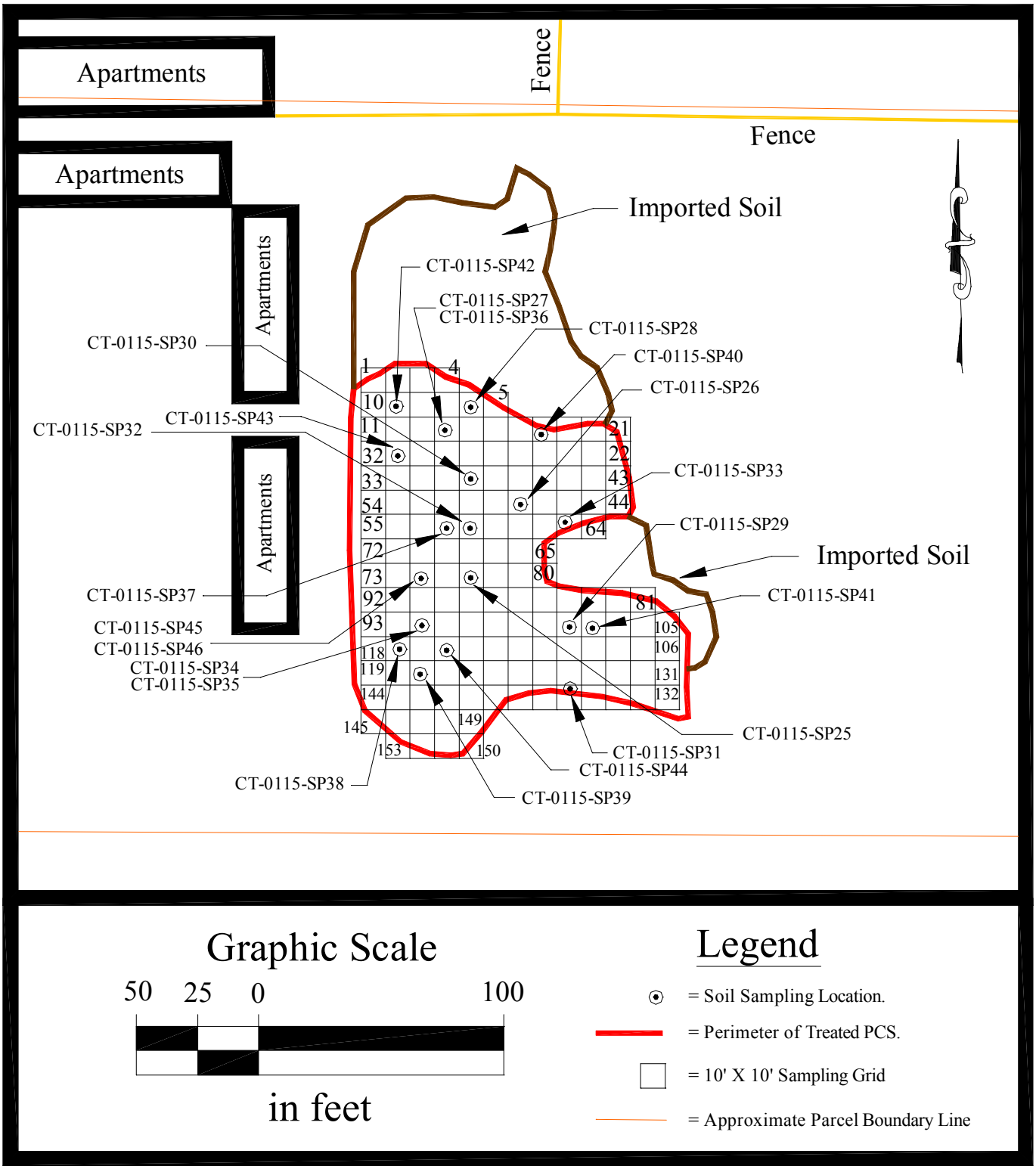


Figure 12. Sampling Locations for the Stockpile of Treated PCS.

Table 7. Summary of Sampling & NWTPH-Dx Analyses for Area Five – Treated PCS

Sample ID Number	Random Grid Number	Value of "n"	Estimated Stockpile Depth (ft.)	Calculated Sampling Depth (inches)	Diesel Range Hydrocarbons (ppm)	Motor Oil Range Hydrocarbons (ppm)
Method A Soil Cleanup Level					2000	2000
CT-0115-SP25	77	2	1.0	7.2	<50	<250
CT-0115-SP26	48	2	2.0	9.6	<50	<250
CT-0115-SP27	14	3	1.0	8.4	<50	<250
CT-0115-SP28	6	5	5.0	33	200	<250
CT-0115-SP29	101	3	3.0	15	<50	<250
CT-0115-SP30	37	2	3.0	12	<50	<250
CT-0115-SP31	136	6	3.0	24	<50	<250
CT-0115-SP32	59	3	3.0	15	<50	<250
CT-0115-SP33	63	1	3.5	9.6	<50	<250
CT-0115-SP34	95	6	2.0	16.8	<50	<250
CT-0115-SP35*	95	6	2.0	16.8	<50	<250
CT-0115-SP36	14	2	1.0	7.2	<50	<250
CT-0115-SP37	58	7	2.5	22.8	<50	<250
CT-0115-SP38	117	9	0.7	7.8	<50	<250
CT-0115-SP39	121	7	1.5	14.4	<50	<250
CT-0115-SP40	18	8	2.5	25.2	<50	<250
CT-0115-SP41	102	5	3.5	24	92	<250
CT-0115-SP42	9	5	1.5	12	<50	<250
CT-0115-SP43	31	8	1.5	15.6	<50	<250
CT-0115-SP44	115	2	2.5	10.8	150	<250
CT-0115-SP45	75	5	3.0	21	<50	<250
CT-0115-SP46*	75	5	3.0	21	<50	<250

* indicates the sample is a field duplicate of the previous sample.
ppm = parts per million or mg/Kg.

Table 8. Summary of Additional Analyses for Area Five – Treated PCS

Compound:	SP28 (ppm)	SP31 (ppm)	SP37 (ppm)	SP41 (ppm)	SP44 (ppm)	Cleanup Level (ppm)
Benzene	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
Toluene	<0.02	<0.02	<0.02	<0.02	<0.02	7
Ethylbenzene	<0.02	<0.02	<0.02	<0.02	<0.02	6
Total Xylenes	<0.06	<0.06	<0.06	<0.06	<0.06	9
Naphthalene	<0.01	<0.01	<0.01	<0.01	<0.01	5
Acenaphthylene	<0.01	<0.01	<0.01	<0.01	<0.01	NA
Acenaphthene	<0.01	<0.01	<0.01	<0.01	<0.01	9.79E+01
Fluorene	<0.01	<0.01	<0.01	<0.01	<0.01	1.01E+02
Phenanthrene	<0.01	<0.01	0.02	<0.01	<0.01	NA
Anthracene	<0.01	<0.01	0.01	<0.01	<0.01	2.27E+03
Fluoranthene	<0.01	<0.01	0.083	<0.01	<0.01	6.31E+02
Pyrene	<0.01	<0.01	0.098	<0.01	<0.01	6.55E+02
Benz(a)anthracene	<0.01	<0.01	0.042	<0.01	<0.01	8.58E-01
Chrysene	<0.01	<0.01	0.084	<0.01	<0.01	9.55E+01
Benzo(a)pyrene	<0.01	<0.01	0.054	<0.01	<0.01	2.33E+00
Benzo(b)flouranthene	<0.01	<0.01	0.15	<0.01	<0.01	2.95E+00
Benzo(k)flouranthene	<0.01	<0.01	0.035	<0.01	<0.01	2.95E+01
Indeno(1,2,3-cd)pyrene	<0.01	<0.01	0.055	<0.01	<0.01	8.32E+00
Dibenz(a,h)anthracene	<0.01	<0.01	0.012	<0.01	<0.01	4.29E-01
Benzo(g,h,i) perylene	<0.01	<0.01	0.051	<0.01	<0.01	NA

Note Sample ID preceded with "CT-0115-" in this report.
NA = Not Available in *CLARC, Soil – Method B and Method A)*[42]., ppm = ppm = parts per million or mg/Kg.

5.5.2 Installation of an Additional Groundwater Monitoring Well

Construction of additional groundwater monitoring wells was limited to one (1) well (MW-9), installed within the perimeter of the petroleum remediation excavation perimeter, at the location shown by Figure 13. The purpose of the additional groundwater monitoring well installation was to:

- evaluate soil conditions remaining at the floor of the former remedial excavation and
- expand the capture zone of potential groundwater contaminants potentially remaining in groundwater.

The well was installed on November 9, 2015 in accordance with the *Minimum Standards for Construction and Maintenance of Wells,* Chapter 173-160 WAC[2]. Drilling tools were steam cleaned before drilling operations commenced. The new 2-inch PVC monitoring well (MW #9) was installed using an 8" hollow stem auger, to a depth of 12.7 feet. Ten feet of 10-slot threaded PVS screen (0.010 inch openings) with a PVC well cap was installed in the annulus at depths between 2.5 and 12.5 feet BGS. The annulus was filled with 10 X 20 silica sand filter pack at depths between 1.5 and 12.5 feet BGS. Bentonite chip sealant was used to fill the annulus at depths between 1.0 feet and 1.5 feet BGS. An above ground steel monument was set in a one foot thick concrete base which was placed directly atop the bentonite seal. A locking well cap was installed atop the PVC casing, and a lock placed on the monument. Drill cuttings were placed in a barrel pending receipt of analytical results of a soil sample collected during the drilling process. Sage's *Drilling Report* documents well construction and stratigraphy and is attached as Appendix G.

Sage developed the well using a new disposable bailer in conjunction with a peristaltic pump to surge the well contents and purge suspended sediment from the well. The well was developed until visible suspended sediment was nearly absent. Approximately 75 gallons of water was removed during well development activities on November 10-11, 2015. Well development purge water was placed in a 55-gallon drum for temporary storage, pending results of analyses of groundwater samples subsequently collected from the well. Disposal of drill cuttings and water purged during well development and well purging activities is discussed in Section 5.6 of this report.

5.5.3 Evaluation of Soil within Remedial Excavation Perimeter

During MW-9 drilling activities discussed above, one (1) soil sample (CT-0115-SB47) was collected at a depth ranging from 5.5 to 7.0 BGS using a split barrel sampler in accordance with the *Work Plan*[23]. The soil sampling location is shown by Figure 13. The soil sample was submitted to FBI for the following analytical laboratory methods:

- Diesel and Heavy Oil Range Organics by NWTPH-Dx,
- BTEX by Method 8021B,
- CPAH's (including naphthalene) by Method 8270D SIM

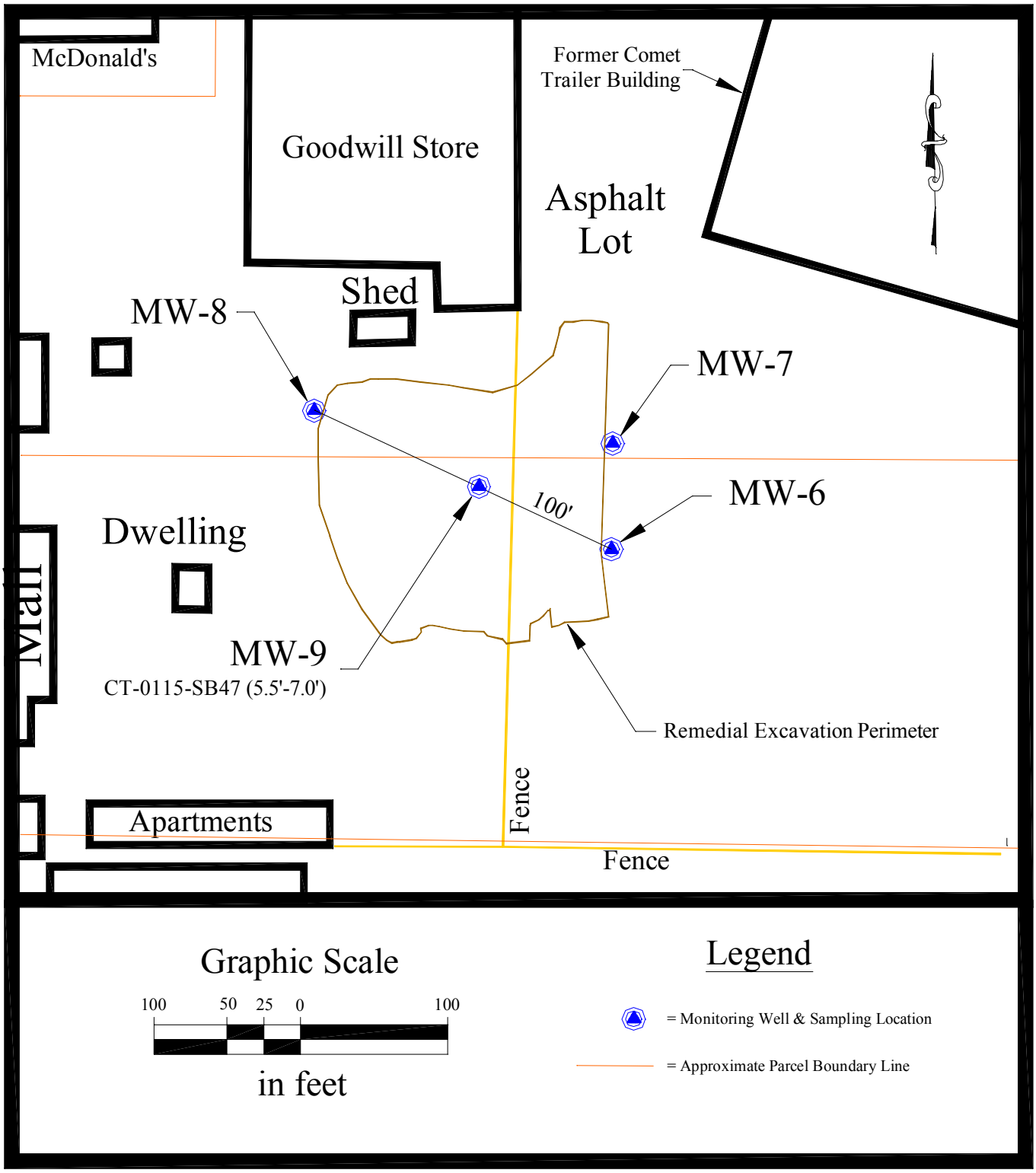


Figure 13. MW-9 Installation & CT-0115-SB47 Sampling Location

The FBI analytical data report is included as Appendix H and summarized by Table 9. Direct comparison of the analytical results with the *Method A Soil Cleanup Levels of WAC-173-340-740* (Cleanup Levels) and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no additional remediation is required within the Area Five remedial excavation.

Table 9. Summary of CT-0115-SB47 Analytical Results

Compound:	SB47 (ppm)	Cleanup Level (ppm)
Diesel Range Petroleum Hydrocarbons	170	2,000
Motor Oil Range Petroleum Hydrocarbons	<250	2,000
Benzene	<0.02	0.03
Toluene	<0.02	7
Ethylbenzene	<0.02	6
Total Xylenes	<0.06	9
Naphthalene	<0.01	5
Acenaphthylene	<0.01	NA
Acenaphthene	<0.01	9.79E+01
Fluorene	<0.01	1.01E+02
Phenanthrene	<0.01	NA
Anthracene	<0.01	2.27E+03
Fluoranthene	<0.01	6.31E+02
Pyrene	<0.01	6.55E+02
Benz(a)anthracene	<0.01	8.58E-01
Chrysene	<0.01	9.55E+01
Benzo(a)pyrene	<0.01	2.33E+00
Benzo(b)flouranthene	<0.01	2.95E+00
Benzo(k)flouranthene	<0.01	2.95E+01
Indeno(1,2,3-cd)pyrene	<0.01	8.32E+00
Dibenz(a,h)anthracene	<0.01	4.29E-01
Benzo(g,h,i) perylene	<0.01	NA

Note: Sample ID preceded with "CT-0115-" in this report.
NA = Not Available in *CLARC, Soil – Method B and Method A)*[42]
ppm = parts per million or mg/Kg.

5.5.4 Groundwater Monitoring Program

Sage performed groundwater monitoring activities for six (6) consecutive quarterly sampling events at Area 5 wells (MW-6 through MW #9) located in the immediate vicinity of the petroleum remediation excavation location[22]. Quarterly groundwater monitoring activities were performed on 11/17/15, 02/22/16, 05/23/16, 08/22/16, 11/15/16 and 02/20/17. Groundwater sampling locations are shown by Figures 14 through 20, respectively (see Pages 38 through 44). Water level measurements, well purging and groundwater sampling activities were performed in accordance with the *Work Plan*[23]. Disposal of water purged during sampling activities is discussed in Section 5.6 of this report. Sage observed no Light Non-Aqueous Phase Liquid (LNAPL) in any of the wells during field activities.

5.5.4.1 Groundwater Sample Analyses

Groundwater samples from each well were submitted to FBI for analysis using the following methods:

- Diesel and Heavy Oil Range Organics by NWTPH-Dx,
- BTEX by Method 8021B,
- CPAH's (including naphthalene) by Method 8270D SIM

QA/QC samples for each sampling event were limited to:

- One field duplicate analyzed for Diesel and Heavy Oil Range Organics by NWTPH-Dx,
- One field duplicate analyzed for BTEX by Method 8021B and
- One field duplicate analyzed for CPAH's (including naphthalene) by Method 8270D SIM
- One travel blank analyzed for BTEX by Method 8021B (if detected in any sample).

Field duplicate sampling locations were rotated consecutively for each quarterly sampling event for the first four quarters. However, since petroleum hydrocarbons were only found in MW-9 during the first four (4) quarters, duplicate samples were limited to the MW-9 sampling location during the fifth and sixth quarters.

A summary of sampling and analytical information is presented by Table 10. Sampling locations are shown by Figure 14 through 20. First quarter Field Sampling Documentation is included as Appendix I. FBI analytical data reports for first quarter samples are included as Appendix J. Second quarter Field Sampling Documentation is included as Appendix K. FBI analytical data reports for first quarter samples are included as Appendix L. Third quarter Field Sampling Documentation is included as Appendix M. FBI analytical data reports for first quarter samples are included as Appendix N. Fourth quarter Field Sampling Documentation is included as Appendix O. FBI analytical data reports for fourth quarter samples are included as Appendix P. Fifth quarter Field Sampling Documentation is included as Appendix Q. FBI analytical data reports for fifth quarter samples are included as Appendix R. Sixth quarter Field Sampling Documentation is included as Appendix S. FBI analytical data reports for Sixth quarter samples are included as Appendix T. Seventh event Field Sampling Documentation is included as Appendix U. FBI analytical data reports for the Seventh event samples are included as Appendix V.

Review of the analytical data for project groundwater monitoring samples detected no diesel, heavy oil, BTEX or CPAH's in samples collected from MW6, MW7 or MW8 throughout the course of the project (see Table 10). However, diesel and/or heavy oil was detected in MW9 during the first two quarters of the monitoring program, as well as the sixth quarter. No BTEX or CPAH's were found in MW9 throughout the project. Diesel and motor oil range petroleum hydrocarbon concentrations were found to exceed the *Method A Groundwater Cleanup Levels of WAC 173-340-720* in MW-9 only during the Second Quarter Groundwater Monitoring event (See Table 10). FBI analysis of MW9 samples during the Second Quarter event found:

- Diesel range petroleum hydrocarbons at a concentration of 1,000 µg/L and
- Motor Oil range petroleum hydrocarbons at a concentration of 890 µg/L.

Direct comparison the analytical results (Appendices J, L, N, P, R, T & V) with *Method A Groundwater Cleanup Levels of WAC 173-340-720*[5] indicates we have subsequently obtained over four consecutive quarters of analytical results compliant with these Cleanup Levels.

Table 10. Summary of Analytical Results for Groundwater Monitoring at the Former Comet Trailer Facility

Site Well ID	Quarter	Date	Sample ID	Benzene (ppb)	Toluene (ppb)	Ethyl Benzene (ppb)	Total Xylenes (ppb)	Diesel Range (ppb)	Motor Oil Range (ppb)	Naphthalene (ppb)	Benz(a) anthracene (ppb)	Chrysene (ppb)	Benzo(a) pyrene (ppb)	Benzo(b fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Indeno(1,2,3-cd) pyrene (ppb)	Dibenz(a,h) anthracene (ppb)
		Method A Groundwater Cleanup Level:		5	1000	700	1000	500	500	160	*Method B Groundwater Cleanup Levels* not determined due to consistent lack of target compound detections.						
MW-6	1	11/17/2015	CT-0115-1-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	1	11/17/2015	CT-0115-1-GW10*	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
MW-7	1	11/17/2015	CT-0115-1-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW10**	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
MW-8	1	11/17/2015	CT-0115-1-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW10***	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
MW-9	1	11/17/2015	CT-0115-1-GW9	<1	<1	<1	<3	290	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW9	<1	<1	<1	<3	**1000**	**890**	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW9	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW9	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW10****	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW9	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW10****	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW9	<1	<1	<1	<3	370	280	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW10****	<1	<1	<1	<3	450	420	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	7	09/11/2017	CT-0115-7-GW9	--	--	--	--	<50	<250	--	--	--	--	--	--	--	--
	7	09/11/2017	CT-0115-7-GW10****	--	--	--	--	<50	<250	--	--	--	--	--	--	--	--

* = Duplicate sample collected from MW-6
** = Duplicate sample collected from MW-7
*** = Duplicate sample collected from MW-8
**** = Duplicate sample collected from MW-9

5.5.4.2 Groundwater Gradient Monitoring

Upon installation of MW-9, Sage retained Survey Technical Services, Inc. of Prosser, WA to determine horizontal and vertical position of top of casing of groundwater monitoring wells relative to temporary bench mark. As discussed above, Sage checked for the presence of Light Non-Aqueous Phase Liquid (LNAPL), and collected Depth to Water (DTW) measurements, using a Solinst 122 interface probe during each event. No petroleum product was indicated by the interface probe in the groundwater monitoring wells during this project. The water levels appear to represent the uppermost portion of an unconfined water-bearing unit. A summary of groundwater monitoring well data collected during the project is presented in Table 11.

Review of the groundwater data found the groundwater table to be very shallow and the general groundwater flow direction trends from northwest toward southeast (see Figures 14 - 20). However, Sage observed groundwater gradients indicative of groundwater mounding in the area of the previous remedial excavation perimeter during the sampling events of February of 2016 and 2017 (see Figures 15 and 19). This appears to be due to successive heavy winter precipitation in the valley areas and we experienced extremely muddy conditions during these sampling events due to high runoff. It is during these groundwater mounding events that diesel and motor oil range petroleum hydrocarbon concentration levels appeared to be at their highest.

On November 17, 2015, the groundwater surface was found to lie at depths ranging from 5.42 to 7.61 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.009 ft/ft from the northeast to the southwest, bearing between N 138° E and N 152° E respectfully, as shown by Figure 14.

On February 22, 2016, the groundwater surface was found to lie at depths ranging from 5.04 to 7.28 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.018 ft/ft, bearing between N 12° E in the northern portion of the remedial excavation, to 0.017 ft/ft bearing N 123° E in the southern portion of the remedial excavation, as shown by Figure 15.

On May 23, 2016, the groundwater surface was found to lie at depths ranging from 5.37 to 7.56 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.009 ft/ft from the northeast to the southwest, bearing between N 138° E and N 152° E respectfully, as shown by Figure 16.

On August 22, 2016, the groundwater surface was found to lie at depths ranging from 5.56 to 7.81 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.009 ft/ft from the northeast to the southwest, bearing between N 144° E and N 154° E respectfully, as shown by Figure 17.

On November 15, 2016, the groundwater surface was found to lie at depths ranging from 5.21 to 7.39 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.008 ft/ft from the northeast to the southwest, bearing between N 128° E and N 149° E respectfully, as shown by Figure 18.

On February 20, 2017, the groundwater surface was found to lie at depths ranging from 4.99 to 7.21 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft, bearing between N 48° E in the northern portion of the remedial excavation, to 0.009 ft/ft bearing N 140° E in the southern portion of the remedial excavation, as shown by Figure 19.

On September 11, 2017, the groundwater surface was found to lie at depths ranging from 5.13 to 7.39 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.002 ft/ft, bearing between N 136° E in the northern portion of the remedial excavation, to 0.009 ft/ft bearing N 153° E in the southern portion of the remedial excavation, as shown by Figure 20.

Table 11. Summary of Groundwater Monitoring Well Data at the Former Comet Trailer Facility

Site Well ID	WSDOE ID	Date	Northing (ft)	Easting (ft)	Elevation (ft)	BHD (ft)	Casing Stickup (ft)	Screen TOC (ft)	Screen Base (ft)	DTW (TOC) (ft)	SWL Elevation (ft)
MW-6	BCB696		3412.53	5481.23	101.30	14.7	2.6	4.7	14.7		
		11/17/2015								5.95	95.35
		2/22/2016								5.68	95.62
		5/23/2016								5.91	95.39
		8/22/2016								6.09	95.21
		11/15/2016								5.67	95.63
		2/20/2017								5.46	95.84
		9/11/17								5.67	95.63
MW-7	BCB697		3484.73	5481.95	101.33	14.7	2.5	4.2	14.2		
		11/17/2015								5.42	95.91
		2/22/2016								5.04	96.29
		5/23/2016								5.37	95.96
		8/22/2016								5.56	95.77
		11/15/2016								5.21	96.12
		2/20/2017								4.99	96.34
		9/11/17								5.13	96.20
MW-8	BCB698		3506.79	5278.56	103.96	14.7	2.5	4.4	14.4		
		11/17/2015								7.61	96.35
		2/22/2016								7.28	96.68
		5/23/2016								7.56	96.40
		8/22/2016								7.81	96.15
		11/15/2016								7.39	96.57
		2/20/2017								7.21	96.75
		9/11/17								7.39	96.57
MW-9	BIZ231		3448.12	5389.06	102.56	14.7	2.7	5.2	12.5		
		11/17/2015								6.55	96.01
		2/22/2016								5.24	97.32
		5/23/2016								6.50	96.06
		8/22/2016								6.72	95.84
		11/15/2016								6.31	96.25
		2/20/2017								5.94	96.62
		9/11/17								6.27	96.29

Note: Measurements relative to Temporary Bench Mark

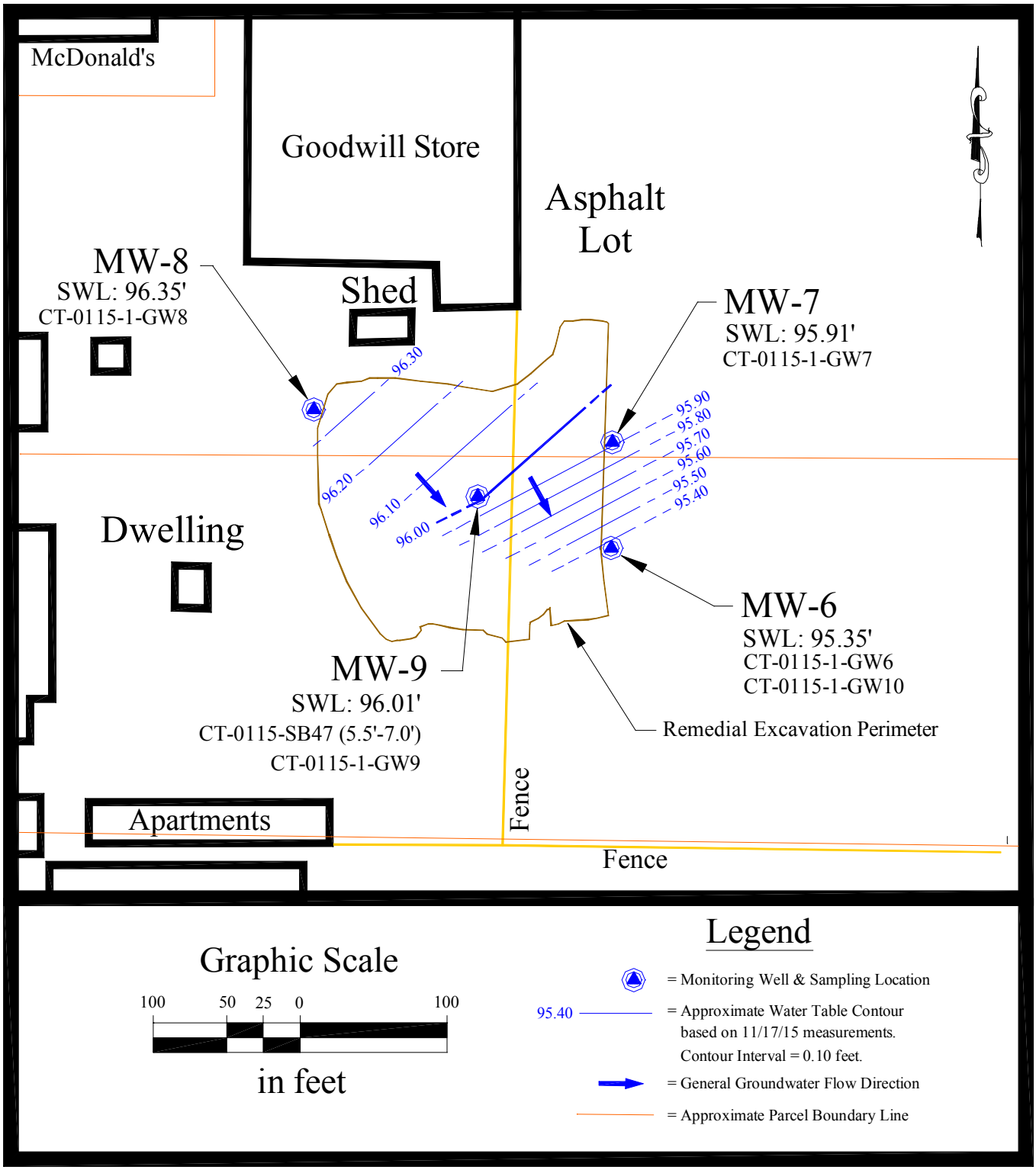


Figure 14. Groundwater Sampling Locations and Groundwater Gradient on 11/17/15

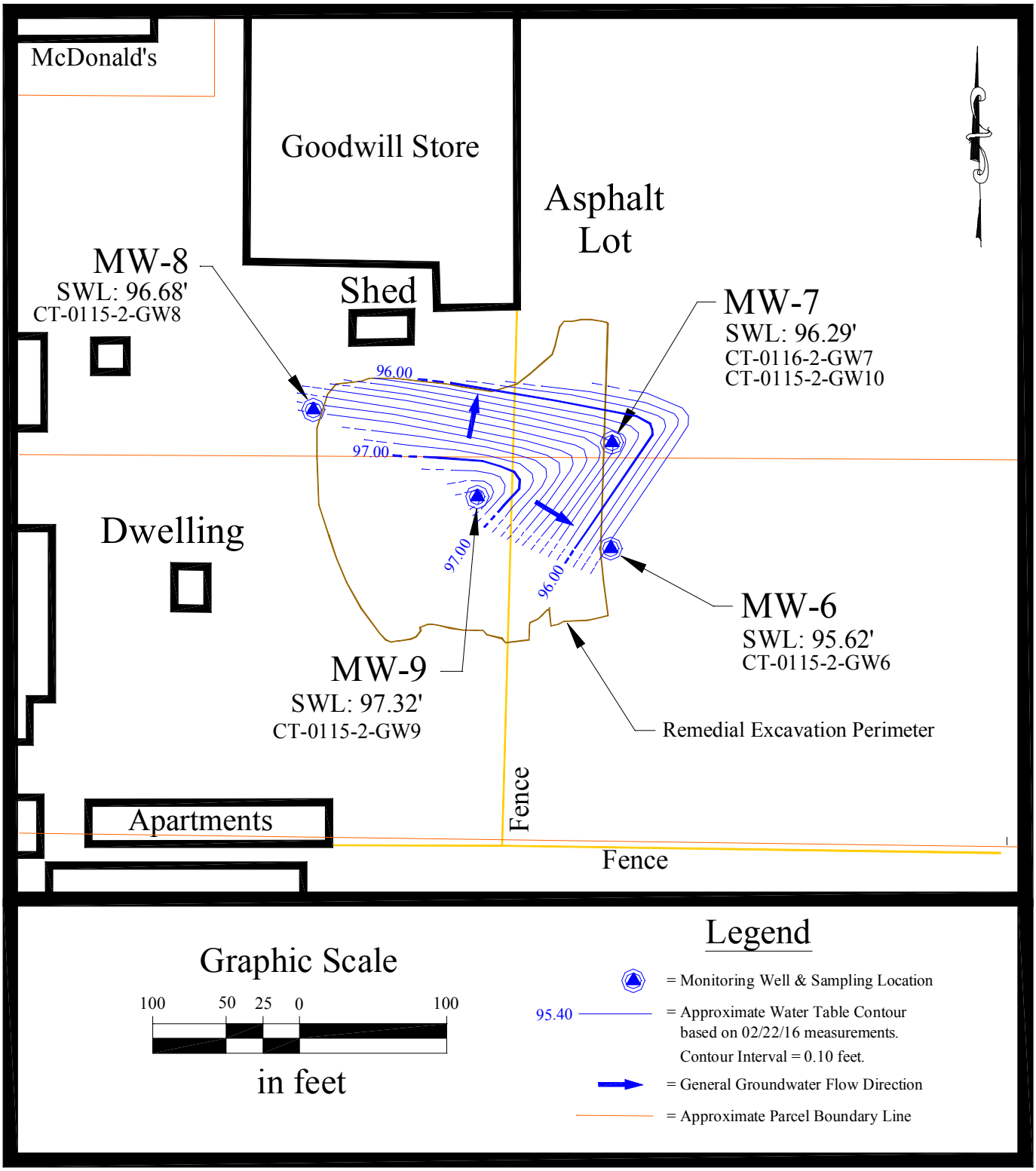


Figure 15. Groundwater Sampling Locations and Groundwater Gradient on 02/22/16

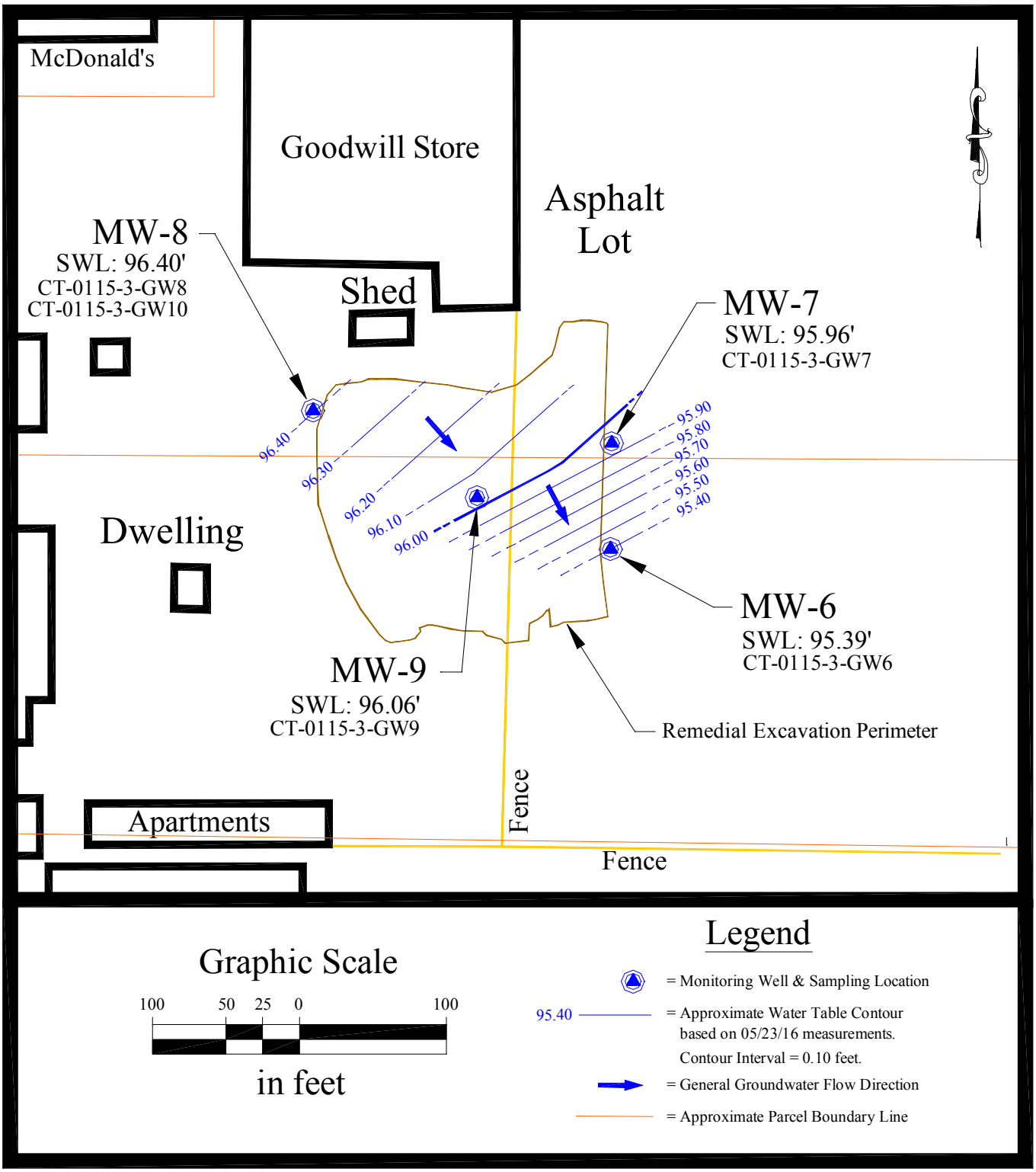


Figure 16. Groundwater Sampling Locations and Groundwater Gradient on 05/23/16

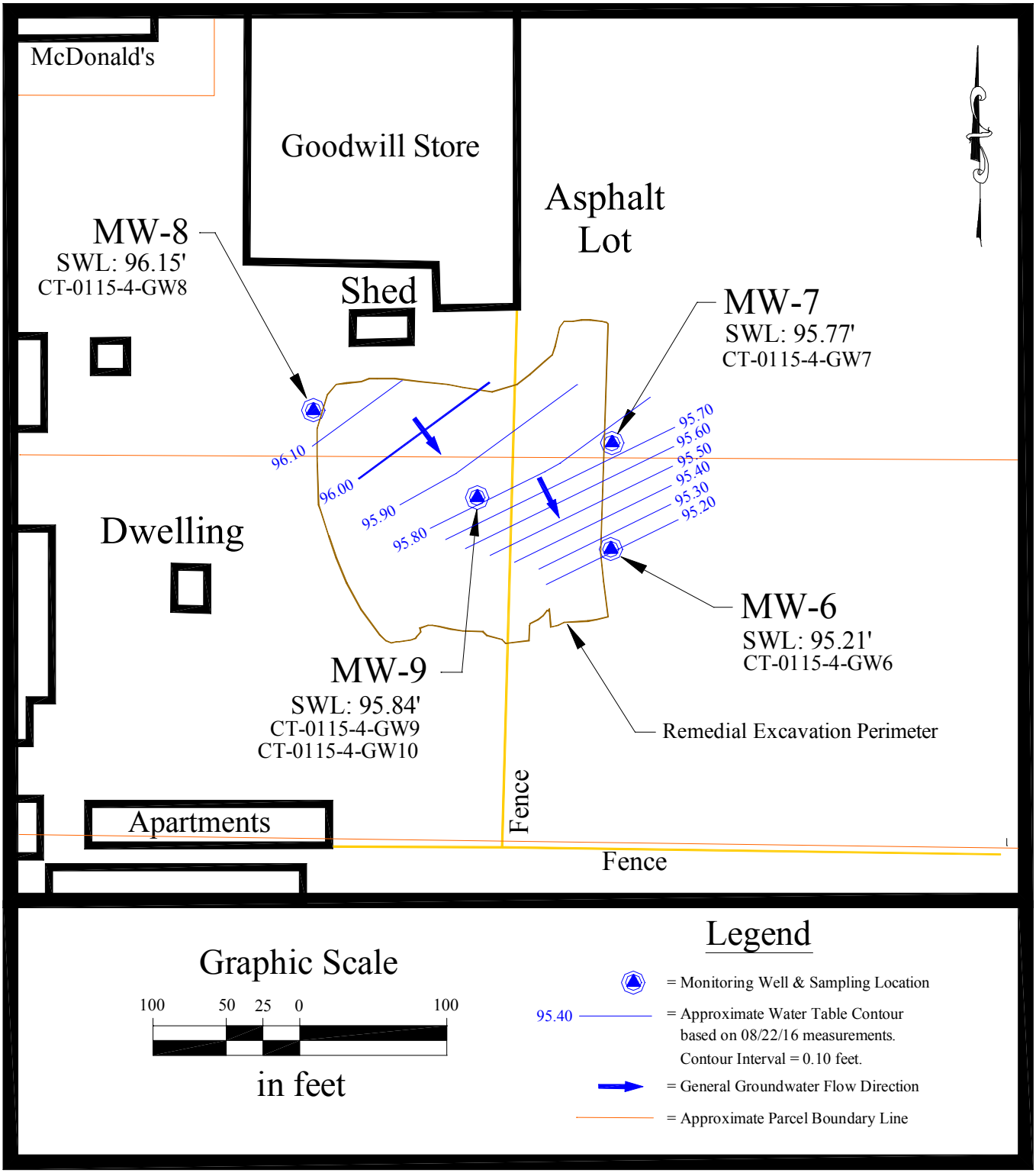


Figure 17. Groundwater Sampling Locations and Groundwater Gradient on 08/22/16

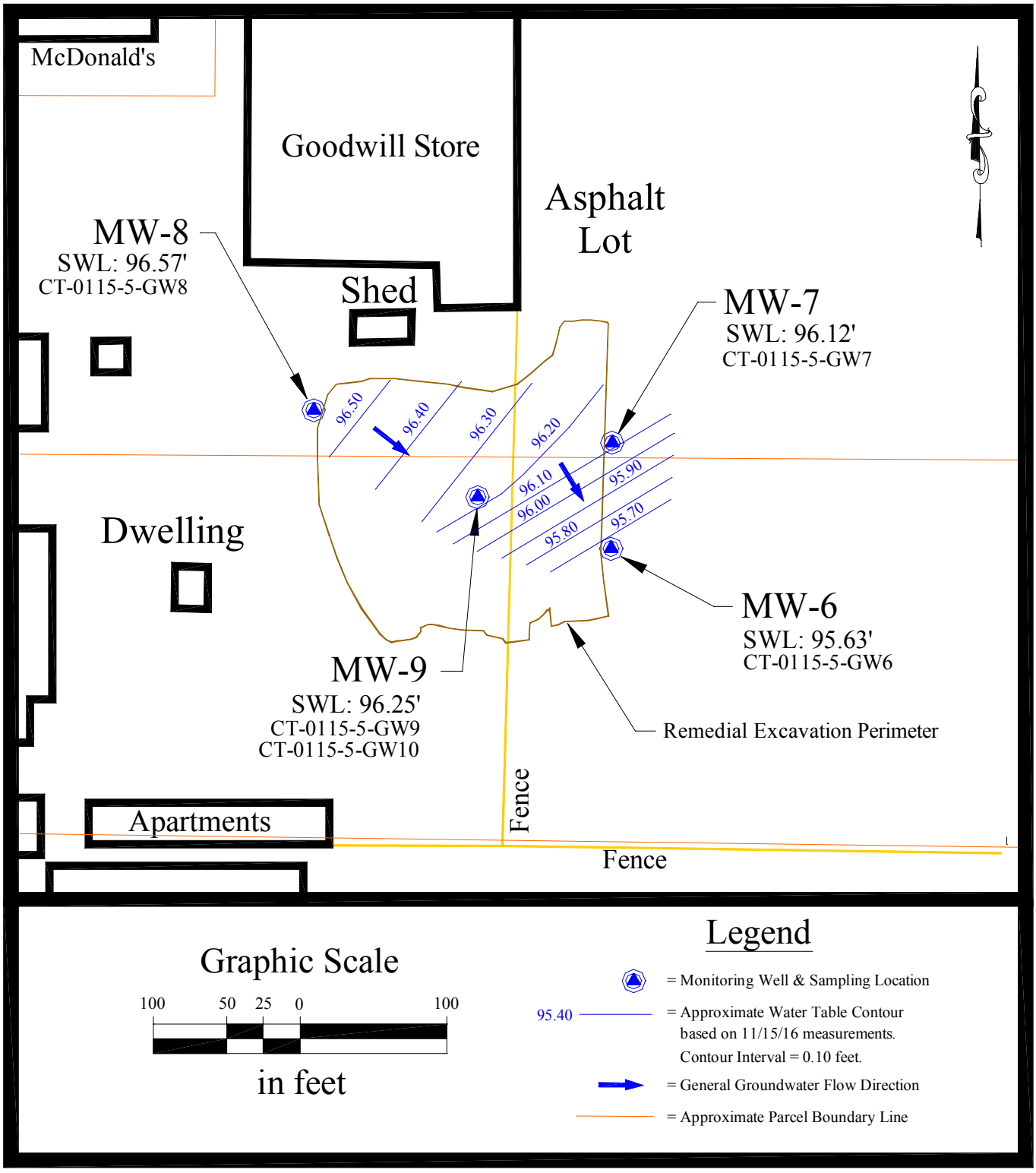


Figure 18. Groundwater Sampling Locations and Groundwater Gradient on 11/15/16

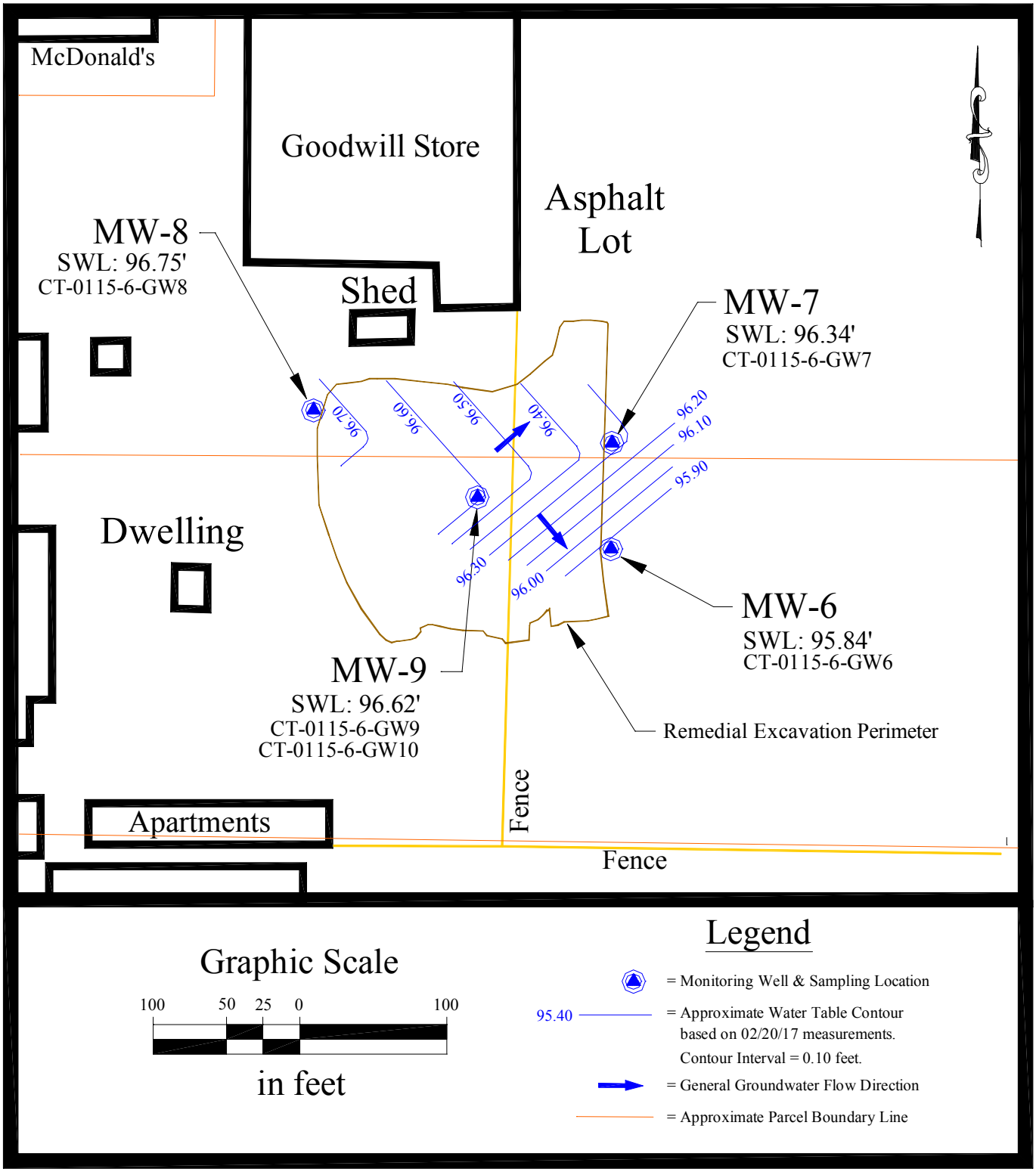


Figure 19. Groundwater Sampling Locations and Groundwater Gradient on 02/20/17

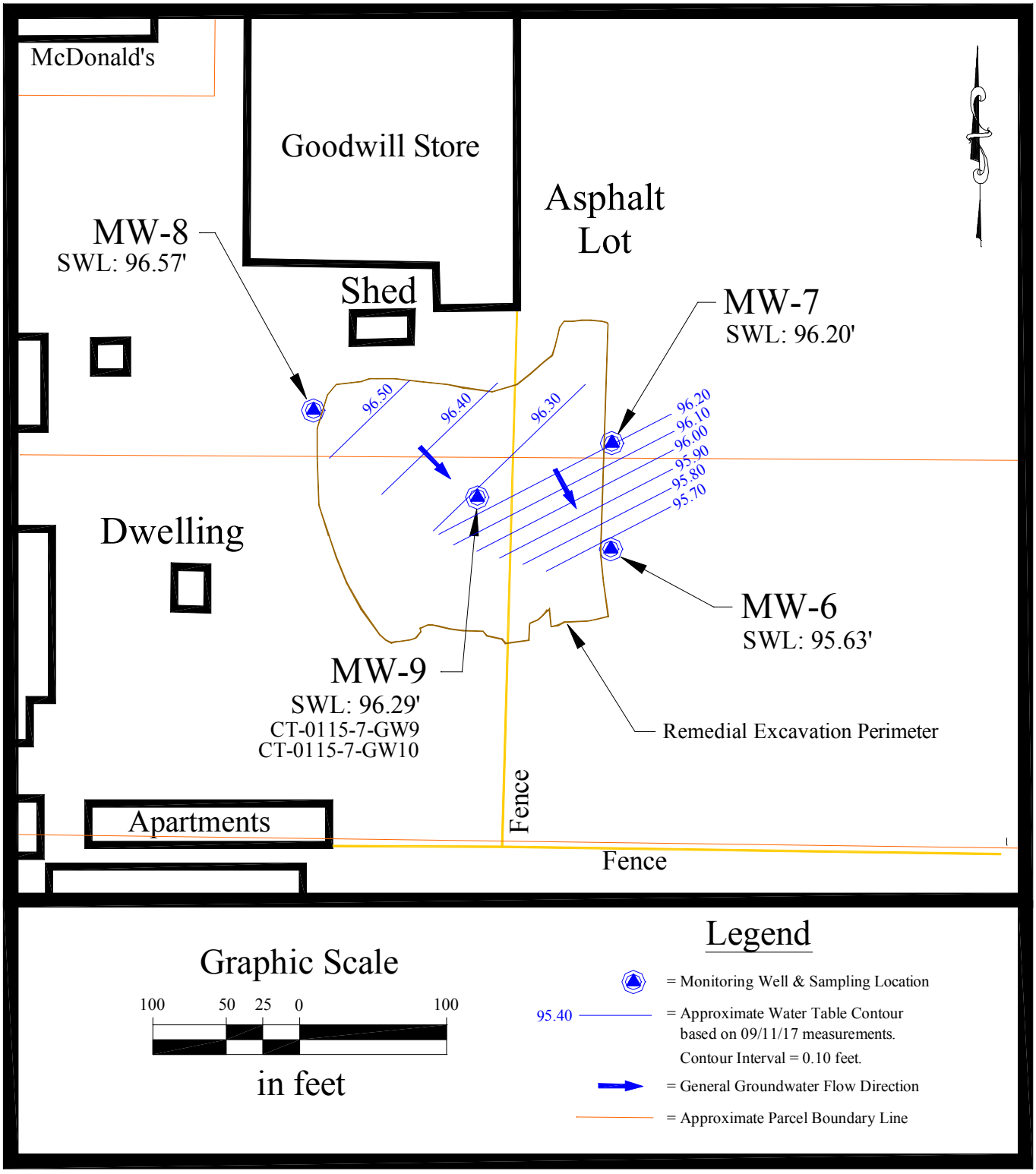


Figure 20. Groundwater Sampling Locations and Groundwater Gradient on 09/11/17

5.6 Disposal of Project Generated Wastes

5.6.1 AREA 5 Drill Cuttings

As discussed in Section 5.5.3 of this report, one (1) soil sample (CT-0115-SB47) was collected during MW-9 drilling activities. Analytical results for this sample were used to determine disposition of soil generated during the drilling process. The FBI analytical data report is included as Appendix H and summarized by Table 9. Direct comparison of the analytical results with the *Method A Soil Cleanup Levels of WAC-173-340-740* (Cleanup Levels) and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] found no target compounds in excess of the Cleanup Levels. Upon receiving approval from the WSDOE Project Coordinator[32], Sage placed soil generated during the drilling process on the Area 5 treated soil stockpile.

5.6.2 Disposal of Well Purge Water from MW6 – MW8

Sage collected purge water generated during groundwater sampling activities discussed in Section 5.5.4 of this report. Analytical results for groundwater samples were used to determine appropriate methods of disposal for water purged during well development and well purging activities. Review of the analytical data for project groundwater monitoring samples detected no diesel, heavy oil, BTEX or CPAH's in samples collected from MW6, MW7 or MW8 throughout the course of the project (see Table 10). A total of approximately 96.8 gallons of purge water were generated from MW-6 through MW-8 during the project (see Table 12). Upon obtaining approval from the WSDOE Project Coordinator[32,33], Sage disposed of this purge water on the ground surface, near the fence, south of the subject area on January 19, 2016 and April 27, 2017.

Table 12. Summary of Project Monitoring Well Purge Water

Date Generated	MW6 (gallons)	MW7 (gallons)	MW8 (gallons)	MW9 (gallons)
11/12/15	5	5	6	75
02/22/16	6	6	5	7
05/23/16	6	6	6	7
08/22/16	6	6	7	7
11/15/16	4.4	4.5	3.8	5.5
02/20/17	4.3	5.5	4.3	5.9
09/11/17	--	--	--	10
Total	31.7	33	32.1	117.4

5.6.3 Disposal of Well Purge Water from MW9

Diesel and/or heavy oil was detected in MW9 during the first two quarters of the monitoring program, as well as the sixth quarter monitoring event. No BTEX or CPAH's were found in MW9 throughout the project. Diesel and motor oil range petroleum hydrocarbon concentrations were found to exceed the *Method A Groundwater Cleanup Levels of WAC 173-340-720* in MW-9 only during the Second Quarter Groundwater Monitoring event (See Table 10).

A total of approximately 117.4 gallons of purge water were generated from MW-9 during the project (see Table 12). Upon obtaining approval from the WSDOE Project Coordinator[32,33] and Mr. Todd Laroche of the City of Selah Waste Water Treatment Plant (SWWTP)[24,25], Sage disposed of this purge water at the SWWTP on January 19, 2016 and April 28, 2017. Sage disposed of purge water generated on September 11, 2017 on the ground surface, near the fence, south of the subject area.

6.0 Conclusions & Recommendations

6.1 Area One: Sandblast Grit On B.N.S.F. Land

Sage performed Area One sampling and analysis activities as prescribed by the *Work Plan*[23]. Area One sampling and analysis activities are discussed in Section 5.1 of this report. Sage used a direct comparison of the analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area One. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of Area One.

6.2 Area Two: Paved Area With Building

Work regarding catch basins and the storm water drainage system at the site was limited to mapping and describing catch basin construction, inspection for indications of piping direction and exploring for an additional outfall into the drainage ditch on the northeast portion of the site. Sage completed these activities as documented in Section 5.2 of this report.

6.3 Area Three: Wastewater Ditch

Work regarding the Wastewater Ditch was limited to exploring for an additional outfall into the drainage ditch on the northeast portion of the site. Sage completed these activities as documented in Section 5.2 and 5.3 of this report.

6.4 Area Four: Land South of the Building

Sage performed Area Four sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Four sampling and analysis activities are discussed in Section 5.4 of this report. Sage used a direct comparison of the analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area Four. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of Area Four.

6.5 Area Five: Petroleum Contaminated Soil & Groundwater

6.5.1 Treated Soil Stockpile

Sage performed Area Five *Treated Soil Stockpile* sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Five *Treated Soil Stockpile* sampling and analysis activities are discussed in Section 5.5.1 of this report. Sage used a direct comparison of the analytical results (Appendix F) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required for the Area Five *Treated Soil Stockpile*. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of the Area Five *Treated Soil Stockpile*.

6.5.2 Remedial Excavation Area Soil

Sage performed Area Five *Remedial Excavation Area Soil* sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Five *Remedial Excavation Area Soil* sampling and analysis activities are discussed in Section 5.5.2 & 5.5.3 of this report. Sage used a direct comparison of the analytical results (Appendix H) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required for the Area Five *Remedial Excavation Area Soil*. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of the Area Five *Remedial Excavation Area Soil*.

6.5.3 Remedial Excavation Area Groundwater

Sage performed Area Five *Remedial Excavation Area Groundwater* sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Five *Remedial Excavation Area Groundwater* sampling and analysis activities are discussed in Section 5.5.4 of this report.

Review of the analytical data for project groundwater monitoring samples detected no diesel, heavy oil, BTEX or CPAH's in samples collected from MW6, MW7 or MW8 throughout the course of the project (see Table 10). However, diesel and/or heavy oil was detected in MW9 during the first two quarters of the monitoring program, as well as the sixth quarter. No BTEX or CPAH's were found in MW9 throughout the project. Diesel and motor oil range petroleum hydrocarbon concentrations were found to exceed the *Method A Groundwater Cleanup Levels of WAC 173-340-720*[5] in MW-9 only during the Second Quarter Groundwater Monitoring event (See Table 10).

FBI analysis of MW9 samples during the Second Quarter event found:

- Diesel range petroleum hydrocarbons at a concentration of 1,000 µg/L and
- Motor Oil range petroleum hydrocarbons at a concentration of 890 µg/L.

Sage used a direct comparison of the analytical results (Appendices J, L, N, P, R & T) with the *Method A Groundwater Cleanup Levels of WAC-173-340-720*[5] to determine if groundwater remediation is required. The comparison indicates we have obtained five consecutive quarters of analytical results compliant with these Cleanup Levels. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of the Area Five *Remedial Excavation Area Groundwater*.

To prevent potential future groundwater contaminants from using existing groundwater monitoring wells as preferential migration pathways, Sage recommends retaining a licensed well driller to abandon all site groundwater monitoring wells in accordance with the *Minimum Standards for Construction and Maintenance of Wells,* Chapter 173-160 WAC[2].

7.0 References

1. Burlington Northern Santa Fe Railway, Bruce A. Sheppard, July 30, 2004, Written Communication.

2. Chapter 173-160 WAC *Minimum Standards for Construction and Maintenance of Wells,* December 19, 2008

3. Chapter 173-303 WAC - *Dangerous Waste Regulations,* October 5, 2007.

4. Chapter 173-340 WAC - *Model Toxics Control Act,* October 12, 2007.

5. Chapter 173-340 WAC - *Model Toxics Control Act Cleanup Regulation,* Amended February 12, 2001.

6. *Guidance on Sampling and Data Analysis Methods,* Washington State Department of Ecology-Toxic Cleanup Program, January 1995.

7. Hallard B. Kiinison and Jack E Sceva, *Effects of Hydraulic and Geologic Factors on Streamflow of the Yakima River Basin Washington,* Geological Survey Water-Supply Paper 1595, 1963.

8. *Hydrogeologic Framework of Sedimentary Deposits in Six Structural Basins, Yakima River Basin, Washington*., U.S Geological Survey, Reston, Virginia, 2006.

9. *Resource Protection Well Reports*, Kleinfleder, Inc, March 13, 1995.

10. Sage Earth Sciences, Inc., February 24, 2006 *Limited Free Product Removal & Site Characterization Report*

11. Sage Earth Sciences, Inc., September 30, 2008 *Groundwater Gradient Monitoring Report*

12. Sage Earth Sciences, Inc., February 17, 2009 *Groundwater Gradient Monitoring Report*

13. Sage Earth Sciences, Inc., June 8, 2009 *Groundwater Gradient Monitoring Report*

14. Sage Earth Sciences, Inc., September 15, 2009 *Groundwater Gradient Monitoring Report*

15. Sage Earth Sciences, Inc., Krystal Rodriquez, Written Letter, December 1, 2009.

16. Sage Earth Sciences, Inc., April 9, 2010 *Independent Remedial Action Report*

17. Sage Earth Sciences, Inc., November 17, 2010 *Soil Treatment Cell Sampling Report*

18. Sage Earth Sciences, Inc., September 21, 2010 *Groundwater Monitoring Report*

19. Sage Earth Sciences, Inc., December 10, 2010 *Groundwater Monitoring Report*

20. Sage Earth Sciences, Inc., February 23, 2011 *Third Quarter Groundwater Monitoring Report*

21. Sage Earth Sciences, Inc., May 24, 2011 *Fourth Quarter Groundwater Monitoring Report*

22. Sage Earth Sciences, Inc., *Revised Field Work for Agreed Order No. DE 11193* letter to Matt Durkee – WSDOE-CRO, April 17, 2015.

23. Sage Earth Sciences, Inc., *Final Remedial Investigation Work Plan - Agreed Order No. DE 11193*, October 16, 2015.

24. Selah Wastewater Treatment Plant, Todd Laroche, Verbal Communication, January 14, 2016.

25. Selah Wastewater Treatment Plant, Todd Laroche, Verbal Communication, April 27, 2017.

26. State of Washington, Department of Ecology, J. French, Certified Letter, August 19, 1991.

27. State of Washington, Department of Ecology, *Model Agreed Order No. DE 03 TCPCR*-5877, December5, 2003.

28. State of Washington, Department of Ecology, R. Swackhamer, Written Letter, February 12, 1992.

29. State of Washington, Department of Ecology, Krystal Rodriguez, Certified Letter, February 24, 2005.

30. State of Washington, Department of Ecology, Brianne Plath, Written Letter, December 7, 2009.

31. State of Washington, Department of Ecology, Matt Durkee, Email Communication, December 18, 2015.

32. State of Washington, Department of Ecology, Kyle Parker, Email Communication, December 28, 2015.

33. State of Washington, Department of Ecology, Kyle Parker, Email Communication, March 13, 2017.

34. *Statistical Guidance for Ecology Site Managers,* Washington State Department of Ecology – Toxics Cleanup Program, August 1992, 92-54.

35. Technico Environmental Services, Inc. January 13, 2004, *Work Plan For Comet Trailer Facility.*

36. Technico Environmental Services, Inc. August 3, 2004, *Amendment 1 Work Plan.*

37. Technico Environmental Services, Inc. August 13, 2004, *Amendment 2.*

38. Technico Environmental Services, Inc. October 4, 2004, *Comet Trailer Sampling Results.*

39. Technico Environmental Services, Inc. December 8, 2004, *Comet Trailer Characterization of Free Product.*

40. Washington State Department of Ecology, Environmental Investigations and Laboratory Services, Manchester Laboratory, R. Knox, Written Letter, April 16, 1991.

41. Washington State Department of Ecology, Manchester Environmental Laboratory, C. Smith, Written Report, May 7, 1991

42. Washington State Department of Ecology web site: https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*, March 24, 2017.

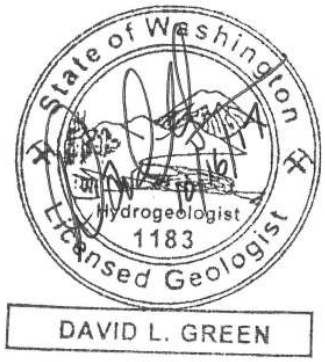
Remedial Investigation/Feasibility Study

Comet Trailer Corp Site - Facility No. 503
501 South First Street
Selah, WA 98942
Agreed Order No. DE 11193

Prepared For:

Bud Owens Limited Family Partnership
P.O. Box 129
Selah, WA 98942

Prepared By:



SAGE Earth Sciences, Inc.
1396 Lombard Loop Rd.
Wapato, WA 98951

October 16, 2017

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GUIDE TO ACRONYMS

AST	Above-ground Storage Tank
BGS	Below Ground Surface
BNSF	Burlington Northern-Santa Fe Railroad
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
Cleanup Levels	*Method A Groundwater and Soil Cleanup Levels of WAC-173-340-740 or* *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*
CPAH	Carcinogenic Polycyclic Aromatic Hydrocarbons
DOE	State of Washington, Department of Ecology
DTW	Depth To Water
EPH	Extractable Petroleum Hydrocarbons
FBI	Friedman & Bruya, Inc.
GPS	Global Positioning System
HPE	Hi-Point Excavation LLC
KI	Kleinfelder, Inc.
LNAPL	Light Non-Aqueous Phase Liquid
MW	Monitoring Well
PCS	Petroleum Contaminated Soil
PPM	Parts Per Million or mg/Kg or mg/L
RI/FS	Remedial Investigation/Feasibility Study
SWWTP	Selah Waste Water Treatment Plant
TES	Technico Environmental Services
USCS	Unified Soil Classification System
VOC	Volatile Organic Compound
Work Plan	Work Plan for a Remedial Investigation/Feasibility Study

1.0 Background Summary

1.1 Site Location

The Comet Trailer facility is located at 501 South First Street, Selah, WA. It is situated within the W 1/2 of the NW 1/4, Section 01, Township 13 North, Range 18 East, Willamette Meridian. Project activities were conducted on Yakima Tax Parcel Numbers: 181301-22423 & 181301-23001. The approximate site latitude is 46° 38' 46.1" and the approximate longitude is 120° 31' 42.9". Figure 1 shows the location of parcels associated with this Remedial Investigation/Feasibility Study (RI/FS).

1.2 Site Description & Adjacent Land Use

The facility is currently owned by:

Bud Owens Limited Family Partnership
P.O. Box 129
Selah, WA 98942
(509) 697-7264

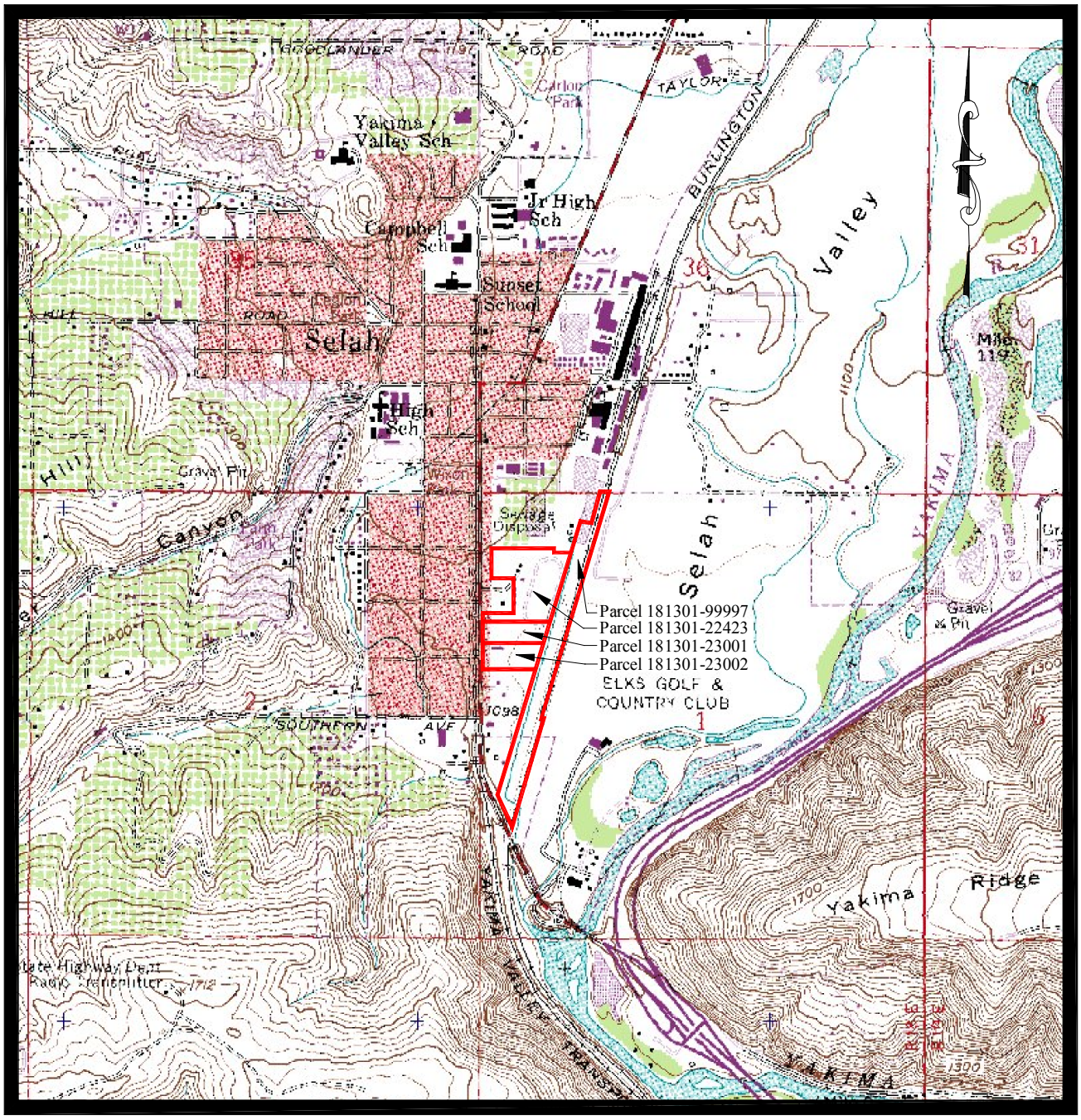
The State of Washington, Department of Ecology (DOE) Site Manager is:

Kyle Parker
WA State Department of Ecology
Toxics Cleanup Program / Central Regional Office
1250 W. Alder Street, Union Gap, WA 98903
Direct (509) 454-7833

As shown by Figure 2, the eastern portion of Parcel Number 181301-22423 is occupied by the former Comet Trailer manufacturing building, which was occupied by the following commercial businesses during Sage's field activities: Tree Top & Ross Plant Ingredient Division Warehouse, Graham Packaging and Yakama Juice. The area surrounding the building was covered by asphalt surface. The northwestern portion of this parcel was occupied by a gravel parking lot. The southwestern portion of this parcel was occupied by a storage buildings and a residential dwelling. These western areas were separated from the asphalted area by fencing.

The eastern portion of Parcel Number 181301-23001 was occupied by an asphalt parking and equipment storage area. The western portion of this parcel was occupied by a strip mall, an apartment complex and a residential dwelling.

Goodwill Industries and small commercial businesses lie west of the northern portion of Parcel Number 181301-22423. South First Street lies immediately west of the Parcel Number 181301-23001 and the southern portion of Parcel Number 181301-22423.



Graphic Scale

Contour Interval - 20 Feet

Figure 1. Site Location Map

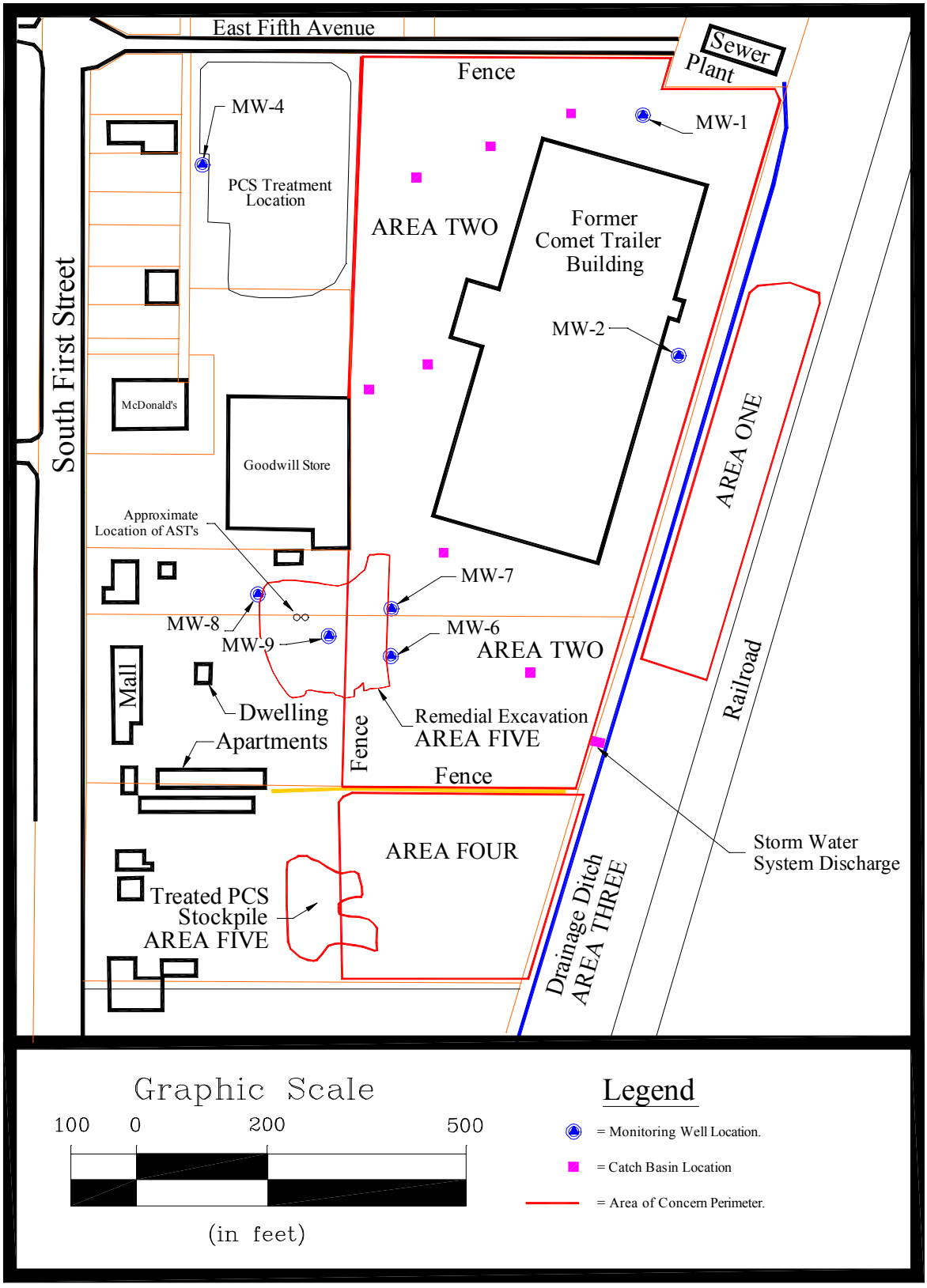


Figure 2. Property Use and Areas of Concern

The local topography slopes gently southeast. A drainage ditch, which discharges effluent from the municipal sewer treatment plant, lies immediately east of the subject parcels. The drainage ditch discharges into the Yakima River, which lies approximately three-tenths of a mile southeast of the site.

1.3 Site History

The late Mr. Bud Owens was a former owner of Comet Trailer, which operated a truck trailer manufacturing business on parcel 181301-22423 and 181301-23001 from 1984-1995. In the course of trailer manufacturing activities, trailers and/or their components were sandblasted prior to painting. Mr. Owens placed spent sandblast media on property south of the manufacturing facility and on property east of the site leased from Burlington Northern-Santa Fe Railroad (BNSF) property.

Mr. Owens also operated a heating oil sales and delivery business. The business utilized two (2) Above-ground Storage Tanks (AST's) of unknown size from parcels 181301-22423 and/or 181301-23001 to support the sale of heating oil. The approximate location of the AST's is shown by Figure 2.

1.4 Geology and Hydrogeology

Selah is located near the northwest margin of the Yakima Fold Province of the Columbia River Plateau, which is lithologically composed of Columbia River Basalts and interbedded sediments of the Ellensburg Formation[7]. This province is characterized by anticlinal ridges and synclinal valleys that generally trend east-west forming drainage basins. Selah is located within the Selah sub-basin of the Upper Yakima River Basin, as shown by Figure 3 and Figure 4. The Selah sub-basin is bounded on the north by the Umtanum Anticline and on the South by Yakima Ridge, both of which are anticlinal ridges composed of Columbia River Basalts and the interbedded Ellensburg Formation[8]. Basalt in the central portion of the sub-basin is overlain by up to several hundred feet of Ellensburg Formation sediments.

The site lies approximately three-tenths of a mile northwest of the Yakima River. The Yakima River flows south-southwest through the Selah basin, from the Yakima River Canyon to Selah Gap, which is a narrow gap in Yakima Ridge cut by the Yakima River during uplifting of the ridge. The Yakima River has deposited unconsolidated gravels, small boulders, primarily basaltic, and flood silts derived from rocks upstream in the Yakima River, as well as the Wenas and Selah Creek drainages. Surface water from the area west of the Yakima River is drained by Wenas Creek. Groundwater recharge is supplied by precipitation, snow runoff and irrigation water diverted from the Naches River by the Naches-Selah Canal.

During previous excavation and drilling activities at the site, subsurface materials observed consisted of: medium brown, slightly pebbly, clayey silt[16]. This soil unit is classified as "ML" according to the Unified Soil Classification System (USCS). Soil located near, and east of the fence also exhibited poorly sorted, river gravels up to approximately six inches in diameter underlying the silt. The surface of the gravel unit lies at depths ranging from six feet Below

Ground Surface (BGS) and extends to a depth of at least thirteen feet BGS[18]. This soil unit is classified as "GP" according to the USCS.

Previous hydrogeologic investigations at the subject site, discussed in Section 3.5.2 of this *RI/FS*, found the uppermost portion of a very shallow unconfined water-bearing unit at depths ranging from approximately 2 to 4 feet below top of casing wells near the plume of diesel contamination (known as "Area 5" in this *RI/FS*). The groundwater was observed to seasonally fluctuate up to approximately one and one-half (1.5) feet.

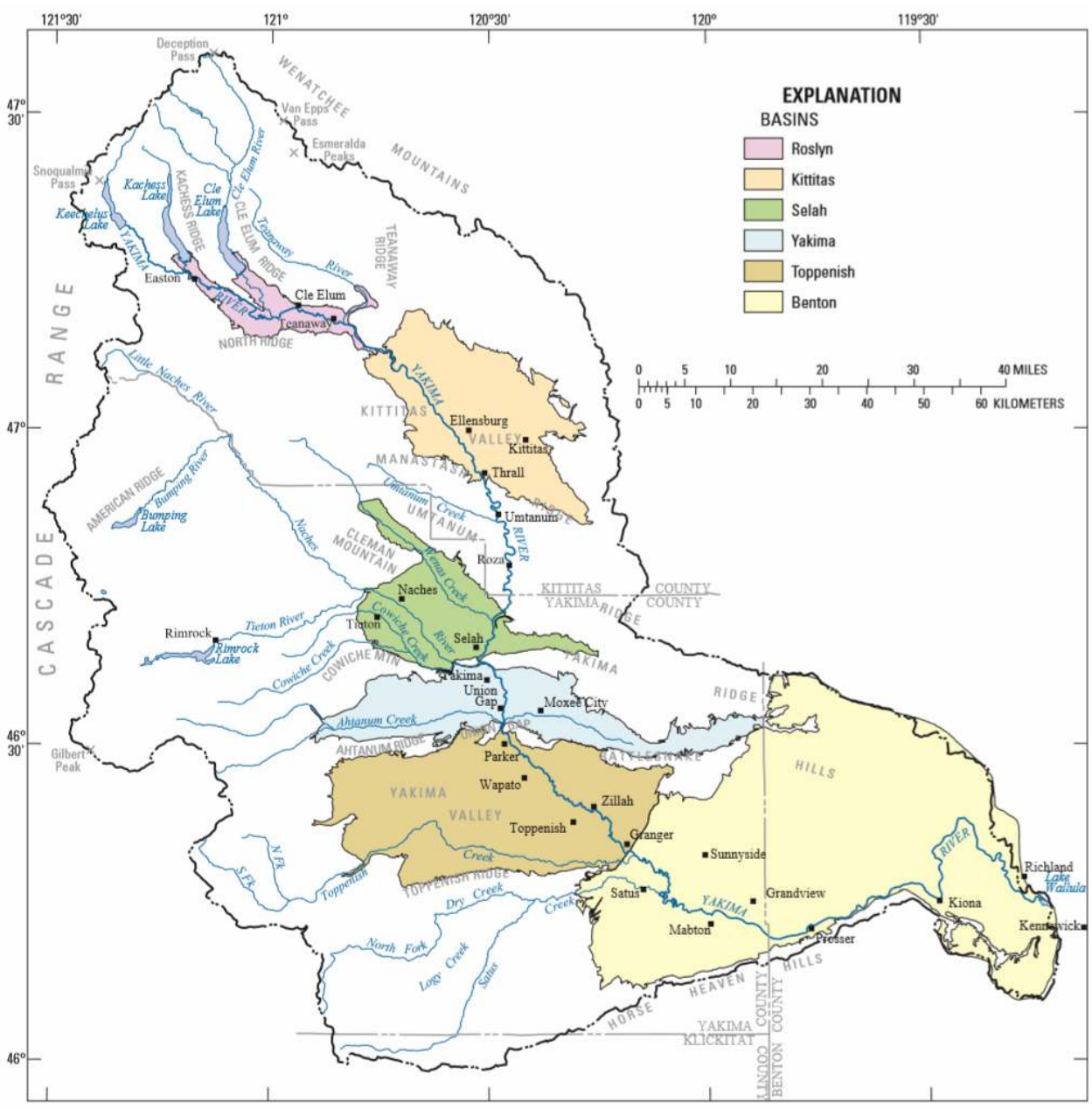


Figure 3. Basins in the Yakima River Drainage[8].

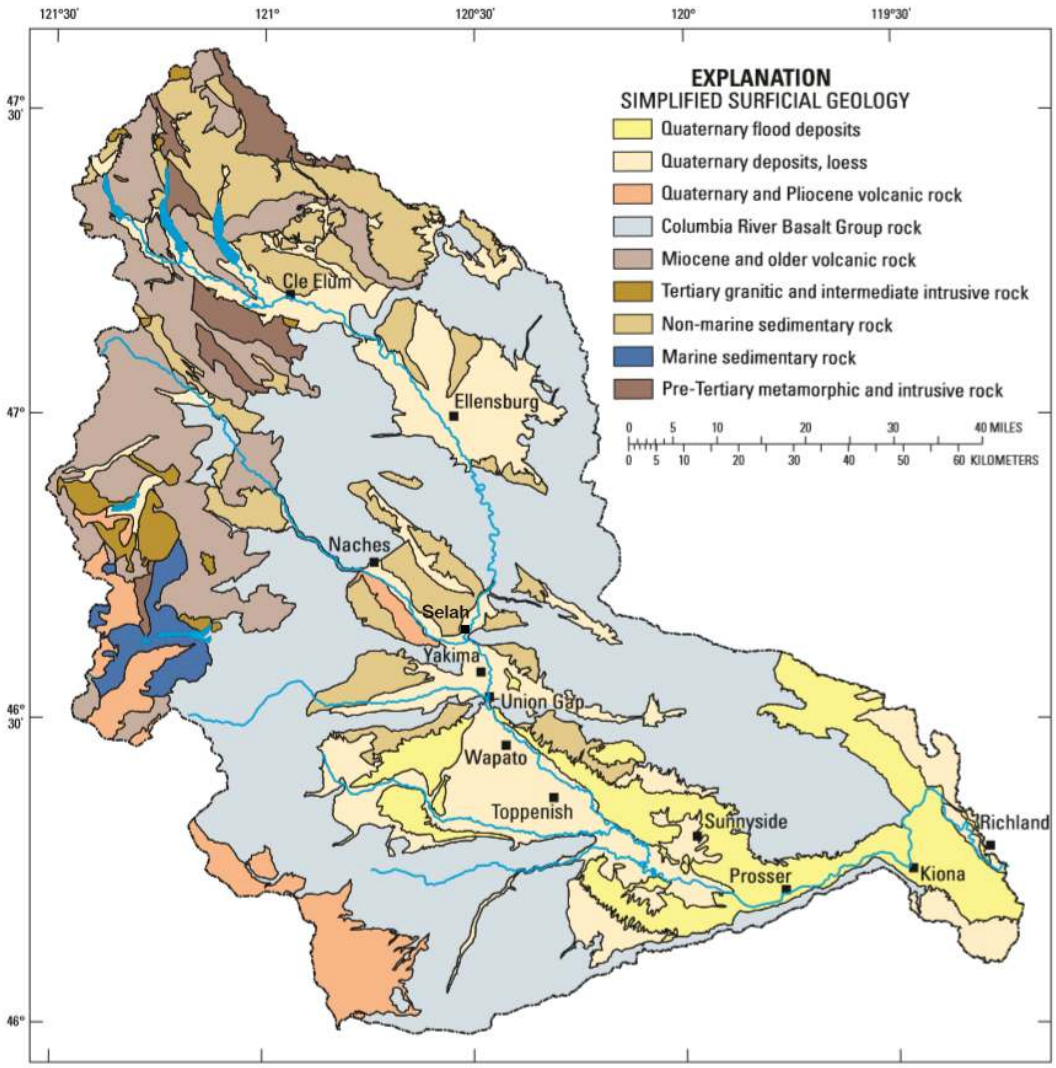


Figure 4. Simplified Surficial Geologic Map of the Yakima River Drainage[8].

2.0 Previous Agreed Order & Work Plan

2.1 Initial Investigation

On March 11 and May 13 1991, the State of Washington, Department of Ecology (DOE) conducted an initial investigation at the Comet Trailer facility[26]. Due to the nature of business at the Comet Trailer facility, the DOE collected samples of sandblast waste and sludge from a catch basin on the north end of the site. The catch basins were connected to a storm drain system which entered a nearby storm water drain which eventually flows to the Yakima River. A summary of the DOE findings is presented below.

- Catch Basin Sludge Samples: Samples collected from the catch basin were analyzed for volatile organics and total metals, which found the following compounds were detected: trichlorofluromethane, toluene, styrene, ethylbenzene and xylenes[26]. The DOE required the facility to: cease discharge from the catch basins, manage sludge from the sampled catch basin as "Dangerous Waste" per Chapter 173-303 WAC[3], collect and designate samples from the remaining catch basins and verify through sampling and analysis that the catch basin system had been cleanup up adequately.

- Sandblast Waste Material Samples: Total metals analysis results revealed the presence of chromium at 261 ppm and 207 ppm[40]. These levels exceed the Method A Soil Cleanup Levels for Unrestricted Land Uses of WAC 173-340-900[4] for chromium VI but are below the *Cleanup Level* for chromium III. Additional metals analyses required to determine the species of chromium were not performed, so it was not established if remedial action was actually required. Analysis of the samples using the Toxic Characteristic Leaching Procedure (TCLP) found no detectable (less that 0.1 ppm) chromium[41]. Sandblast grit piles were identified as being in the following locations:

    - South of the warehouse in a low area that has since been filled,
    - Southeast corner of the unpaved area, south of the facility, and about 10 yards from the irrigation ditch,
    - East section of the facility on BNSF property,
    - Southwest corner of the unpaved area (sampled by the DOE).

In 1992, the DOE completed a Site Hazard Assessment for the site and determined that the site would rank a "1", where 1 represents the highest relative risk and 5 the lowest[28]. The ranking indicated that the facility posed a high potential threat to human health and the environment relative to other sites ranked at that time.

2.2 Previous Agreed Order No. DE 03 TCPCR-5877

On December 5, 2003 Mr. Bud Owens entered into Agreed Order No. DE 03 TCPCR-5877 with the State of Washington, Department of Ecology[27] to perform eight specific activities at the facility. These consisted of:

1. Mr. Owens shall develop a Scope of Work and Work Plan for a Remedial Investigation/Feasibility Study (RI/FS). The scope of Work and Work Plan shall contain all of the elements outlined in WAC 173-340-350, -355, and -357. The RI/FS shall be designed to determine the horizontal and vertical extent and magnitude of all hazardous substances released at the site, including metals and volatile organics.
2. Upon Ecology approval of the Scope of Work, Mr. Owens shall implement this Work Plan and prepare a Draft RI/FS that complies with WAC 173-340-350 through 370 for Ecology review and public comment.
3. Upon Ecology approval of the Draft RI/FS and incorporation of public comment, Mr. Owens shall deliver three copies of the Final RI/FS incorporation Ecology's comments to Ecology for review and approval.
4. In accordance with WAC 173-340-820, Mr. Owens shall submit to Ecology for review and approval a Sampling and Analysis Plan with the Work Plan.

5. In accordance with WAC 173-340-810, Mr. Owens Shall submit to Ecology for review a Worker Safety and Health Plan with the Work Plan.
6. In accordance with WAC 173-340-600, Mr. Owens shall submit to Ecology for review and approval a Public Participation Plan.
7. Mr. Owens shall submit sampling data in accordance with Environmental Information Management (EIM) guidelines.
8. The work required under the Order shall be completed in such a manner to meet the schedule prescribed in the Agreed Order.

To fulfill Activity #1 required by *Agreed Order*, Mr. Owens retained Technico Environmental Services (TES), Kennewick, WA to develop a Scope of Work and Work Plan for a Remedial Investigation/Feasibility Study (*Work Plan*). TES produced three documents[35,36,37] to fulfill Activity #1, which are on file at the Central Regional Office of the DOE. The elements for the *Work Plan* are briefly described in Sections 2.1 through 2.4 of this report.

2.3 Work Plan for Comet Trailer Facility

TES produced the *Work Plan For Comet Trailer Facility, January 13, 2004* (*Work Plan*). This document provides facility background information and identifies three possible sources of contamination to be investigated at the facility under the Agreed Order.

The three possible sources of contamination consist of:

1. Sampling Area #1: the bottom of the catch basin located in the northeast section of the property.
2. Sampling Area #2: the south of the paved parking lot.
3. Sampling Area #3: east of the ditch on Burlington Northern property.

2.3.1 Amendment 1 to the Work Plan

TES produced the *Amendment 1 to the Work Plan, July 28, 2004.* This document amended the *Work Plan* to address four specific areas of interest which include:

1. Area One: Sandblasting grit on Burlington Northern Santa Fe Railway (BNSF) Land. Sandblast grit sampling and analysis data would be obtained from BNSF and compared to Method A Cleanup Levels (*Cleanup Levels*).
2. Area Two: Paved area with building. A catch basin would be sampled and analyzed in accordance with the *Work Plan* and the analytical results would be compared to the *Cleanup Levels*. Groundwater samples would be collected from existing monitoring wells and analyzed for solvents.
3. Area Three: Wastewater ditch. The need for additional work in the wastewater ditch will be evaluated based upon the analytical results for the sandblast grit waste.
4. Area Four: Land south of the building. Sandblast grit waste would be located and sampled. Analytical results would be compared to the Cleanup Levels. If the analytical results indicate the waste required remediation, the material would be transported to a landfill or hazardous waste facility, depending on classification of the waste. If the waste volume was determined to be less than 3 cubic yards, three samples would be collected. If the quantity exceeded 35 cubic yards, five to seven samples would be collected.

2.3.2 Amendment 2 to the Work Plan

TES produced the *Amendment 2 to the Work Plan, August 12, 2004*. This document identifies sampling areas, analytes and laboratory methods according to the following table taken from this amendment:

Table 1. Amendment 2 Sampling Areas, Analytes & Laboratory Methods.

Area	Description	Analyte	Method
One	Sand Blasting Grit on BNSP Land	Total Chrome	6010 B
		Cr +6	Extraction ASA Mono 9, 20 - 4.3
		Cr +3	Calculated from Total and Cr +6
		Pb	6010 B
Two	Catch Basin	Solvents	EPA 8260
		Total Chrome	6010 B
		Cr +6	Extraction ASA Mono 9, 20 - 4.3
		Cr +3	Calculated from Total and Cr +6
		Pb	6010 B
Three	Wastewater Ditch	None	
Four	Owens Land South of Building Sand Blasting Grit	Total Chrome	6010 B
		Cr +6	Extraction ASA Mono 9, 20 - 4.3
		Cr +3	Calculated from Total and Cr +6
		Pb	6010 B

2.4 Additional Requirements for Comet Trailer Facility

Area Five: During performance of *Work Plan* sampling activities during August 2004, TES discovered free petroleum product in a groundwater monitoring well located southwest of the building[38]. For the purposes of this document, Sage designated this area of soil and groundwater contamination as "Area 5".

Upon learning of the discovery, the DOE issued a letter requiring that further investigation be performed to address groundwater contamination discovered during sampling activities[29]. The letter indicated that "the petroleum release must be addressed independently and this requires one of the following to occur: either an amendment can be made to the Agreed Order or a new Agreed Order can be drafted" and "the document must be finalized before work is to be conducted".

Since the Agreed Order had not been amended, nor had a new Agreed Order been drafted, Sage requested permission from the DOE to "perform soil remediation *as soon as possible* without amending the existing Agreed Order" on December 1, 2009[15]. Sage obtained permission from the DOE to perform soil remediation, without amending the existing Agreed Order, on December 7, 2009[30].

3.0 Previous Remedial Investigation Activities

3.1 Area One: Sandblasting Grit on B.N.S.F. Land

In accordance with the amended Work Plan, Sandblast grit sampling and analysis data was obtained from BNSF[1]. Sampling was performed by GeoEngineers, Inc. of Tacoma, WA. This document identifies five sampling locations in each of two areas (Grit Pile #1 and Grit Pile #2 on the *Site Plan* map). GeoEngineers submitted the samples to North Creek Analytical, Inc. of Bothell, WA for RCRA metals. The analytical results are summarized in Table 2.

Table 2. NCA Analytical Results for Area One Sandblast Grit Samples

Location	Sample ID	Cr (mg/Kg)	As (mg/Kg)	Se (mg/Kg)	Ag (mg/Kg)	Cd (mg/Kg)	Ba (mg/Kg)	Pb (mg/Kg)	Hg (mg/Kg)
Grit Pile #1	SS-01-032003	41.9	3.28	<0.562	<0.500	<0.562	136	12.8	<0.200
	SS-02-032003	42.5	2.50	<0.556	<0.500	<0.556	138	8.84	<0.200
	SS-03-032003	39.8	2.88	<0.625	<0.500	0.724	135	7.98	<0.200
	SS-04-032003	41.2	2.80	<0.575	<0.500	<0.575	137	12.2	<0.200
	SS-05-032003	41.0	2.73	0.668	<0.500	<0.625	142	8.90	<0.200
Grit Pile #2	SS-06-032003	8.74	0.667	<0.568	<0.500	<0.568	19.4	7.37	<0.200
	SS-07-032003	36.2	3.09	<0.595	<0.500	<0.595	100	13.6	<0.200
	SS-08-032003	7.75	0.890	<0.562	<0.500	<0.562	27.3	4.10	<0.200
	SS-09-032003	36.1	3.14	<0.595	<0.500	<0.595	98.1	12.7	<0.200
	SS-10-032003	37.4	2.86	<0.500	<0.500	<0.500	96.1	14.2	<0.200

Red Font indicates that concentration exceeds Method A Cleanup Levels of WAC 173-340-740
Green Font indicates that concentration does not exceed Method A Cleanup Levels of WAC 173-340-740
Orange Font indicates that type of Chromium (III or VI) must be determined to determine Cleanup Level.
Blue Font indicates that Method A Cleanup Levels of WAC 173-340-740 are not established.
Cyan Font indicates values represent soil concentrations that are expected to be protective at any MTCA site and are provided for use in eliminating hazardous substances from further consideration under WAC 173-340-7493 (2)(a)(i)
mg/Kg = parts per million (ppm); µg/L = parts per billion (ppb); NA = Sample not analyzed

As reported in their *Comet Trailer Sampling Results* report[38], TES collected one (1) sample of sandblast grit from the BNSF property. In a table summarizing analytical results for samples collected per the *Work Plan*, TES reported the analytical results for this sandblast grit sample to be:

- Total Chromium at a concentration of 8.19 mg/Kg,
- Chromium VI at a concentration of 0.09 mg/Kg,
- Chromium III at a concentration of 8.1 and
- Total lead at a concentration of 4.81 mg/Kg.

Comparison of the analytical results with the *Method A Soil Cleanup Levels* of WAC 173-340-740 (Cleanup Levels) indicated no Chromium or lead concentrations requiring remedial action.

3.2 Area Two: Paved Area With Building

In accordance with the amended *Work Plan*, TES collected sludge from the Catch Basin located north of the existing building on August 18, 2004. As reported in their *Comet Trailer Sampling Results* report[38], TES reported that analysis of the Catch Basin Sludge sample found:

- Total Chromium at a concentration of 64.2 mg/Kg,
- No detectable (less than 0.08 mg/Kg) Chromium VI,
- Chromium III at a concentration of 64.2,
- Total lead at a concentration of 2.3 mg/Kg and
- No detectable Volatile Organic Compounds (VOC's).

Comparison of the analytical results with the *Cleanup Levels* indicated no remedial action was required at the Catch Basin sampling locations.

TES also collected samples from three (3) groundwater monitoring wells in accordance with the amended *Work Plan*. As reported in their *Comet Trailer Sampling Results* report[38], TES reported that analysis of the groundwater samples found:

- No detectable Volatile Organic Compounds (VOC's),
- Total Chromium at concentrations ranging from less than 0.001 mg/L up to 0.002 mg/L,
- No detectable (less than 0.01 mg/L) Chromium VI,
- No detectable (less than 0.01 mg/L) Chromium III and
- No detectable Petroleum Hydrocarbons (by analytical method HCID).

Comparison of the analytical results with the Cleanup Levels indicated no remedial action was required at the groundwater sampling locations.

3.3 Area Three: Wastewater Ditch

In accordance with the amended Work Plan[36], the Wastewater Ditch was not sampled since analysis of sandblast grit found no contaminants exceeding the *Cleanup Levels*.

3.4 Area Four: Land South of the Building

3.4.1 Sandblast Grit

In accordance with the amended Work Plan[36,37], TES collected two (2) samples from sandblast grit located south of the building on August 18, 2004. As reported in their *Comet Trailer Sampling Results* report[38], analysis of the sandblast grit samples found:

- Total Chromium at concentrations ranging from 5.52 mg/Kg up to 7.86 mg/Kg,
- No detectable (less than 0.08 mg/Kg) Chromium VI,
- Chromium III at concentrations ranging from 5.52 mg/Kg up to 7.86 mg/Kg and
- Total lead at concentrations ranging from 2.08 mg/Kg up to 2.86 mg/Kg.

Comparison of the analytical results with the *Cleanup Levels* indicated no Chromium or lead concentrations requiring remedial action. The letter also stated that Mr. Owens will remove all the sand blast grit encountered during the work and dispose of it at a permitted landfill.

Although the amended *Work Plan* required collection of a minimum of three (3) samples from sandblast grit located south of the building[36], TES only collected two (2) samples from the sandblast grit[38].

Sage met on-site with Mr. Doug Owens to ascertain the location of sandblast grit piles to facilitate collection of the third sample required by the amended *Work Plan*. On June 14, 2012, Sage collected four (4) samples (CT-0112-SND-1 through CT-0112-SND-4) of soil from areas identified as having been previously occupied by sandblast grit piles. These sampling locations are shown by Figure 5. Sage submitted the samples to Friedman & Bruya, Inc. (FBI), Seattle, WA and selected two samples (CT-0112-SND-2 & CT-0112-SND-3) from an area we deemed most likely to have been occupied by sandblast grit pile, to be composited at the FBI laboratory. FBI analysis of the composite sample found:

- Total Chromium at a concentration of 16.1 mg/Kg,
- Total Lead at a concentration of 13.8 mg/Kg and
- No detectable (less than 5 mg/Kg) Chromium VI.

Comparison of the FBI analytical results (Appendix A) with the *Cleanup Levels*[4] found no Chromium or Lead concentrations requiring remedial action.

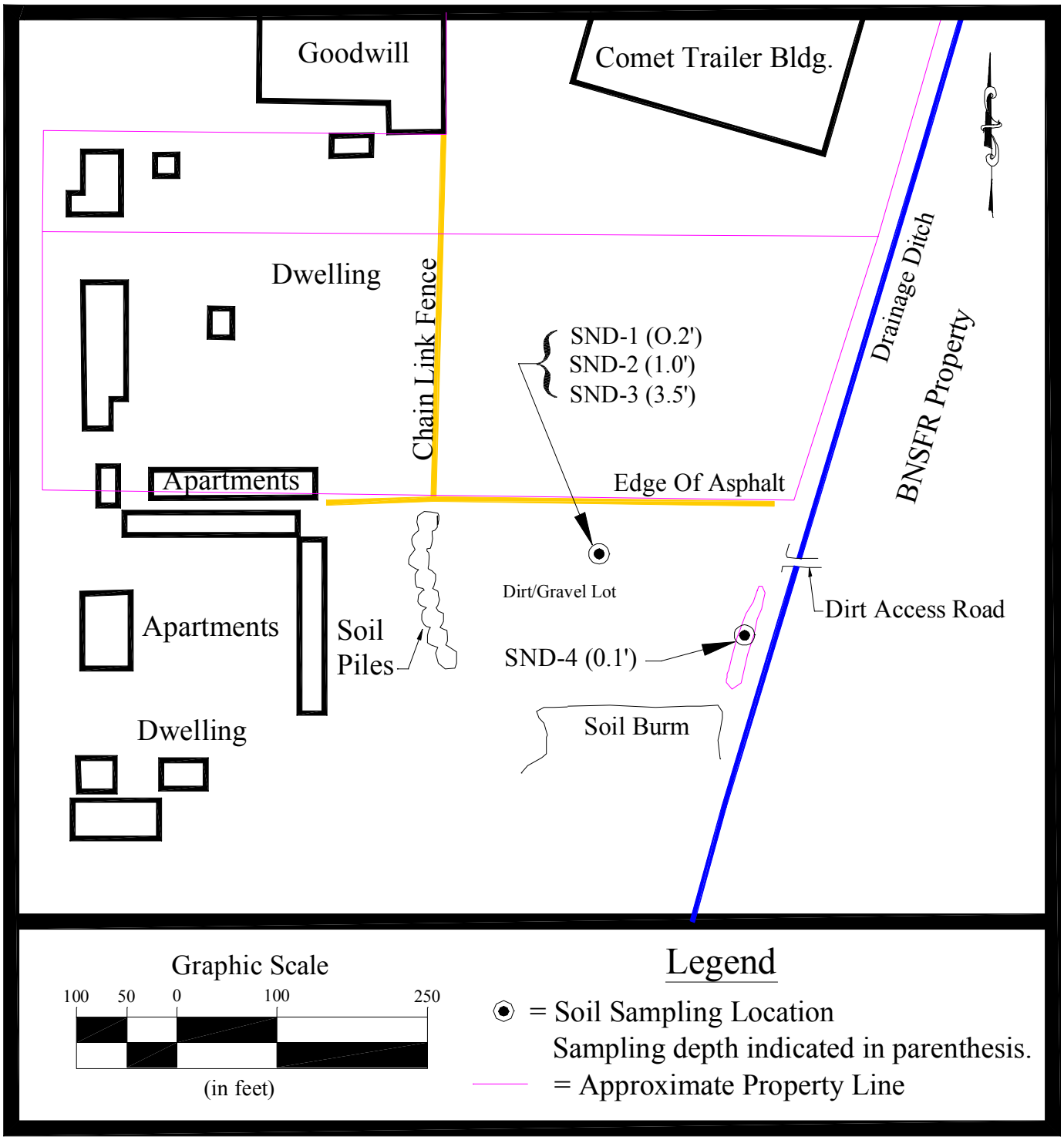


Figure 5. Previous Sandblast Grit Sampling Locations

3.5 Area Five: Petroleum Contaminated Soil & Groundwater

3.5.1 Characterization of Petroleum Hydrocarbon Contamination

Kleinfelder, Inc. (KI) directed installation of five (5) groundwater monitoring wells (MW-1 through MW-5) on the subject site during March of 1995[9]. The wells were installed by Cascade Drilling, Inc. Monitoring well locations are shown by Figure 6.

During sampling activities conducted during August 18, 2004, TES discovered approximately four (4) inches of Diesel #2 floating on groundwater within "Well 1", which hereafter identified within this RI/FS as "MW-3" (KI Well ID # ABZ363).

On October 7, 2004 TES collected a sample of the petroleum and submitted it to CCI Analytical Laboratories, Inc. of Everett, WA for analysis to determine the nature of the product by modified methods NWTPH-Gx and NWTPH-Dx. Based up review of the chromatograms, CCI believed the product to consist of Diesel #2[39].

Mr. Owens retained Sage to conduct limited free product removal and site characterization activities during October of 2005. Mr. Owens informed Sage that the area was historically used as an independent historical bulk heating oil storage location operated by Leonardo Trucking to support retail sale of heating oil. Sage initially removed 15 ounces of Light Non-Aqueous Phase Liquid (LNAPL) from MW-3[10]. Follow-up inspection found 0.02 feet of LNAPL in the well, so Sage inserted an oliophilic/hydrophobic pad into the water table to remove residual LNAPL from the groundwater surface. Five subsequent inspections performed between November 30, 2005 through February 14, 2006 found no measurable quantity of LNAPL in the well.

To characterize the extent petroleum impacted soil and groundwater, Sage installed a total of 29 test pits between November 9, 2005 through January 10, 2006. To determine if remedial action may be required, Sage compared the analytical results to the *Method A Groundwater and Soil Cleanup Levels of WAC 173-340-720 & 740* (Cleanup Levels). Based upon field observations and FBI independent laboratory analyses, the inferred lateral extent of petroleum impacted soil and groundwater was limited to the area shown by Figure 7.

Test pits exhibiting the potential for LNAPL accumulation were allowed to remain open for observation and oliophilic/hydrophobic pads were placed on the groundwater surface to collect and remove any LNAPL present from December 8, 2005 to January 23, 2006, prior to backfilling. Sage used a total of 50 pads during this time period and estimates the total quantity of removed diesel to be less than 25 fluid ounces, including the LNAPL concurrently removed from MW-3.

To confirm the nature of LNAPL present in the well, Sage collected as sample of the material and submitted it to FBI for forensic analysis on July 30, 2008. Analysis by Capillary Gas Chromatography using a Flame Ionization Detector found "a middle distillate such as diesel fuel or heating oil" that had "undergone substantial biological degradation"[11]. Additional analysis indicated that if the product was used as road fuel, it was produced prior to October 1, 1993, when the EPA mandated the limit of sulfur to 0.05 percent.

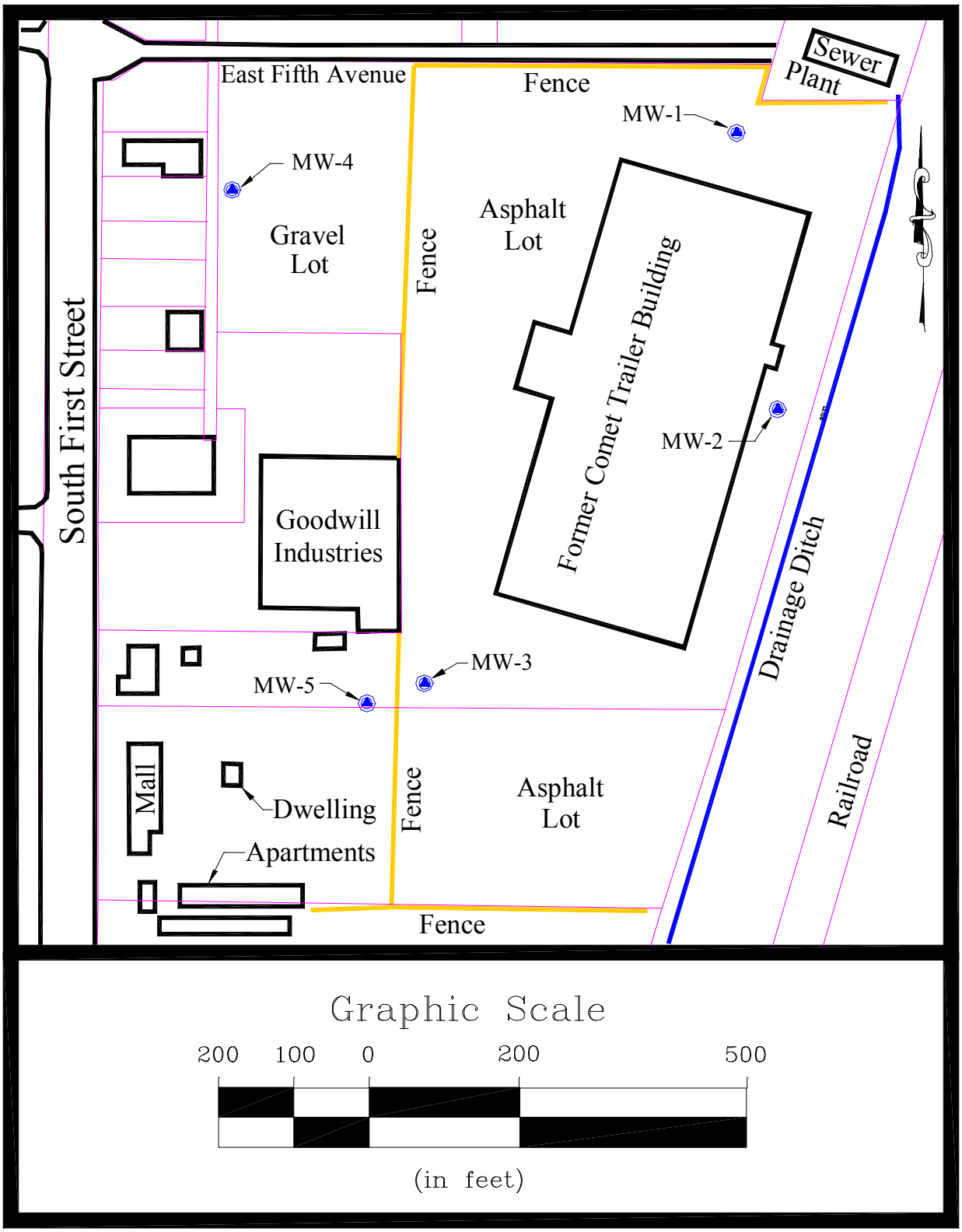


Figure 6. Locations of Initial Groundwater Monitoring Wells

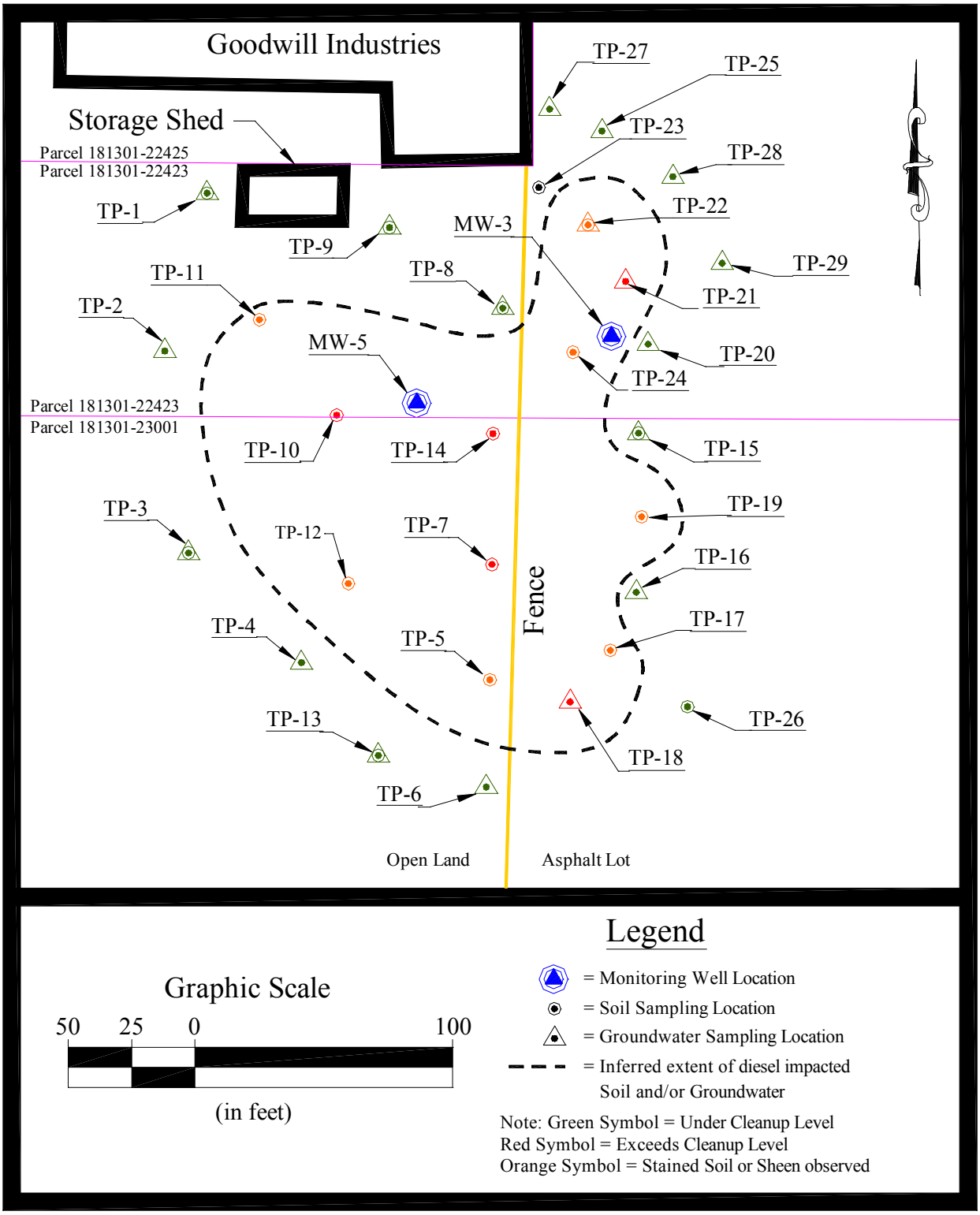
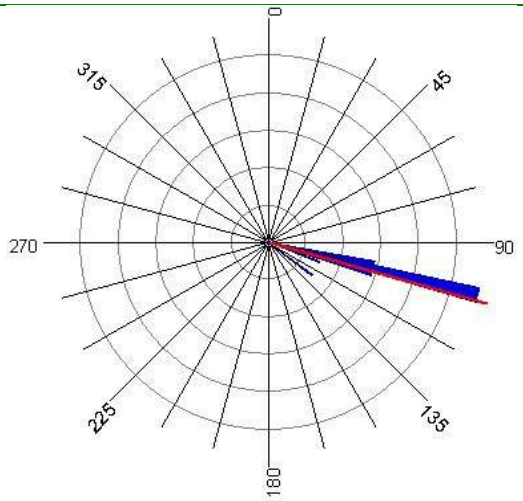


Figure 7. Extent of Petroleum Impacts Inferred from Initial Characterization Activities.

3.5.2 Groundwater Gradient Characterization

Sage periodically checked for the presence of Light Non-Aqueous Phase Liquid (petroleum product), and collected Depth To Water (DTW) measurements, using a Solinst 122 interface probe[10,11,12,13,14]. Using well survey and DTW measurements, Sage calculated the groundwater gradient for each monitoring event. A summary of groundwater flow direction calculations for the immediate vicinity of Area #5 is presented in Table 3. The mean (average) bearing of flow direction was E 16 S, or 106 in the azimuth scale at a gradient of 0.002 ft/ft.

Table 3. Summary of Initial Groundwater Monitoring Flow Direction Data

Date	Calculated Gradient	Rose Diagram of Flow Direction
11/22/05	110	
12/26/05	105	
01/23/06	104	
07/30/08	101	
09/02/08	105	
09/25/08	102	
10/27/08	101	
12/04/08	126	
01/09/09	106	
02/05/09	103	
03/11/09	102	
05/01/09	103	
07/13/09	105	
08/28/09	106	

Note: North = 0º, East = 90º, South = 180º, West = 270º.
Red line in Rose Diagram shows Mean Flow Direction

The water levels appeared to represent the uppermost portion of an unconfined water-bearing unit. In MW-3 the groundwater surface was found to lie at depths ranging from 2.16 to 3.73 feet below top of casing in the well. In MW-5 the groundwater surface was found to lie at depths ranging from 2.64 to 3.73 feet below top of casing in the well. For the area near the plume of diesel contamination, the groundwater was observed to fluctuate up to approximately one and one-half (1.5) feet.

Of note, the observed water table elevation in MW-3 often exceeded the elevation of the top of the well screen in MW-3. Since the water table did not intersect the well screen during the duration of this project, free product measurements were commonly not representative of actual conditions in the vicinity of MW-3.

During the free product removal/ site characterization phase of the project, Sage removed a total of approximately 518 ounces (4 gallons) of petroleum from the groundwater surface.

3.5.3 Soil Remediation Activities

To reduce impacts to groundwater, Comet Trailer chose to excavate accessible diesel impacted soil and temporarily store it on site. Sage formally requested permission from Ecology to perform soil remediation without amending the existing Agreed Order on December 1, 2009[15]. Sage obtained approval from Ecology to initiate soil remediation activities on December 7, 2009[30].

Upon receiving approval from the Department of Ecology, Hi-Point Excavation LLC (HPE) of Yakima excavated approximately 5280 cubic yards of diesel impacted soil on January 2 - February 24, 2010[16]. Approximately 3,000 cubic yards of apparently clean overburden soil was excavated and stockpiled on-site for use as backfill material. HPE transported impacted soil to a temporary storage area, located on the northwestern portion of the property. To facilitate complete removal of impacted soil, MW3 and MW5 were removed completely by excavation.

Sage collected soil samples from within the remedial excavation for field screening and/or laboratory analysis to determine the adequacy of soil remediation activities. Sage submitted twenty-two (22) soil samples and one (1) groundwater sample to Friedman & Bruya, Inc. (FBI), Seattle, WA for independent laboratory analysis to characterize the final remedial excavation. Sage collected twelve (12) samples of the apparently clean overburden for characterization to evaluate its suitability for use as remedial excavation backfill.

FBI analysis of remedial excavation characterization soil samples found no detectable diesel or motor oil range petroleum hydrocarbons. Comparison of the FBI analytical results with the *Method A Soil Cleanup Levels of WAC 173-340-740* indicated that no additional impacted soil removal is required at the release location. However, FBI analysis of the groundwater sample found diesel range petroleum hydrocarbons at a concentration of 52,000 µg/L and motor oil range petroleum hydrocarbons at a concentration of 2,600 µg/L. Comparison of the FBI analytical results with the *Method A Groundwater Cleanup Levels of WAC 173-340-720* indicated that remedial action was required to reduce diesel and motor oil range petroleum hydrocarbons to acceptable concentrations. Analysis of the twelve (12) overburden soil stockpiles found no detectable diesel and/or motor oil range petroleum hydrocarbons. Based upon the FBI analyses, the overburden soil was suitable for use as excavation backfill.

After installing three (3) additional monitoring wells, Sage conducted one year of quarterly groundwater sampling on August 12, 2010[18], November 8, 2010[19], February 15, 2011[20] and May 12, 2011[21]. FBI analysis of the groundwater samples found no diesel and/or motor oil range petroleum hydrocarbons at concentrations exceeding the *Method A Groundwater Cleanup Levels* of WAC 173-340-720 in any of the samples.

Comet Trailer chose to independently treat petroleum impacted soil, generated during soil remediation activities, on the northwestern portion of the property using the "landfarming" method[17]. Sage observed that the impacted soil stockpile has been spread to a thickness of approximately one and one-half (1.5) feet in depth. The client informed Sage that they had aerated the soil using a caterpillar ripper and watered it using a water truck.

To evaluate the adequacy of soil treatment activities, Sage collected seventeen (17) soil samples from soil on the northwestern portion of the property. Sage submitted the samples to Friedman & Bruya, Inc. (FBI) for analysis using method NWTPH-Dx. The FBI analyses found:

- Diesel range petroleum hydrocarbons at concentrations ranging from 450 mg/Kg up to 4,400 mg/Kg and
- No detectable (less than 250 mg/Kg) motor oil range petroleum hydrocarbons.

Treatment of soil was discontinued and the treated soil was transported to the southern portion of the property.

4.0 Current Agreed Order No. DE 1193

Agreed Order No. DE 03 TCPCR-5877 was signed by the late Mr. Bud Owens and was replaced by Agreed Order No. DE 11193, to identify Bud Owens Family Limited Partnership as the Potentially Liable Person (PLP) required to conduct a Remedial Investigation and Feasibility Study for the Comet Trailer Corp Site. Agreed Order No. DE 11193 is included as Appendix B.

5.0 Remedial Investigation

Sage followed the Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) in the *Final Remedial Investigation Work Plan*[23] to ensure sample collection, handling, and analysis would result in data of sufficient quantity and quality to plan and evaluate remedial actions at the site and to ensure proper planning and implementation of sampling activities, as well as to gather sufficient data to facilitate determination of appropriate cleanup levels for the site. Sage personnel licenses and certificates are included as Appendix W.

5.1 AREA ONE: Sandblast Grit on B.N.S.F. Land

Sage inspected Area One for evidence of sandblast grit piles on June 22, 2015. No evidence of sandblast grit was observed. Since stockpiles or residues of sandblast waste materials were not found, the *Work Plan*[23] included collection and analysis of:

- five (5) surface soil samples (CT-0115-S1 through CT-0115-S5) collected randomly from Area One and
- five (5) samples (CT-0115-S6 through CT-0115-S10) collected in the area of the former grit waste pile locations identified by GeoEngineers in 2003[1], which were not sampled at that time.

To determine the random sampling locations, Sage overlaid Area One with a grid as shown by Figure 8. The overlay consisted of 100 grids measuring 25' X 25' each. Sage utilized an internet based random integer generator to generate 10 random numbers which were used to designate sampling locations (See Appendix C). The random numbers were consecutively assigned to unique sample identification numbers, as shown by Table 4. Samples were collected as near to the center of their assigned grid as possible, using portable GPS. Since impacts from previous sandblast grit piles are more likely at the soil surface, the samples were collected from the upper three inches of soil.

As prescribed in the *Work Plan*[23], Sage collected the soil samples on December 16, 2015. The CT-0115-S5 sampling location was chosen randomly as the location to collect a duplicate sample (CT-0115- S11) for Total Lead, Total Chromium and Hexavalent Chromium. The Area One soil sampling locations are shown by Figure 8.

Sage submitted the samples to FBI and Fremont Analytical for independent laboratory analysis. The analytical results are attached as Appendix D. The five (5) samples exhibiting the highest concentration of Chromium (CT-0115-S2, S6, S7, S9 & S10) were analyzed for Hexavalent Chromium. A summary of analytical data for Area One soil samples is presented in Table 4.

Sage used a direct comparison of the laboratory analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] (Appendix E) to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area One.

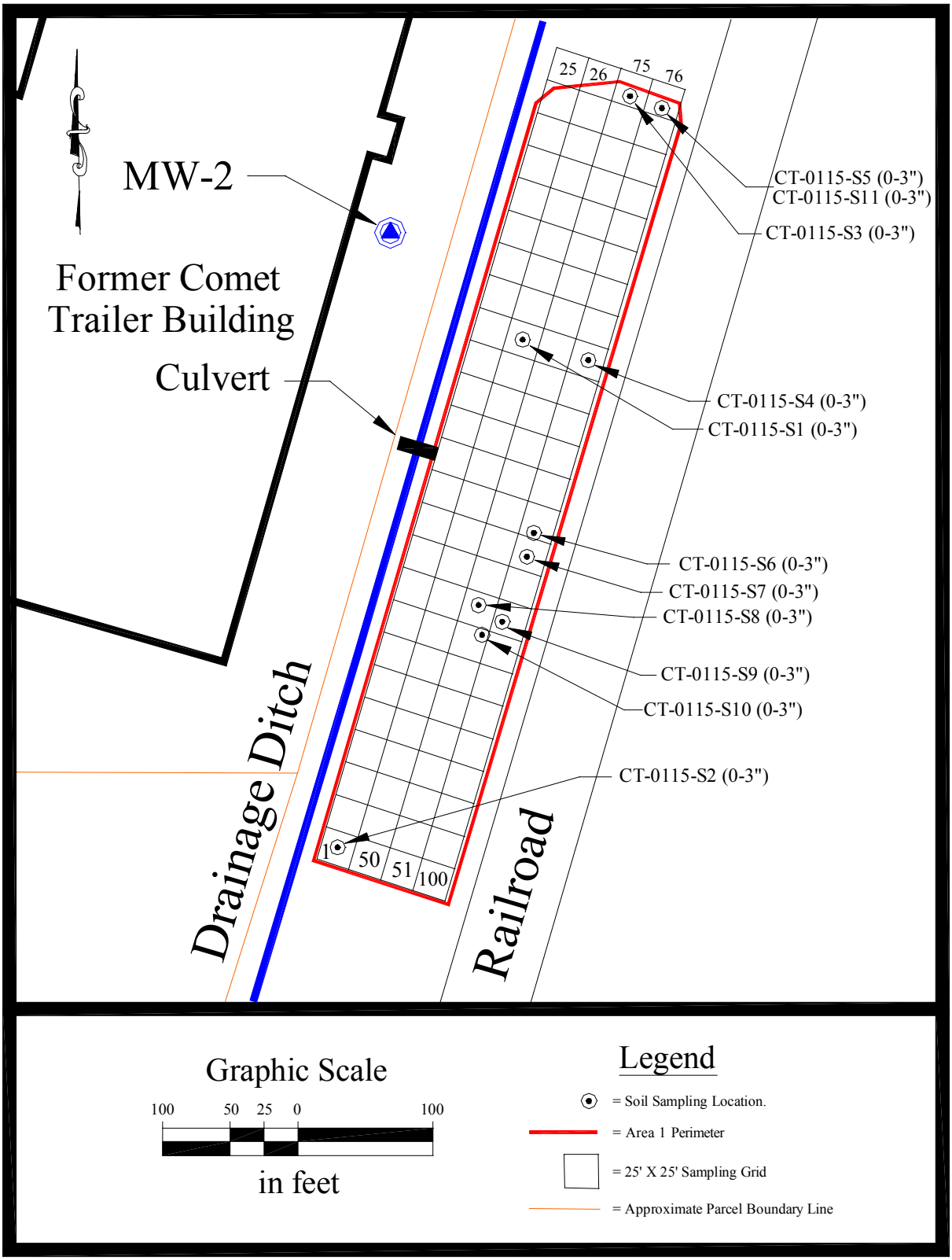


Figure 8. Soil Sampling Locations for Area One.

Table 4. Summary of Analytical Data for Area One Samples					
Sample ID Number	Random Grid Number	Depth (inches)	Total Lead Mg/Kg	Total Chromium Mg/Kg	Hexavalent Chromium Mg/Kg
Method A Soil Cleanup Level			250	2000	19
CT-0115-S1	34	0 to 3	7.82	12.1	--
CT-0115-S2	1	0 to 3	6.95	17.4	<0.637
CT-0115-S3	75	0 to 3	7.54	10.0	--
CT-0115-S4	84	0 to 3	16.5	12.9	--
CT-0115-S5	76	0 to 3	24.4	9.59	<0.652
CT-0115-S6	76	0 to 3	12.7	15.2	<0.671
CT-0115-S7	NA	0 to 3	7.45	15.4	<0.650
CT-0115-S8	NA	0 to 3	8.79	14.5	--
CT-0115-S9	NA	0 to 3	8.60	15.3	<0.697
CT-0115-S10	NA	0 to 3	9.09	15.0	<0.635
CT-0115-S11*	NA	0 to 3	22.8	10.6	<0.650
* Indicates the sample is a duplicate collected at the CT-0115-S5 location analyzed for Total Pb, Total Cr and Hexavalent Chromium. NA= Not Applicable.					

5.2 AREA TWO: Paved Area with Building

Work regarding catch basins and the storm water drainage system at the site was limited to mapping and describing catch basin construction, inspection for indications of piping direction and exploring for an additional outfall into the drainage ditch on the northeast portion of the site. The *Work Plan*[23] did not include sampling of the catch basins.

Sage observed a total of eight (8) catch basins within Area 2 on April 23, 2017. Catch Basin locations (CB-1 through CB-8) are shown by Figure 9. Each catch basin was constructed of concrete walls and floor, measuring approximately twenty (20) inches by twenty-four (24) inches. A steel grate covered each catch basin. Observed piping consisted of PVC. A summary of Catch Basin observations is presented as Table 5. CB-1 through CB-3 appeared to discharge toward Storm Water Discharge #1, an 8 inch PVC pipe located on the northeast portion of the property, as shown by Figure 9. CB-4 through CB-8 appeared to discharge toward Storm Water Discharge #2, a 12 inch PVC pipe located on the southeast portion of the property, as shown by Figure 9.

Table 5. Summary of Catch Basin Observations				
Catch Basin ID	Depth to Bottom (inches)	Depth to Water (inches)	Influent Pipe Size/From Direction	Effluent Pipe Size/Toward Direction
CB-1	37	36	8” WSW	8” E
CB-2	32	31	8” WSW	8” ENE
CB-3	48	33	None	8” ENE
CB-4	44	38	None	12” SE
CB-5	48	37	12” NW	12” SSW
CB-6	44	40	12” NNE & 6” ESE	12” SE
CB-7	26	21	12” NW	12” SE
CB-8	48	37	12” NW	12” SE

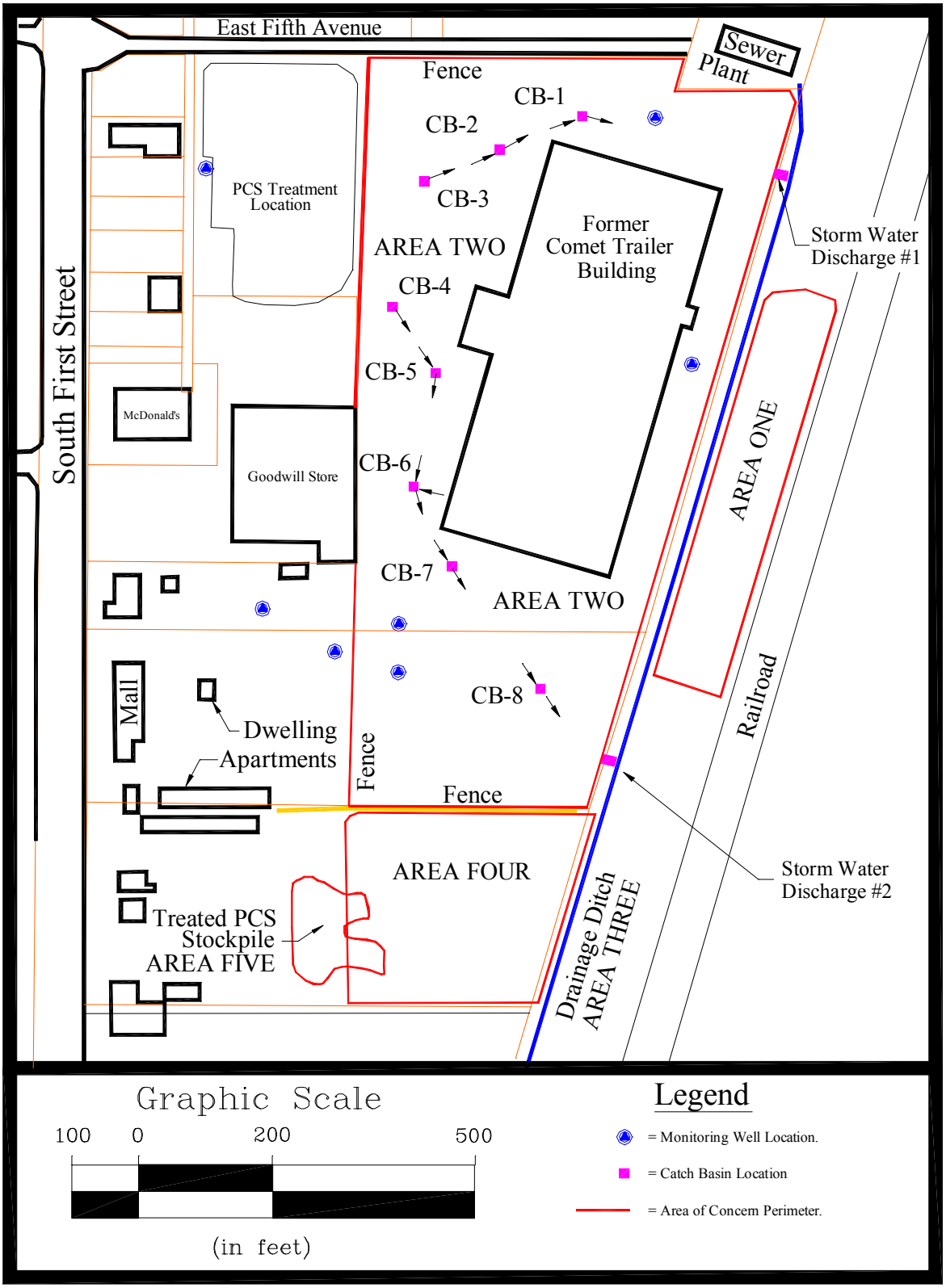


Figure 9. Catch Basin Locations Showing Influent & Effluent Directions

5.3 AREA THREE: Wastewater Ditch

Work regarding the Wastewater Ditch was limited to exploring for an additional outfall into the drainage ditch on the northeast portion of the site. Sage's exploration found one (1) eight inch PVC discharge pipe (Storm Water Discharge #1) at the location shown by Figure 9. The *Work Plan*[23] did not include sampling of the drainage ditch.

5.4 AREA FOUR: Land South of the Building

Sage inspected Area Four for evidence of sandblast grit piles on June 22, 2015. Since stockpiles or residues of sandblast waste materials were not found, the *Work Plan*[23] included collection and analysis of:

- Ten (10) random soil samples (CT-0115-S13 through S17 & S19 through S23) analyzed for Total Lead by Method 200.8,
- Ten (10) random soil samples (CT-0115-S13 through S17 & S19 through S23) analyzed for Total Chromium by Method 200.8,
- Five (5) soil samples, exhibiting the highest concentration of Chromium (CT-0115-S13, S14, S15, S21 & S23), analyzed for Hexavalent Chromium by Method 7196.

To determine random sampling locations, Sage overlaid Area Four with a grid as shown by Figure 10. The overlay consisted of 150 grids measuring 25' X 25' each. Sage utilized an internet based random integer generator to generate 10 random numbers which were used to designate sampling locations (See Appendix C). The random numbers were consecutively assigned to unique sample identification numbers, as shown by Table 6. Samples were collected as near to the center of their assigned grid as possible, using handheld GPS. Since impacts from previous sandblast grit piles are likely at the soil surface, samples were collected from the upper three inches of soil.

As prescribed in the *Work Plan*[23], Sage collected the soil samples on December 16, 2015. The CT-0115-S17 sampling location was chosen randomly as the location to collect a duplicate sample (CT-0115- S18) for Total Lead, Total Chromium and Hexavalent Chromium. The Area Four soil sampling locations are shown by Figure 10.

Sage submitted the samples to FBI and Fremont Analytical for independent laboratory analysis. The analytical results are attached as Appendix D. As mentioned above, the five (5) samples exhibiting the highest concentration of Chromium (S13, S14, S15, S21 & S23) were analyzed for Hexavalent Chromium. A summary of analytical data for Area One soil samples is presented in Table 6.

Sage used a direct comparison of the analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] (Appendix E) to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area Four.

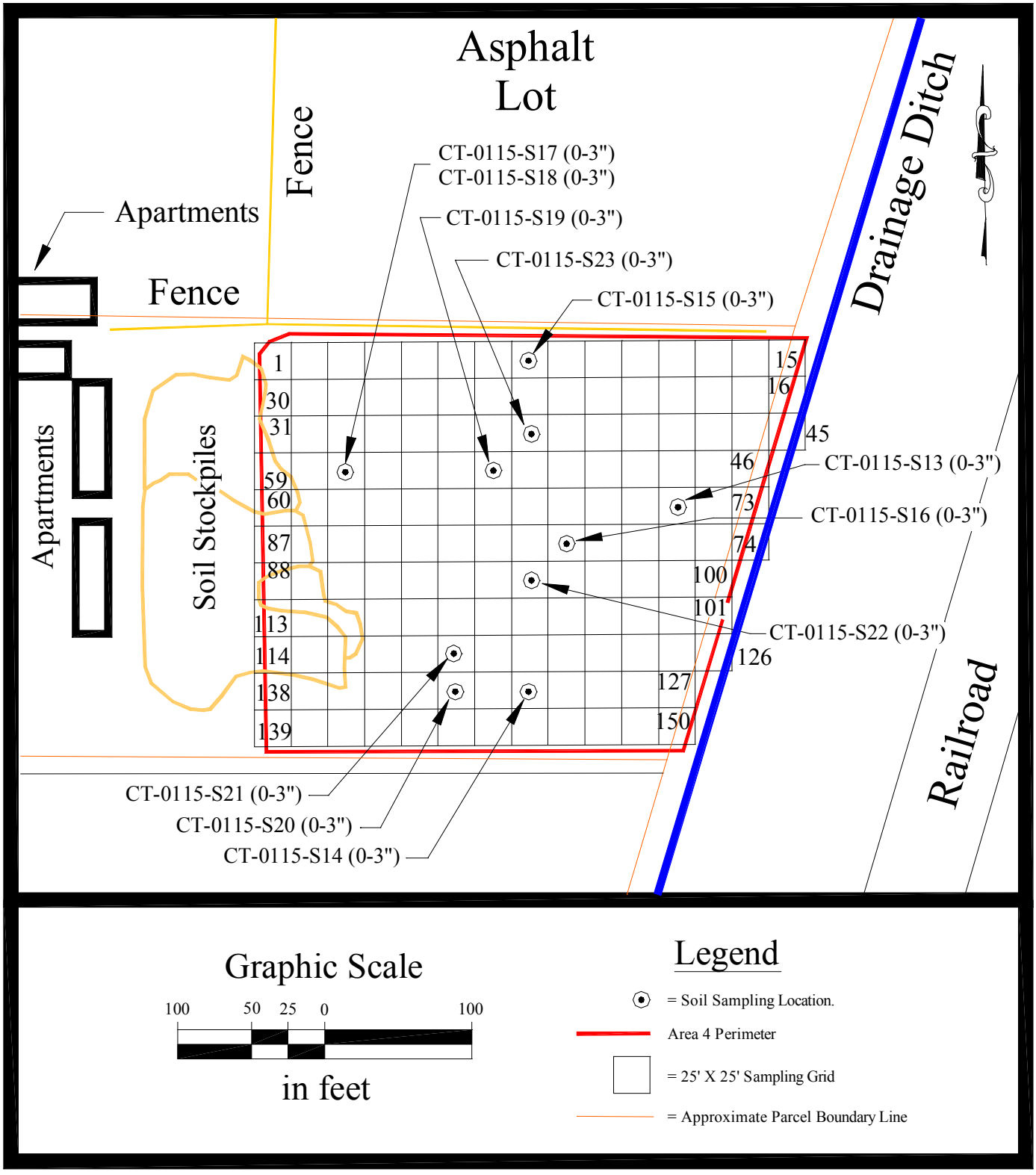


Figure 10. Soil Sampling Locations for Area Four.

Table 6. Summary of Analytical Data for Area Four Samples					
Sample ID Number	Random Grid Number	Depth (inches)	Total Lead Mg/Kg	Total Chromium Mg/Kg	Hexavalent Chromium Mg/Kg
Method A Soil Cleanup Level			250	2000	19
CT-0115-S13	71	0 to 3	11.7	16.1	<0.603
CT-0115-S14	131	0 to 3	7.02	12.2	<0.644
CT-0115-S15	8	0 to 3	14.5	10.9	<0.572
CT-0115-S16	79	0 to 3	11.3	5.54	--
CT-0115-S17	57	0 to 3	27.2	7.17	<0.603
CT-0115-S18*	57	0 to 3	28.5	6.44	<0.600
CT-0115-S19	53	0 to 3	19.0	5.00	--
CT-0115-S20	133	0 to 3	67.2	6.42	--
CT-0115-S21	119	0 to 3	15.8	11.0	<0.634
CT-0115-S22	95	0 to 3	30.4	5.54	--
CT-0115-S23	38	0 to 3	9.70	12.5	<0.563
* Indicates the sample is a duplicate of CT-0115-S17 analyzed for Total Pb, Total Cr and Hexavalent Chromium.					

5.5 AREA FIVE: Petroleum Contaminated Soil & Groundwater

5.5.1 Treated Soil Stockpile

Sage inspected the treated soil stockpile area on June 22, 2015. Sage observed that additional imported material appeared to be added to the site, which consisted of soil including concrete fragments, wood and scrap metal. Imported soil was excluded from sampling activities covered under the scope of work in the *Work Plan*[23]. Sage sketched the perimeter of these materials on an aerial photo, as shown by Figure 11. Although the surface of area is variable (ranging from 0' to 4' thick), due to effects of dumping truck loads adjacent to each other, Sage estimated that the average thickness of treated soil is approximately two feet. Using the field sketch, Sage digitized the perimeter of the treated soil stockpile and calculated the area it occupied to be approximately 14,840 square feet. Sage calculated the estimated volume of soil to be: 14,840 ft^2 X 2 ft = 29,680 ft^3. Converting cubic feet to cubic yards: 29,680 ft^3 X (1 yd^3/27 ft^3) = 1,099 yds^3.

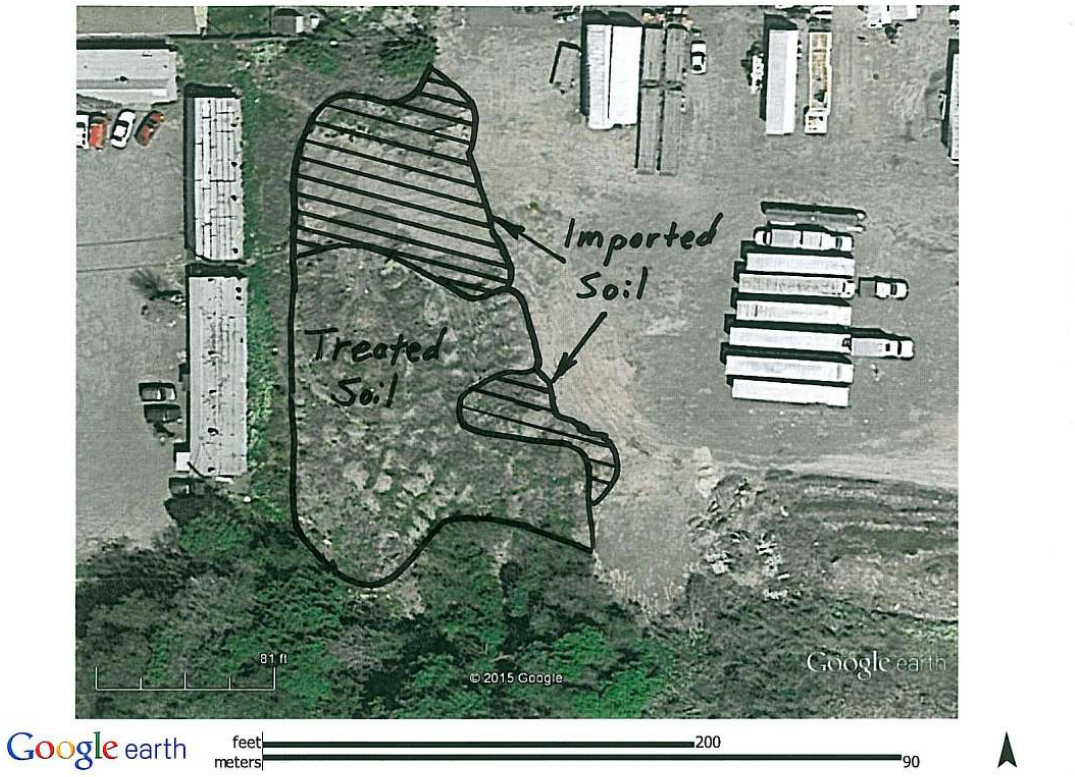


Figure 11. Treated Soil Stockpile Area observed on June 22, 2015.

The *Work Plan*[23] required determination of twenty (20) random sampling locations. To determine random sampling locations, Sage overlaid the Area Five Stockpile of Treated PCS with a grid as shown by Figure 12. The overlay consisted of 153 grids measuring 10' X 10' each. Sage utilized an internet based random integer generator to generate 20 random numbers which were used to designate sampling locations (See Appendix C). The random numbers were consecutively assigned to unique sample identification numbers, as shown by Table 7.

Since selected samples will be analyzed for BTEX, the upper six inches of soil will be excluded from sampling. To determine sampling depths, the thickness of the soil stockpile beneath the upper six inches will be estimated in the field, during sampling activities, and the sampling depth will be calculated using the following equation:

Sample Depth = 6 inches + (Estimated Thickness – 6 inches)(0.n)

To determine "n", Sage utilized the internet based random integer generator to generate 20 random numbers (see Appendix C), ranging from 1 to 9 which were consecutively assigned to unique sample identification numbers, as shown by Table 7. The calculated sampling depth is also included in Table 9.

The CT-0115-SP34 sampling location was chosen to collect field duplicate sample CT-0115-SP35 and the CT-0115-SP45 sampling location was chosen to collect field duplicate sample CT-0115-SP46.

On December 15, 2015, Sage collected twenty-two (22) soil samples (CT-0115-SP25 through SP46) at the locations shown by Figure 12. Samples were collected as near to the center of their assigned grid as possible, using handheld GPS, in accordance with the *Work Plan*[23].

Sage submitted the samples to FBI for laboratory analysis. Initially, all samples were analyzed using NWTPH-Dx. Three (3) of the samples (CT-0115-SP28, SP41 &SP44) exhibited diesel range petroleum hydrocarbons at concentrations ranging from 92 ppm up to 200 ppm. The analytical data reports are included as Appendix F. The analytical results are summarized in Table 7. Based upon the NWTPH analysis results, samples were selected for additional analysis as follows:

- Five (5) soil samples (CT-0115-SP28, SP31, SP37, SP 41 & SP44) were analyzed for BTEX by Method 8021B and
- Five (5) soil samples (CT-0115-SP28, SP31, SP37, SP41 & SP44) were analyzed for CPAH's (including naphthalene) by Method 8270D SIM.

Since the analyses found only low concentrations of diesel range petroleum hydrocarbons in the three samples mentioned above, Extractable Petroleum Hydrocarbons (EPH) analysis was determined to be unnecessary and written approval was obtained from Ecology to forego the analyses[31] prescribed in the *Work Plan*[23]. The FBI data reports for the additional analyses are included in Appendix F. The additional results are summarized by Table 8. Very low concentrations of CPAH's were detected in only one sample (CT-0115-SP37).

To evaluate the adequacy of treatment, Sage used a direct comparison of the analytical results with the *Method A Soil Cleanup Levels of WAC-173-340-740* (Cleanup Levels) and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42]. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no additional remediation is required for the Area Five treated soil stockpile.

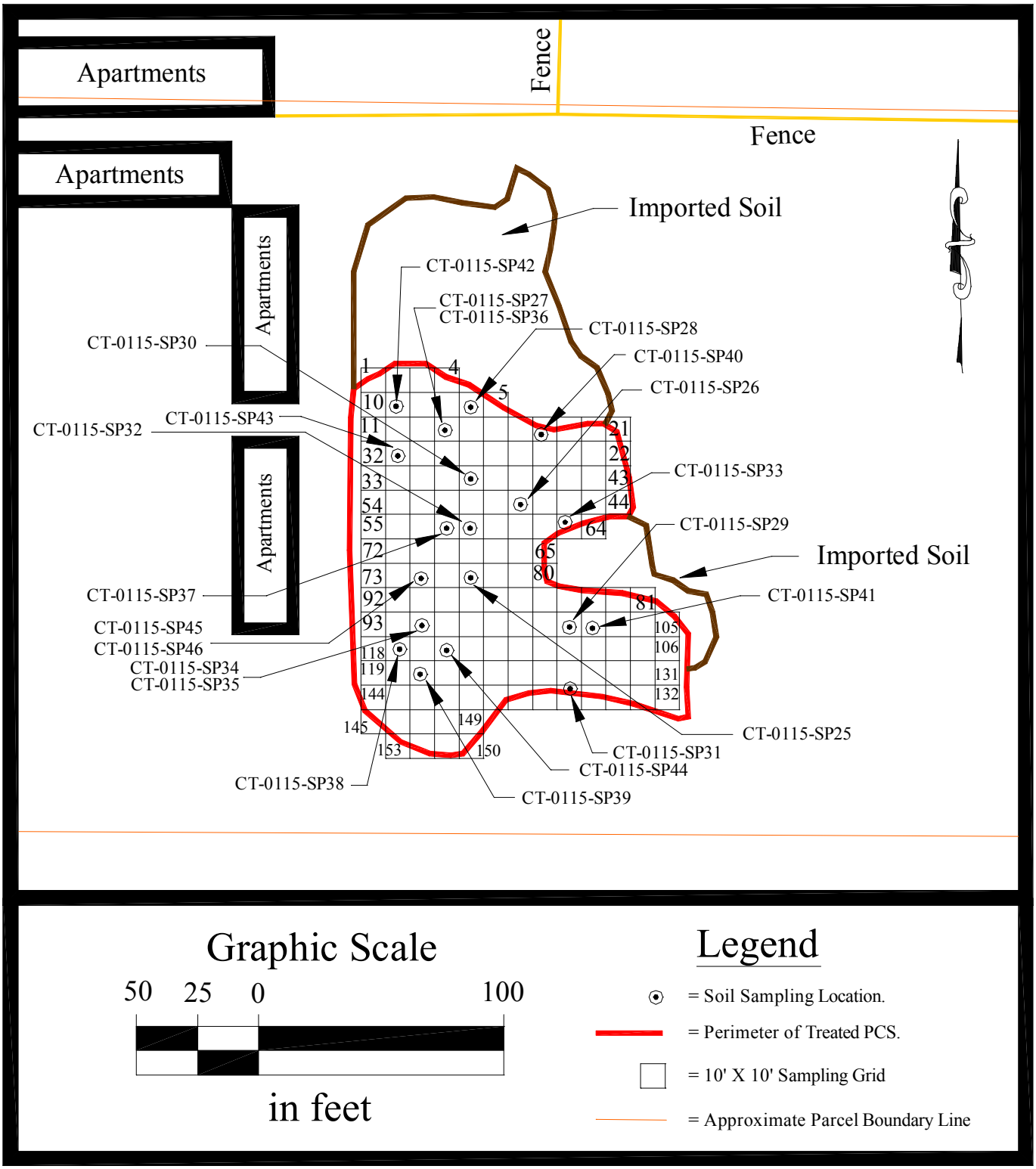


Figure 12. Sampling Locations for the Stockpile of Treated PCS.

Table 7. Summary of Sampling & NWTPH-Dx Analyses for Area Five – Treated PCS

Sample ID Number	Random Grid Number	Value of "n"	Estimated Stockpile Depth (ft.)	Calculated Sampling Depth (inches)	Diesel Range Hydrocarbons (ppm)	Motor Oil Range Hydrocarbons (ppm)
Method A Soil Cleanup Level					2000	2000
CT-0115-SP25	77	2	1.0	7.2	<50	<250
CT-0115-SP26	48	2	2.0	9.6	<50	<250
CT-0115-SP27	14	3	1.0	8.4	<50	<250
CT-0115-SP28	6	5	5.0	33	200	<250
CT-0115-SP29	101	3	3.0	15	<50	<250
CT-0115-SP30	37	2	3.0	12	<50	<250
CT-0115-SP31	136	6	3.0	24	<50	<250
CT-0115-SP32	59	3	3.0	15	<50	<250
CT-0115-SP33	63	1	3.5	9.6	<50	<250
CT-0115-SP34	95	6	2.0	16.8	<50	<250
CT-0115-SP35*	95	6	2.0	16.8	<50	<250
CT-0115-SP36	14	2	1.0	7.2	<50	<250
CT-0115-SP37	58	7	2.5	22.8	<50	<250
CT-0115-SP38	117	9	0.7	7.8	<50	<250
CT-0115-SP39	121	7	1.5	14.4	<50	<250
CT-0115-SP40	18	8	2.5	25.2	<50	<250
CT-0115-SP41	102	5	3.5	24	92	<250
CT-0115-SP42	9	5	1.5	12	<50	<250
CT-0115-SP43	31	8	1.5	15.6	<50	<250
CT-0115-SP44	115	2	2.5	10.8	150	<250
CT-0115-SP45	75	5	3.0	21	<50	<250
CT-0115-SP46*	75	5	3.0	21	<50	<250

* indicates the sample is a field duplicate of the previous sample.
ppm = parts per million or mg/Kg.

Table 8. Summary of Additional Analyses for Area Five – Treated PCS

Compound:	SP28 (ppm)	SP31 (ppm)	SP37 (ppm)	SP41 (ppm)	SP44 (ppm)	Cleanup Level (ppm)
Benzene	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
Toluene	<0.02	<0.02	<0.02	<0.02	<0.02	7
Ethylbenzene	<0.02	<0.02	<0.02	<0.02	<0.02	6
Total Xylenes	<0.06	<0.06	<0.06	<0.06	<0.06	9
Naphthalene	<0.01	<0.01	<0.01	<0.01	<0.01	5
Acenaphthylene	<0.01	<0.01	<0.01	<0.01	<0.01	NA
Acenaphthene	<0.01	<0.01	<0.01	<0.01	<0.01	9.79E+01
Fluorene	<0.01	<0.01	<0.01	<0.01	<0.01	1.01E+02
Phenanthrene	<0.01	<0.01	0.02	<0.01	<0.01	NA
Anthracene	<0.01	<0.01	0.01	<0.01	<0.01	2.27E+03
Fluoranthene	<0.01	<0.01	0.083	<0.01	<0.01	6.31E+02
Pyrene	<0.01	<0.01	0.098	<0.01	<0.01	6.55E+02
Benz(a)anthracene	<0.01	<0.01	0.042	<0.01	<0.01	8.58E-01
Chrysene	<0.01	<0.01	0.084	<0.01	<0.01	9.55E+01
Benzo(a)pyrene	<0.01	<0.01	0.054	<0.01	<0.01	2.33E+00
Benzo(b)flouranthene	<0.01	<0.01	0.15	<0.01	<0.01	2.95E+00
Benzo(k)flouranthene	<0.01	<0.01	0.035	<0.01	<0.01	2.95E+01
Indeno(1,2,3-cd)pyrene	<0.01	<0.01	0.055	<0.01	<0.01	8.32E+00
Dibenz(a,h)anthracene	<0.01	<0.01	0.012	<0.01	<0.01	4.29E-01
Benzo(g,h,i) perylene	<0.01	<0.01	0.051	<0.01	<0.01	NA

Note Sample ID preceded with "CT-0115-" in this report.
NA = Not Available in *CLARC, Soil – Method B and Method A)*[42]., ppm = ppm = parts per million or mg/Kg.

5.5.2 Installation of an Additional Groundwater Monitoring Well

Construction of additional groundwater monitoring wells was limited to one (1) well (MW-9), installed within the perimeter of the petroleum remediation excavation perimeter, at the location shown by Figure 13. The purpose of the additional groundwater monitoring well installation was to:

- evaluate soil conditions remaining at the floor of the former remedial excavation and
- expand the capture zone of potential groundwater contaminants potentially remaining in groundwater.

The well was installed on November 9, 2015 in accordance with the *Minimum Standards for Construction and Maintenance of Wells,* Chapter 173-160 WAC[2]. Drilling tools were steam cleaned before drilling operations commenced. The new 2-inch PVC monitoring well (MW #9) was installed using an 8" hollow stem auger, to a depth of 12.7 feet. Ten feet of 10-slot threaded PVS screen (0.010 inch openings) with a PVC well cap was installed in the annulus at depths between 2.5 and 12.5 feet BGS. The annulus was filled with 10 X 20 silica sand filter pack at depths between 1.5 and 12.5 feet BGS. Bentonite chip sealant was used to fill the annulus at depths between 1.0 feet and 1.5 feet BGS. An above ground steel monument was set in a one foot thick concrete base which was placed directly atop the bentonite seal. A locking well cap was installed atop the PVC casing, and a lock placed on the monument. Drill cuttings were placed in a barrel pending receipt of analytical results of a soil sample collected during the drilling process. Sage's *Drilling Report* documents well construction and stratigraphy and is attached as Appendix G.

Sage developed the well using a new disposable bailer in conjunction with a peristaltic pump to surge the well contents and purge suspended sediment from the well. The well was developed until visible suspended sediment was nearly absent. Approximately 75 gallons of water was removed during well development activities on November 10-11, 2015. Well development purge water was placed in a 55-gallon drum for temporary storage, pending results of analyses of groundwater samples subsequently collected from the well. Disposal of drill cuttings and water purged during well development and well purging activities is discussed in Section 5.6 of this report.

5.5.3 Evaluation of Soil within Remedial Excavation Perimeter

During MW-9 drilling activities discussed above, one (1) soil sample (CT-0115-SB47) was collected at a depth ranging from 5.5 to 7.0 BGS using a split barrel sampler in accordance with the *Work Plan*[23]. The soil sampling location is shown by Figure 13. The soil sample was submitted to FBI for the following analytical laboratory methods:

- Diesel and Heavy Oil Range Organics by NWTPH-Dx,
- BTEX by Method 8021B,
- CPAH's (including naphthalene) by Method 8270D SIM

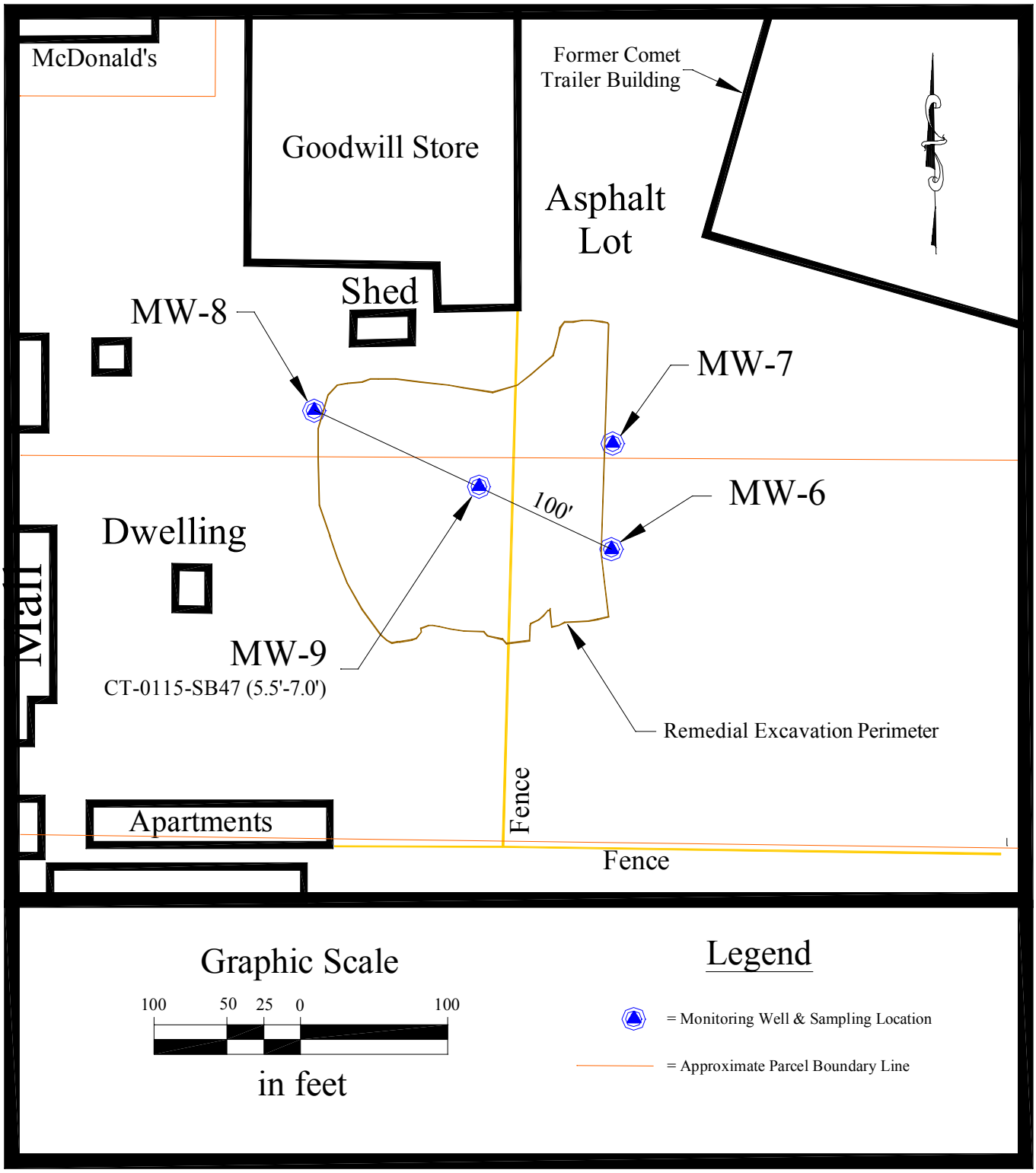


Figure 13. MW-9 Installation & CT-0115-SB47 Sampling Location

The FBI analytical data report is included as Appendix H and summarized by Table 9. Direct comparison of the analytical results with the *Method A Soil Cleanup Levels of WAC-173-340-740* (Cleanup Levels) and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no additional remediation is required within the Area Five remedial excavation.

Table 9. Summary of CT-0115-SB47 Analytical Results

Compound:	SB47 (ppm)	Cleanup Level (ppm)
Diesel Range Petroleum Hydrocarbons	170	2,000
Motor Oil Range Petroleum Hydrocarbons	<250	2,000
Benzene	<0.02	0.03
Toluene	<0.02	7
Ethylbenzene	<0.02	6
Total Xylenes	<0.06	9
Naphthalene	<0.01	5
Acenaphthylene	<0.01	NA
Acenaphthene	<0.01	9.79E+01
Fluorene	<0.01	1.01E+02
Phenanthrene	<0.01	NA
Anthracene	<0.01	2.27E+03
Fluoranthene	<0.01	6.31E+02
Pyrene	<0.01	6.55E+02
Benz(a)anthracene	<0.01	8.58E-01
Chrysene	<0.01	9.55E+01
Benzo(a)pyrene	<0.01	2.33E+00
Benzo(b)flouranthene	<0.01	2.95E+00
Benzo(k)flouranthene	<0.01	2.95E+01
Indeno(1,2,3-cd)pyrene	<0.01	8.32E+00
Dibenz(a,h)anthracene	<0.01	4.29E-01
Benzo(g,h,i) perylene	<0.01	NA

Note: Sample ID preceded with "CT-0115-" in this report.
NA = Not Available in *CLARC, Soil – Method B and Method A)*[42]
ppm = parts per million or mg/Kg.

5.5.4 Groundwater Monitoring Program

Sage performed groundwater monitoring activities for six (6) consecutive quarterly sampling events at Area 5 wells (MW-6 through MW #9) located in the immediate vicinity of the petroleum remediation excavation location[22]. Quarterly groundwater monitoring activities were performed on 11/17/15, 02/22/16, 05/23/16, 08/22/16, 11/15/16 and 02/20/17. Groundwater sampling locations are shown by Figures 14 through 20, respectively (see Pages 38 through 44). Water level measurements, well purging and groundwater sampling activities were performed in accordance with the *Work Plan*[23]. Disposal of water purged during sampling activities is discussed in Section 5.6 of this report. Sage observed no Light Non-Aqueous Phase Liquid (LNAPL) in any of the wells during field activities.

5.5.4.1 Groundwater Sample Analyses

Groundwater samples from each well were submitted to FBI for analysis using the following methods:

- Diesel and Heavy Oil Range Organics by NWTPH-Dx,
- BTEX by Method 8021B,
- CPAH's (including naphthalene) by Method 8270D SIM

QA/QC samples for each sampling event were limited to:

- One field duplicate analyzed for Diesel and Heavy Oil Range Organics by NWTPH-Dx,
- One field duplicate analyzed for BTEX by Method 8021B and
- One field duplicate analyzed for CPAH's (including naphthalene) by Method 8270D SIM
- One travel blank analyzed for BTEX by Method 8021B (if detected in any sample).

Field duplicate sampling locations were rotated consecutively for each quarterly sampling event for the first four quarters. However, since petroleum hydrocarbons were only found in MW-9 during the first four (4) quarters, duplicate samples were limited to the MW-9 sampling location during the fifth and sixth quarters.

A summary of sampling and analytical information is presented by Table 10. Sampling locations are shown by Figure 14 through 20. First quarter Field Sampling Documentation is included as Appendix I. FBI analytical data reports for first quarter samples are included as Appendix J. Second quarter Field Sampling Documentation is included as Appendix K. FBI analytical data reports for first quarter samples are included as Appendix L. Third quarter Field Sampling Documentation is included as Appendix M. FBI analytical data reports for first quarter samples are included as Appendix N. Fourth quarter Field Sampling Documentation is included as Appendix O. FBI analytical data reports for fourth quarter samples are included as Appendix P. Fifth quarter Field Sampling Documentation is included as Appendix Q. FBI analytical data reports for fifth quarter samples are included as Appendix R. Sixth quarter Field Sampling Documentation is included as Appendix S. FBI analytical data reports for Sixth quarter samples are included as Appendix T. Seventh event Field Sampling Documentation is included as Appendix U. FBI analytical data reports for the Seventh event samples are included as Appendix V.

Review of the analytical data for project groundwater monitoring samples detected no diesel, heavy oil, BTEX or CPAH's in samples collected from MW6, MW7 or MW8 throughout the course of the project (see Table 10). However, diesel and/or heavy oil was detected in MW9 during the first two quarters of the monitoring program, as well as the sixth quarter. No BTEX or CPAH's were found in MW9 throughout the project. Diesel and motor oil range petroleum hydrocarbon concentrations were found to exceed the *Method A Groundwater Cleanup Levels of WAC 173-340-720* in MW-9 only during the Second Quarter Groundwater Monitoring event (See Table 10). FBI analysis of MW9 samples during the Second Quarter event found:

- Diesel range petroleum hydrocarbons at a concentration of 1,000 µg/L and
- Motor Oil range petroleum hydrocarbons at a concentration of 890 µg/L.

Direct comparison the analytical results (Appendices J, L, N, P, R, T & V) with *Method A Groundwater Cleanup Levels of WAC 173-340-720*[5] indicates we have subsequently obtained over four consecutive quarters of analytical results compliant with these Cleanup Levels.

Table 10. Summary of Analytical Results for Groundwater Monitoring at the Former Comet Trailer Facility

Site Well ID	Quarter	Date	Sample ID	Benzene (ppb)	Toluene (ppb)	Ethyl Benzene (ppb)	Total Xylenes (ppb)	Diesel Range (ppb)	Motor Oil Range (ppb)	Naphthalene (ppb)	Benz(a) anthracene (ppb)	Chrysene (ppb)	Benzo(a) pyrene (ppb)	Benzo(b fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Indeno(1,2,3-cd) pyrene (ppb)	Dibenz(a,h) anthracene (ppb)
		Method A Groundwater Cleanup Level:		5	1000	700	1000	500	500	160	*Method B Groundwater Cleanup Levels* not determined due to consistent lack of target compound detections.						
MW-6	1	11/17/2015	CT-0115-1-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	1	11/17/2015	CT-0115-1-GW10*	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW6	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
MW-7	1	11/17/2015	CT-0115-1-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW10**	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW7	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
MW-8	1	11/17/2015	CT-0115-1-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW10***	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW8	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
MW-9	1	11/17/2015	CT-0115-1-GW9	<1	<1	<1	<3	290	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	2	2/22/2016	CT-0115-2-GW9	<1	<1	<1	<3	**1000**	**890**	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	3	5/23/2016	CT-0115-3-GW9	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW9	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	4	8/22/2016	CT-0115-4-GW10****	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW9	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	5	11/15/2016	CT-0115-5-GW10****	<1	<1	<1	<3	<50	<250	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW9	<1	<1	<1	<3	370	280	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	6	2/20/2017	CT-0115-6-GW10****	<1	<1	<1	<3	450	420	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
	7	09/11/2017	CT-0115-7-GW9	--	--	--	--	<50	<250	--	--	--	--	--	--	--	--
	7	09/11/2017	CT-0115-7-GW10****	--	--	--	--	<50	<250	--	--	--	--	--	--	--	--

* = Duplicate sample collected from MW-6
** = Duplicate sample collected from MW-7
*** = Duplicate sample collected from MW-8
**** = Duplicate sample collected from MW-9

5.5.4.2 Groundwater Gradient Monitoring

Upon installation of MW-9, Sage retained Survey Technical Services, Inc. of Prosser, WA to determine horizontal and vertical position of top of casing of groundwater monitoring wells relative to temporary bench mark. As discussed above, Sage checked for the presence of Light Non-Aqueous Phase Liquid (LNAPL), and collected Depth to Water (DTW) measurements, using a Solinst 122 interface probe during each event. No petroleum product was indicated by the interface probe in the groundwater monitoring wells during this project. The water levels appear to represent the uppermost portion of an unconfined water-bearing unit. A summary of groundwater monitoring well data collected during the project is presented in Table 11.

Review of the groundwater data found the groundwater table to be very shallow and the general groundwater flow direction trends from northwest toward southeast (see Figures 14 - 20). However, Sage observed groundwater gradients indicative of groundwater mounding in the area of the previous remedial excavation perimeter during the sampling events of February of 2016 and 2017 (see Figures 15 and 19). This appears to be due to successive heavy winter precipitation in the valley areas and we experienced extremely muddy conditions during these sampling events due to high runoff. It is during these groundwater mounding events that diesel and motor oil range petroleum hydrocarbon concentration levels appeared to be at their highest.

On November 17, 2015, the groundwater surface was found to lie at depths ranging from 5.42 to 7.61 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.009 ft/ft from the northeast to the southwest, bearing between N 138° E and N 152° E respectfully, as shown by Figure 14.

On February 22, 2016, the groundwater surface was found to lie at depths ranging from 5.04 to 7.28 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.018 ft/ft, bearing between N 12° E in the northern portion of the remedial excavation, to 0.017 ft/ft bearing N 123° E in the southern portion of the remedial excavation, as shown by Figure 15.

On May 23, 2016, the groundwater surface was found to lie at depths ranging from 5.37 to 7.56 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.009 ft/ft from the northeast to the southwest, bearing between N 138° E and N 152° E respectfully, as shown by Figure 16.

On August 22, 2016, the groundwater surface was found to lie at depths ranging from 5.56 to 7.81 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.009 ft/ft from the northeast to the southwest, bearing between N 144° E and N 154° E respectfully, as shown by Figure 17.

On November 15, 2016, the groundwater surface was found to lie at depths ranging from 5.21 to 7.39 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft up to 0.008 ft/ft from the northeast to the southwest, bearing between N 128° E and N 149° E respectfully, as shown by Figure 18.

On February 20, 2017, the groundwater surface was found to lie at depths ranging from 4.99 to 7.21 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.003 ft/ft, bearing between N 48° E in the northern portion of the remedial excavation, to 0.009 ft/ft bearing N 140° E in the southern portion of the remedial excavation, as shown by Figure 19.

On September 11, 2017, the groundwater surface was found to lie at depths ranging from 5.13 to 7.39 feet below top of casing in the monitoring wells. The local groundwater gradient was calculated to range from approximately 0.002 ft/ft, bearing between N 136° E in the northern portion of the remedial excavation, to 0.009 ft/ft bearing N 153° E in the southern portion of the remedial excavation, as shown by Figure 20.

Table 11. Summary of Groundwater Monitoring Well Data at the Former Comet Trailer Facility

Site Well ID	WSDOE ID	Date	Northing (ft)	Easting (ft)	Elevation (ft)	BHD (ft)	Casing Stickup (ft)	Screen TOC (ft)	Screen Base (ft)	DTW (TOC) (ft)	SWL Elevation (ft)
MW-6	BCB696		3412.53	5481.23	101.30	14.7	2.6	4.7	14.7		
		11/17/2015								5.95	95.35
		2/22/2016								5.68	95.62
		5/23/2016								5.91	95.39
		8/22/2016								6.09	95.21
		11/15/2016								5.67	95.63
		2/20/2017								5.46	95.84
		9/11/17								5.67	95.63
MW-7	BCB697		3484.73	5481.95	101.33	14.7	2.5	4.2	14.2		
		11/17/2015								5.42	95.91
		2/22/2016								5.04	96.29
		5/23/2016								5.37	95.96
		8/22/2016								5.56	95.77
		11/15/2016								5.21	96.12
		2/20/2017								4.99	96.34
		9/11/17								5.13	96.20
MW-8	BCB698		3506.79	5278.56	103.96	14.7	2.5	4.4	14.4		
		11/17/2015								7.61	96.35
		2/22/2016								7.28	96.68
		5/23/2016								7.56	96.40
		8/22/2016								7.81	96.15
		11/15/2016								7.39	96.57
		2/20/2017								7.21	96.75
		9/11/17								7.39	96.57
MW-9	BIZ231		3448.12	5389.06	102.56	14.7	2.7	5.2	12.5		
		11/17/2015								6.55	96.01
		2/22/2016								5.24	97.32
		5/23/2016								6.50	96.06
		8/22/2016								6.72	95.84
		11/15/2016								6.31	96.25
		2/20/2017								5.94	96.62
		9/11/17								6.27	96.29

Note: Measurements relative to Temporary Bench Mark

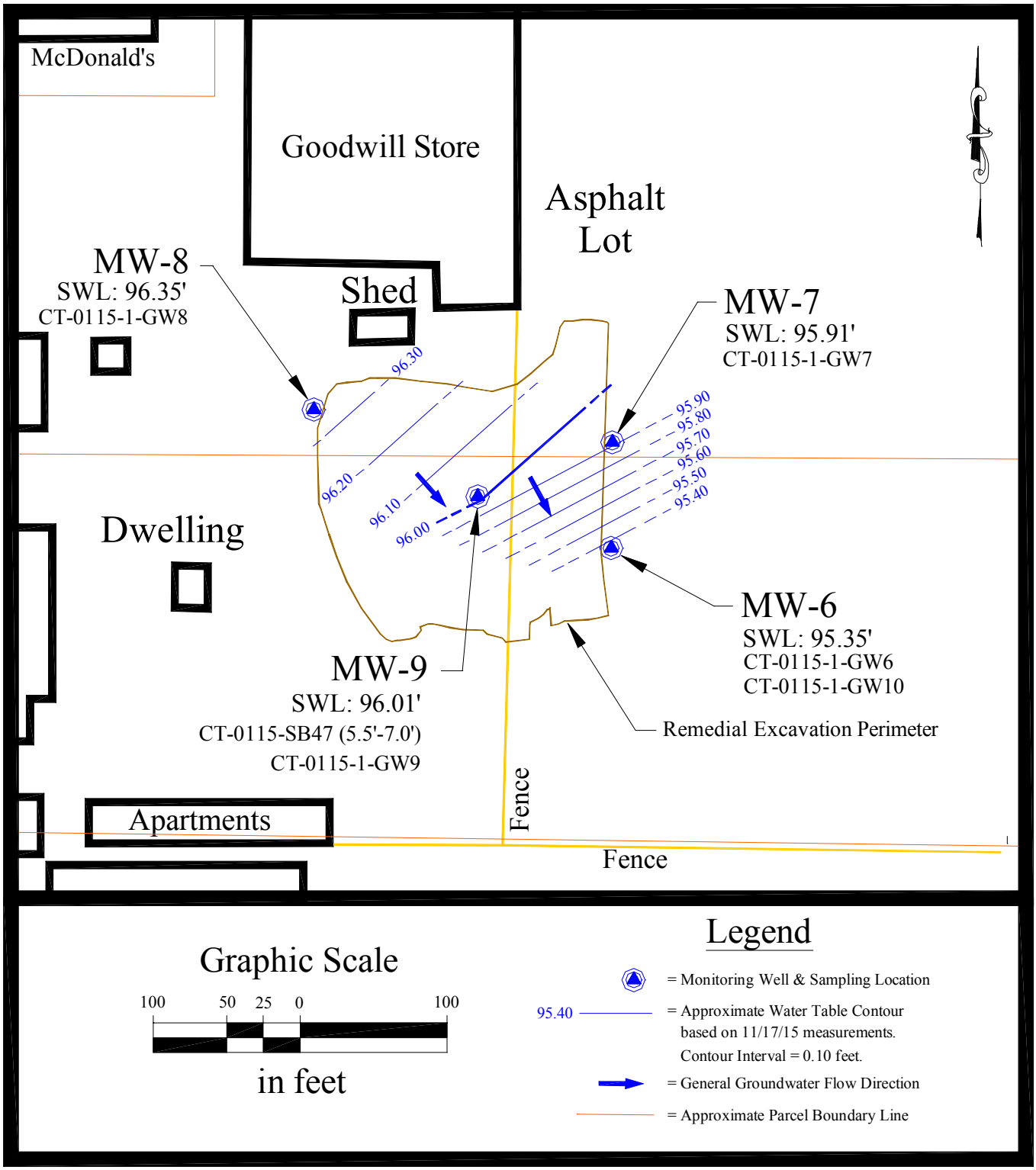


Figure 14. Groundwater Sampling Locations and Groundwater Gradient on 11/17/15

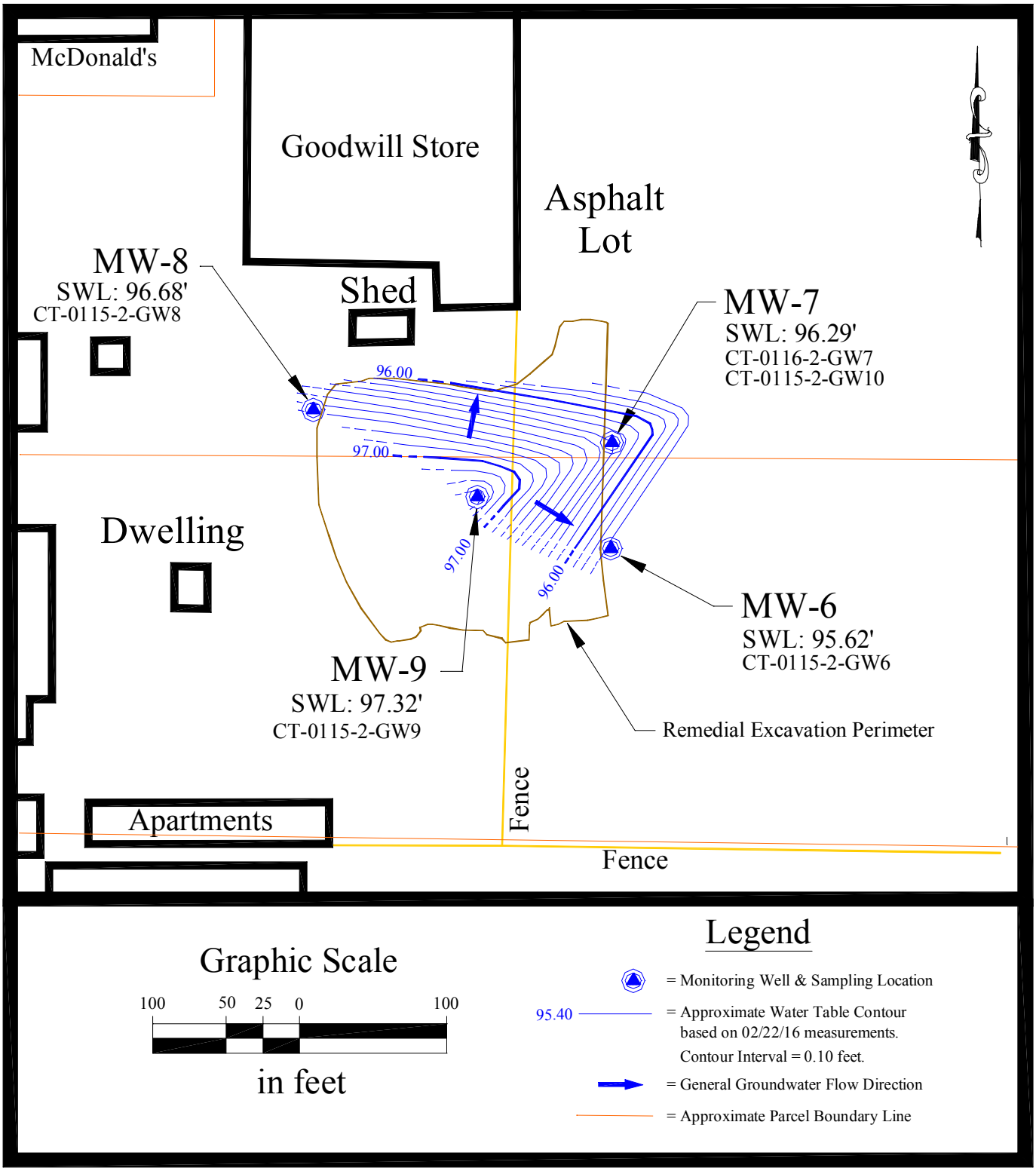


Figure 15. Groundwater Sampling Locations and Groundwater Gradient on 02/22/16

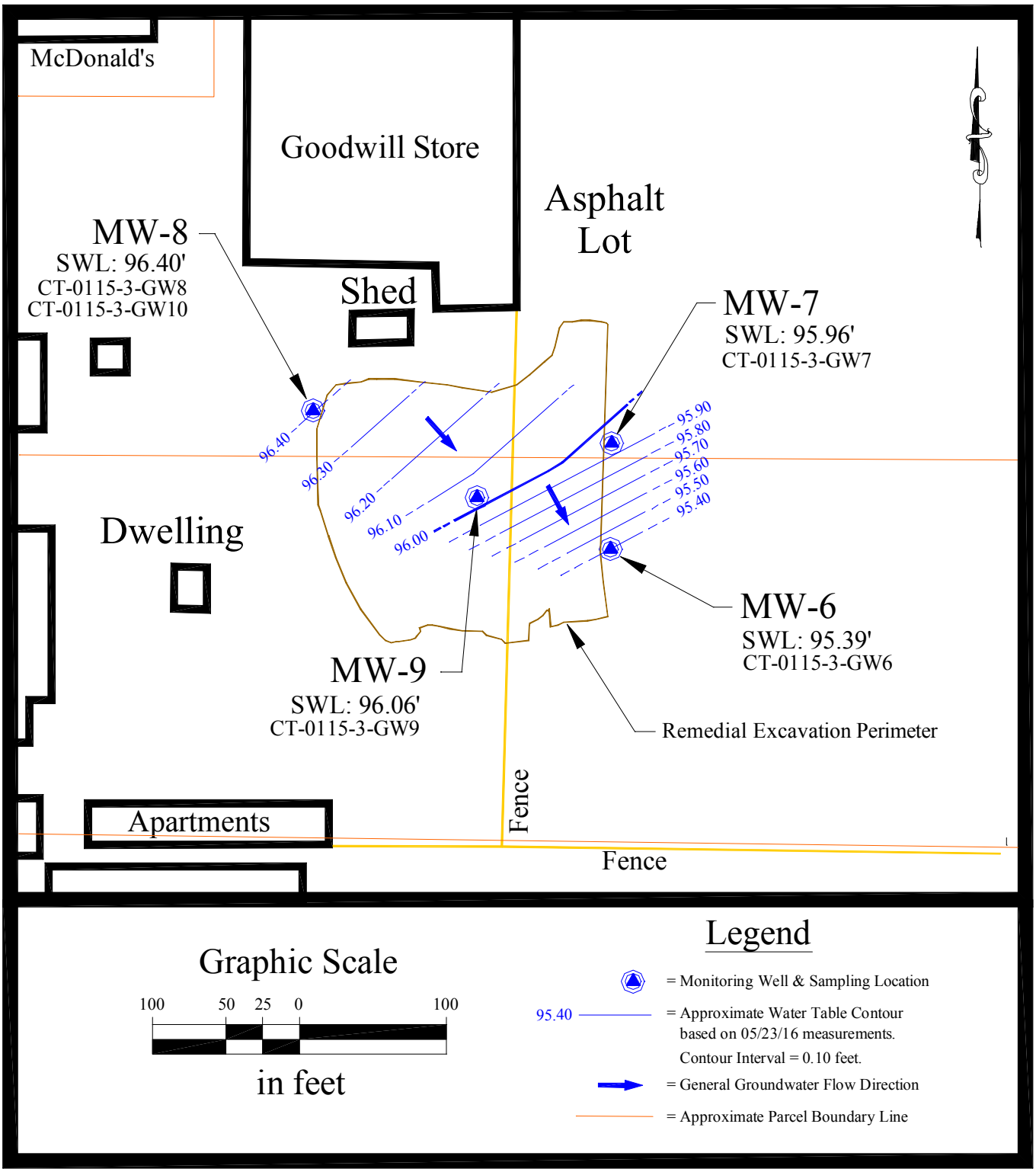


Figure 16. Groundwater Sampling Locations and Groundwater Gradient on 05/23/16

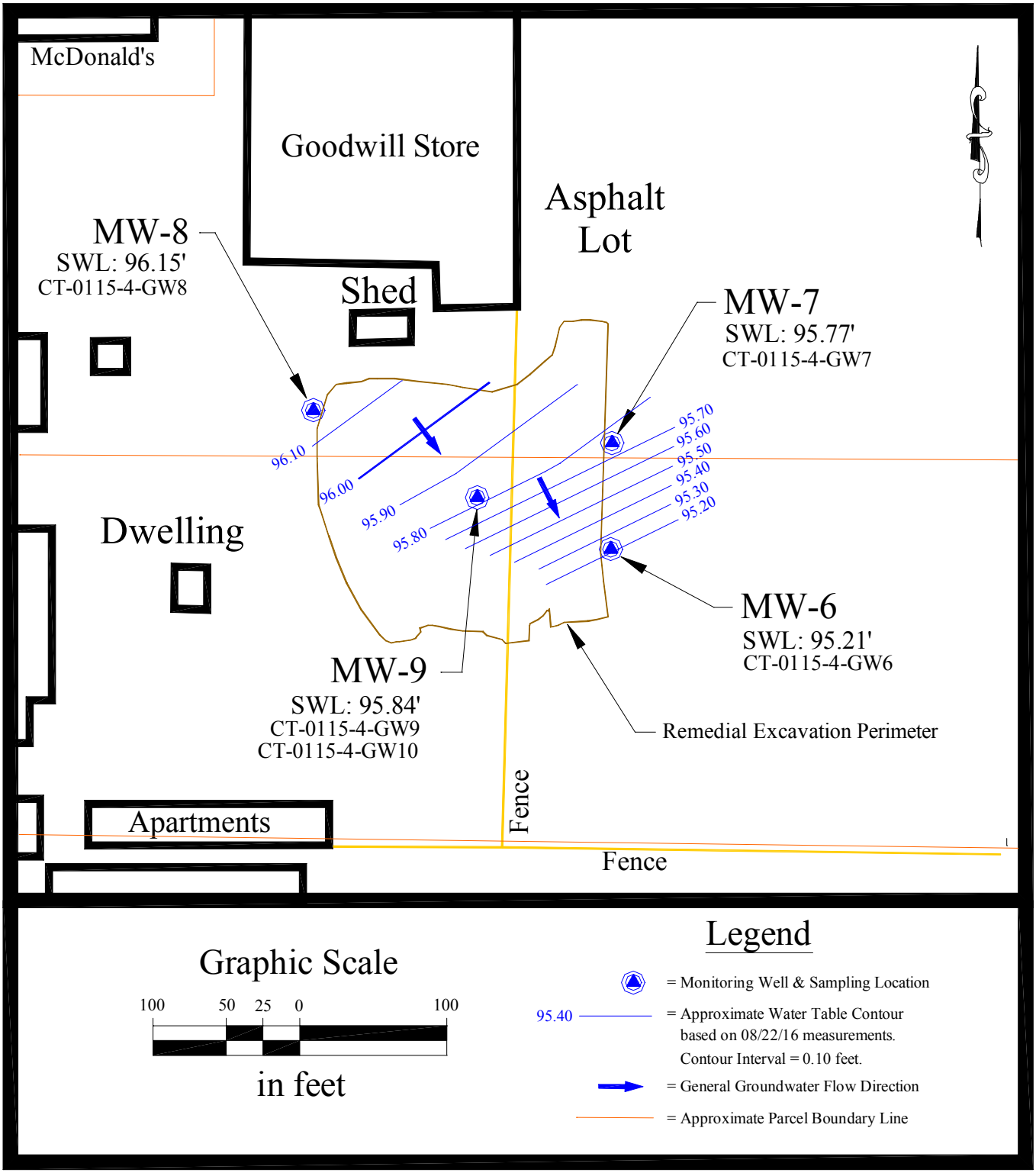


Figure 17. Groundwater Sampling Locations and Groundwater Gradient on 08/22/16

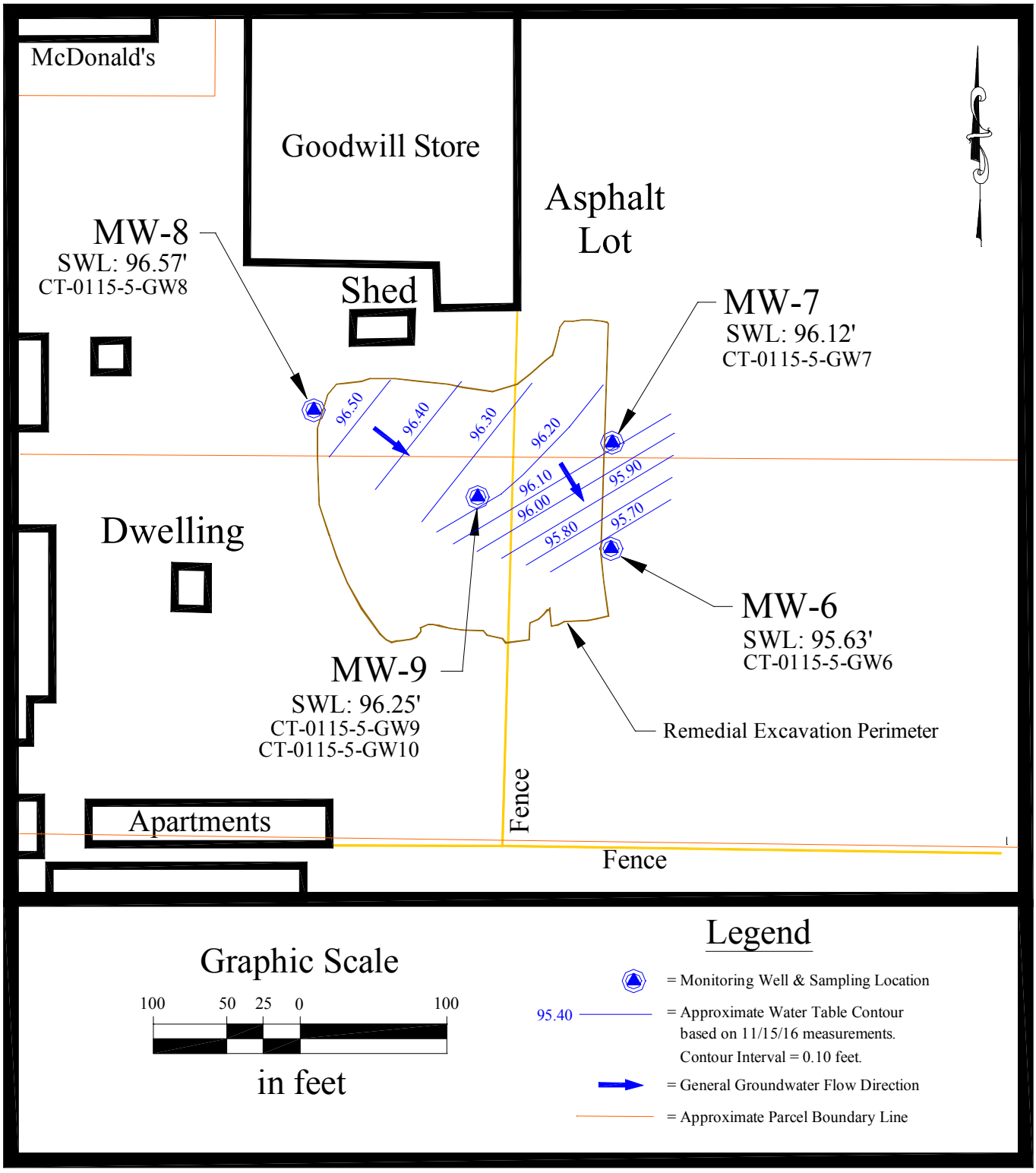


Figure 18. Groundwater Sampling Locations and Groundwater Gradient on 11/15/16

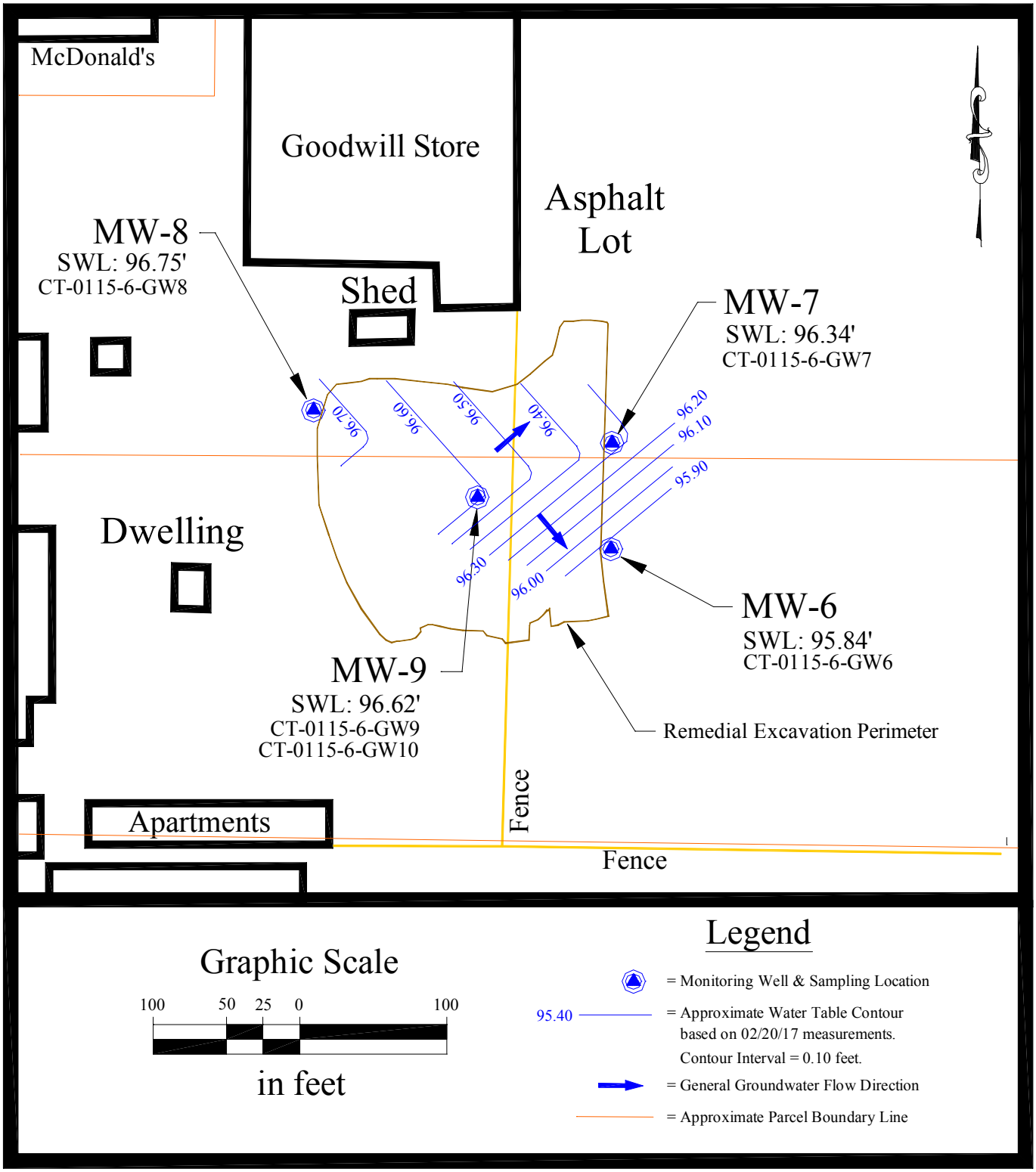


Figure 19. Groundwater Sampling Locations and Groundwater Gradient on 02/20/17

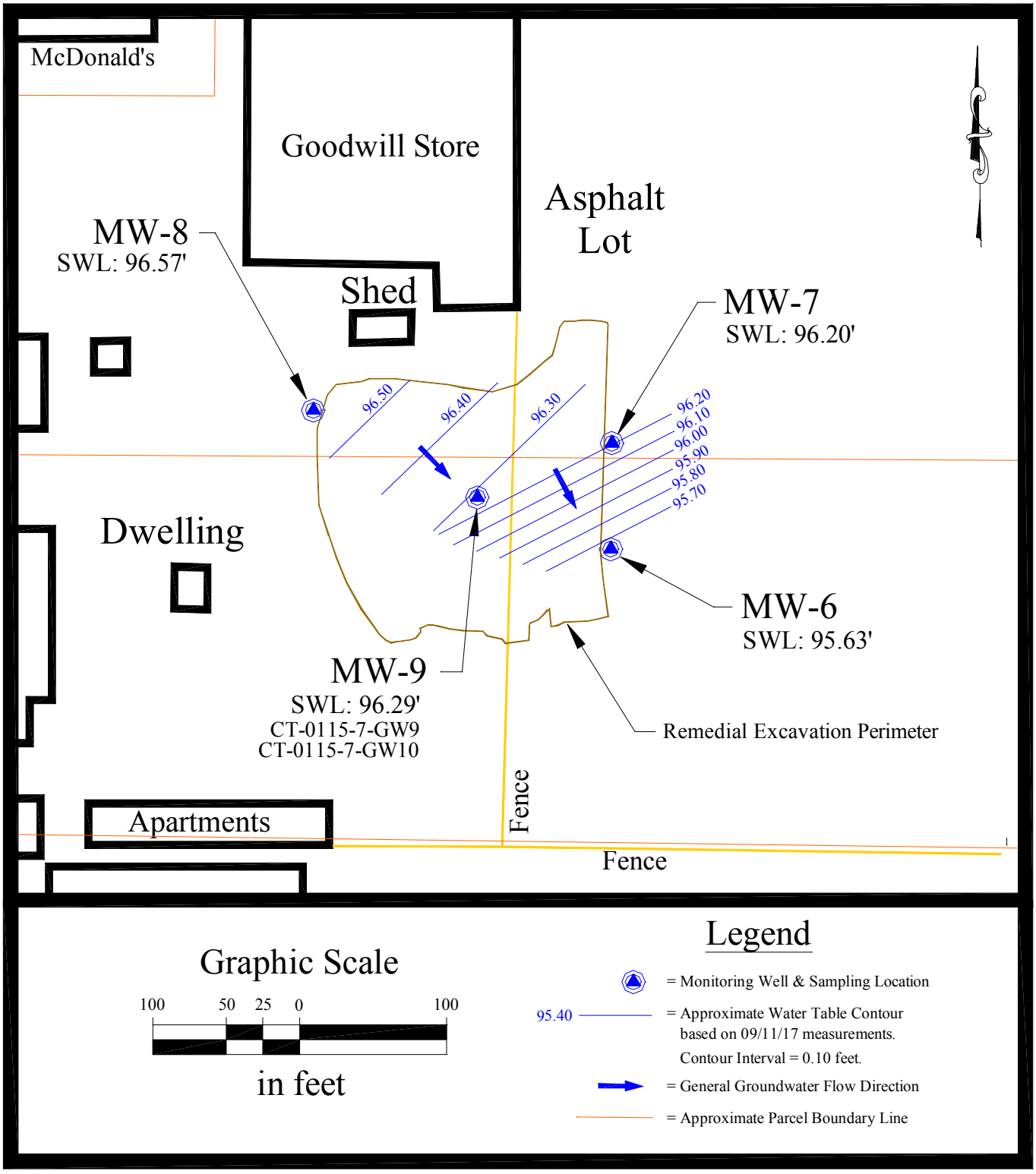


Figure 20. Groundwater Sampling Locations and Groundwater Gradient on 09/11/17

5.6 Disposal of Project Generated Wastes

5.6.1 AREA 5 Drill Cuttings

As discussed in Section 5.5.3 of this report, one (1) soil sample (CT-0115-SB47) was collected during MW-9 drilling activities. Analytical results for this sample were used to determine disposition of soil generated during the drilling process. The FBI analytical data report is included as Appendix H and summarized by Table 9. Direct comparison of the analytical results with the *Method A Soil Cleanup Levels of WAC-173-340-740* (Cleanup Levels) and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] found no target compounds in excess of the Cleanup Levels. Upon receiving approval from the WSDOE Project Coordinator[32], Sage placed soil generated during the drilling process on the Area 5 treated soil stockpile.

5.6.2 Disposal of Well Purge Water from MW6 – MW8

Sage collected purge water generated during groundwater sampling activities discussed in Section 5.5.4 of this report. Analytical results for groundwater samples were used to determine appropriate methods of disposal for water purged during well development and well purging activities. Review of the analytical data for project groundwater monitoring samples detected no diesel, heavy oil, BTEX or CPAH's in samples collected from MW6, MW7 or MW8 throughout the course of the project (see Table 10). A total of approximately 96.8 gallons of purge water were generated from MW-6 through MW-8 during the project (see Table 12). Upon obtaining approval from the WSDOE Project Coordinator[32,33], Sage disposed of this purge water on the ground surface, near the fence, south of the subject area on January 19, 2016 and April 27, 2017.

Table 12. Summary of Project Monitoring Well Purge Water

Date Generated	MW6 (gallons)	MW7 (gallons)	MW8 (gallons)	MW9 (gallons)
11/12/15	5	5	6	75
02/22/16	6	6	5	7
05/23/16	6	6	6	7
08/22/16	6	6	7	7
11/15/16	4.4	4.5	3.8	5.5
02/20/17	4.3	5.5	4.3	5.9
09/11/17	--	--	--	10
Total	31.7	33	32.1	117.4

5.6.3 Disposal of Well Purge Water from MW9

Diesel and/or heavy oil was detected in MW9 during the first two quarters of the monitoring program, as well as the sixth quarter monitoring event. No BTEX or CPAH's were found in MW9 throughout the project. Diesel and motor oil range petroleum hydrocarbon concentrations were found to exceed the *Method A Groundwater Cleanup Levels of WAC 173-340-720* in MW-9 only during the Second Quarter Groundwater Monitoring event (See Table 10).

A total of approximately 117.4 gallons of purge water were generated from MW-9 during the project (see Table 12). Upon obtaining approval from the WSDOE Project Coordinator[32,33] and Mr. Todd Laroche of the City of Selah Waste Water Treatment Plant (SWWTP)[24,25], Sage disposed of this purge water at the SWWTP on January 19, 2016 and April 28, 2017. Sage disposed of purge water generated on September 11, 2017 on the ground surface, near the fence, south of the subject area.

6.0 Conclusions & Recommendations

6.1 Area One: Sandblast Grit On B.N.S.F. Land

Sage performed Area One sampling and analysis activities as prescribed by the *Work Plan*[23]. Area One sampling and analysis activities are discussed in Section 5.1 of this report. Sage used a direct comparison of the analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area One. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of Area One.

6.2 Area Two: Paved Area With Building

Work regarding catch basins and the storm water drainage system at the site was limited to mapping and describing catch basin construction, inspection for indications of piping direction and exploring for an additional outfall into the drainage ditch on the northeast portion of the site. Sage completed these activities as documented in Section 5.2 of this report.

6.3 Area Three: Wastewater Ditch

Work regarding the Wastewater Ditch was limited to exploring for an additional outfall into the drainage ditch on the northeast portion of the site. Sage completed these activities as documented in Section 5.2 and 5.3 of this report.

6.4 Area Four: Land South of the Building

Sage performed Area Four sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Four sampling and analysis activities are discussed in Section 5.4 of this report. Sage used a direct comparison of the analytical results (Appendix D) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required in Area Four. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of Area Four.

6.5 Area Five: Petroleum Contaminated Soil & Groundwater

6.5.1 Treated Soil Stockpile

Sage performed Area Five *Treated Soil Stockpile* sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Five *Treated Soil Stockpile* sampling and analysis activities are discussed in Section 5.5.1 of this report. Sage used a direct comparison of the analytical results (Appendix F) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required for the Area Five *Treated Soil Stockpile*. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of the Area Five *Treated Soil Stockpile*.

6.5.2 Remedial Excavation Area Soil

Sage performed Area Five *Remedial Excavation Area Soil* sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Five *Remedial Excavation Area Soil* sampling and analysis activities are discussed in Section 5.5.2 & 5.5.3 of this report. Sage used a direct comparison of the analytical results (Appendix H) with the *Method A Soil Cleanup Levels of WAC-173-340-740*[5] and the *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*[42] to determine if remediation is required. The comparison found no target compounds in excess of the Cleanup Levels. Based upon the comparison, no remediation is required for the Area Five *Remedial Excavation Area Soil*. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of the Area Five *Remedial Excavation Area Soil*.

6.5.3 Remedial Excavation Area Groundwater

Sage performed Area Five *Remedial Excavation Area Groundwater* sampling and analysis activities as prescribed by the *Work Plan*[23]. Area Five *Remedial Excavation Area Groundwater* sampling and analysis activities are discussed in Section 5.5.4 of this report.

Review of the analytical data for project groundwater monitoring samples detected no diesel, heavy oil, BTEX or CPAH's in samples collected from MW6, MW7 or MW8 throughout the course of the project (see Table 10). However, diesel and/or heavy oil was detected in MW9 during the first two quarters of the monitoring program, as well as the sixth quarter. No BTEX or CPAH's were found in MW9 throughout the project. Diesel and motor oil range petroleum hydrocarbon concentrations were found to exceed the *Method A Groundwater Cleanup Levels of WAC 173-340-720*[5] in MW-9 only during the Second Quarter Groundwater Monitoring event (See Table 10).

FBI analysis of MW9 samples during the Second Quarter event found:

- Diesel range petroleum hydrocarbons at a concentration of 1,000 µg/L and
- Motor Oil range petroleum hydrocarbons at a concentration of 890 µg/L.

Sage used a direct comparison of the analytical results (Appendices J, L, N, P, R & T) with the *Method A Groundwater Cleanup Levels of WAC-173-340-720*[5] to determine if groundwater remediation is required. The comparison indicates we have obtained five consecutive quarters of analytical results compliant with these Cleanup Levels. Since no remediation is required, cleanup alternatives were not investigated. Sage recommends No Further Action associated with the remedial investigation of the Area Five *Remedial Excavation Area Groundwater*.

To prevent potential future groundwater contaminants from using existing groundwater monitoring wells as preferential migration pathways, Sage recommends retaining a licensed well driller to abandon all site groundwater monitoring wells in accordance with the *Minimum Standards for Construction and Maintenance of Wells,* Chapter 173-160 WAC[2].

7.0 References

1. Burlington Northern Santa Fe Railway, Bruce A. Sheppard, July 30, 2004, Written Communication.

2. Chapter 173-160 WAC *Minimum Standards for Construction and Maintenance of Wells,* December 19, 2008

3. Chapter 173-303 WAC - *Dangerous Waste Regulations,* October 5, 2007.

4. Chapter 173-340 WAC - *Model Toxics Control Act,* October 12, 2007.

5. Chapter 173-340 WAC - *Model Toxics Control Act Cleanup Regulation,* Amended February 12, 2001.

6. *Guidance on Sampling and Data Analysis Methods,* Washington State Department of Ecology-Toxic Cleanup Program, January 1995.

7. Hallard B. Kiinison and Jack E Sceva, *Effects of Hydraulic and Geologic Factors on Streamflow of the Yakima River Basin Washington,* Geological Survey Water-Supply Paper 1595, 1963.

8. *Hydrogeologic Framework of Sedimentary Deposits in Six Structural Basins, Yakima River Basin, Washington*., U.S Geological Survey, Reston, Virginia, 2006.

9. *Resource Protection Well Reports*, Kleinfleder, Inc, March 13, 1995.

10. Sage Earth Sciences, Inc., February 24, 2006 *Limited Free Product Removal & Site Characterization Report*

11. Sage Earth Sciences, Inc., September 30, 2008 *Groundwater Gradient Monitoring Report*

12. Sage Earth Sciences, Inc., February 17, 2009 *Groundwater Gradient Monitoring Report*

13. Sage Earth Sciences, Inc., June 8, 2009 *Groundwater Gradient Monitoring Report*

14. Sage Earth Sciences, Inc., September 15, 2009 *Groundwater Gradient Monitoring Report*

15. Sage Earth Sciences, Inc., Krystal Rodriquez, Written Letter, December 1, 2009.

16. Sage Earth Sciences, Inc., April 9, 2010 *Independent Remedial Action Report*

17. Sage Earth Sciences, Inc., November 17, 2010 *Soil Treatment Cell Sampling Report*

18. Sage Earth Sciences, Inc., September 21, 2010 *Groundwater Monitoring Report*

19. Sage Earth Sciences, Inc., December 10, 2010 *Groundwater Monitoring Report*

20. Sage Earth Sciences, Inc., February 23, 2011 *Third Quarter Groundwater Monitoring Report*

21. Sage Earth Sciences, Inc., May 24, 2011 *Fourth Quarter Groundwater Monitoring Report*

22. Sage Earth Sciences, Inc., *Revised Field Work for Agreed Order No. DE 11193* letter to Matt Durkee – WSDOE-CRO, April 17, 2015.

23. Sage Earth Sciences, Inc., *Final Remedial Investigation Work Plan - Agreed Order No. DE 11193*, October 16, 2015.

24. Selah Wastewater Treatment Plant, Todd Laroche, Verbal Communication, January 14, 2016.

25. Selah Wastewater Treatment Plant, Todd Laroche, Verbal Communication, April 27, 2017.

26. State of Washington, Department of Ecology, J. French, Certified Letter, August 19, 1991.

27. State of Washington, Department of Ecology, *Model Agreed Order No. DE 03 TCPCR*-5877, December5, 2003.

28. State of Washington, Department of Ecology, R. Swackhamer, Written Letter, February 12, 1992.

29. State of Washington, Department of Ecology, Krystal Rodriguez, Certified Letter, February 24, 2005.

30. State of Washington, Department of Ecology, Brianne Plath, Written Letter, December 7, 2009.

31. State of Washington, Department of Ecology, Matt Durkee, Email Communication, December 18, 2015.

32. State of Washington, Department of Ecology, Kyle Parker, Email Communication, December 28, 2015.

33. State of Washington, Department of Ecology, Kyle Parker, Email Communication, March 13, 2017.

34. *Statistical Guidance for Ecology Site Managers,* Washington State Department of Ecology – Toxics Cleanup Program, August 1992, 92-54.

35. Technico Environmental Services, Inc. January 13, 2004, *Work Plan For Comet Trailer Facility.*

36. Technico Environmental Services, Inc. August 3, 2004, *Amendment 1 Work Plan.*

37. Technico Environmental Services, Inc. August 13, 2004, *Amendment 2.*

38. Technico Environmental Services, Inc. October 4, 2004, *Comet Trailer Sampling Results.*

39. Technico Environmental Services, Inc. December 8, 2004, *Comet Trailer Characterization of Free Product.*

40. Washington State Department of Ecology, Environmental Investigations and Laboratory Services, Manchester Laboratory, R. Knox, Written Letter, April 16, 1991.

41. Washington State Department of Ecology, Manchester Environmental Laboratory, C. Smith, Written Report, May 7, 1991

42. Washington State Department of Ecology web site: https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx *Cleanup Levels and Risk Calculation, Soil – Method B and Method A (unrestricted land use)*, March 24, 2017.