ASSOCIATED
ENVIRONMENTAL
GROUP, LLC

FINAL CLEANUP REPORT

Former Industrial Petroleum Distributors
1117 West Bay Drive
Olympia, Washington

September 27, 2002

For:
John O'Connell Estate

Associated Environmental Group, LLC

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1.0 INTRODUCTION

The Industrial Petroleum Distributors (IPD) is located on the west side of Budd Bay, at 1117 West Bay Drive, Olympia, Thurston County, Washington. The site cleanup was based on the Remedial Investigation and Feasibility Study (RI/FS) conducted by SECOR international and Cleanup Action Plan (CAP) developed by Associated Environmental Group (AEG). This site cleanup report documents the onsite activities and procedures that were followed for contaminated soil excavation and disposal.

1.1 Site History

Atlantic Richfield Oil Company (ARCO) acquired the subject property sometime in the 1950s and constructed a bulk fuel storage plant. The plant consisted of eight above ground storage tanks ranging in capacity from 20,000 gallons to 156,744 gallons. It was operated by ARCO for approximately 24 years from 1953 to 1977.

In 1977, the former IPD property was purchased by Chaloupka and Nolley and was thereafter leased to IPD. IPD utilized the property to store waste oil from 1977 to 1999. The tank farm ceased being active sometime in 1989 and/or 1990 when Mr. Dennis Cole, owner of the former IPD property, began preparations to demolish the tank farm.

In 1990, the Washington State Department of Ecology (DOE) conducted an inspection of the IPD property and collected grab samples of the product within the tanks, which were not contaminated above the Washington State's dangerous waste thresholds. DOE also documented concerns regarding the corroded condition of three of the tanks.

In 1999, approximately 160,000 gallons of waste oil materials were removed from the tanks and the associated tanks were removed from the IPD property. An undocumented underground storage tank (UST) located west of the loading dock was also removed at the same time.

In October 2000, SECOR on behalf of ARCO performed the remedial investigation (RI) activities. In total, 24 Geoprobe locations, five groundwater monitoring well locations and two surface locations were sampled and analyzed.

The RI was completed in August 2001. The data and interpretations of the RI are recorded in three documents: the RI Report and the RI Report Supplements 1 & 2. The feasibility study was completed in September 2001. The Cleanup Action Plan was completed in March 2002.

2.0 EXCAVATION AND SAMPLING PROCEDURES

The selected cleanup action alternative for the former IPD is soil excavation and groundwater monitoring with institutional controls. The contaminated soils, identified in the RI/FS, have been excavated and transported off site for disposal.

Two distinct areas of concern were identified in the RI/FS; the former tank farm area (soil borings B-4, B-9 and sump) and the former UST area (soil boring B-18).

2.1 Former UST Area

On April 29, 2002, the main building and the pump house building were demolished in preparation for the contaminated soil excavation work. Then, on May 13, 2002, AEG and subcontractor, Advance Environmental began excavation of contaminated soils in the area of the former UST. The limits of the excavation were determined utilizing a portable Photo-ionization detector (PID) and a sheen test. The approximate size of the excavation pit extended 23 feet, east to west and 36 feet, north to south. The final depth of the excavation pit was approximately 11 feet below ground surface (bgs) uniformly across the bottom of the excavation pit area. Approximately 362 tons of petroleum contaminated soil (PCS) was removed from the excavation pit and transported to Olympic View Landfill in Bremerton, Washington for disposal. Refer to Appendix B for Site Diagrams.

Clearance samples were collected from the sidewalls and bottom of the excavation pit and submitted to an independent laboratory for NWTPH-HCID analysis (Table 1). Based on the non-detect laboratory results, the excavation pit was backfilled with imported pit-run gravel and compacted to 95% compaction rate. Refer to Appendix C for Laboratory Documents.

2.2 Former Above Ground Tank Farm Area

On May 21, 2002, excavation of the contaminated soil around the former above ground tank (AST) farm area was started. Initial excavation consisted of removing the contaminated soils within the boring location B-9 area identified in the RI/FS report. The extent of contamination around B-9 was consistent with the limits previously identified in the RI/FS and approximately 125 tons of PCS were excavated and stockpiled for transport. Soils encountered during excavation of this area consisted of silty clay with low plasticity (CL).

The area around the sump and boring location B-4 were excavated down to 7 feet bgs. Soils encountered during excavation of this area were consistent with CL. The extent of contamination merged the two locations (sump & B-4) and continued to the north approximately 14.5 feet directly north of B-4. A portion of the concrete retaining wall immediately south of the sump and B-4 area was removed at this time. Clearance samples were collected from the sidewalls and bottom of the excavation pit and submitted to an independent laboratory for NWTPH-HCID analysis (Table 2). Several of the north and west wall samples indicated detectable levels of diesel and heavy oil range hydrocarbons and detections in the PAH constituents. Based the laboratory results, determination was made to extent the limits of the excavation to the west and north of the sump and B-4 area.

Additional excavation to the west of the sump area was started on May 21, 2002. The levels of affected soils were very minor and approximately 2 to 3 tons of additional contaminated soils were scraped from the sidewalls. Clearance samples were collected from the newly excavated sidewalls and submitted for laboratory analysis.

The additional excavation along the north wall initially indicated minor levels of affected soil and, as with the west wall, additional contaminated soils were scraped from the entire length of the north sidewall. Field observations indicated localized areas of contaminated soil that continued to increase in degree of petroleum saturation to the north. The depth of contaminated zone ranged from 3 feet to 7 feet bgs and was relatively uniform throughout the new excavation area. The contaminated area was confined to the eastern portion of the former AST farm from the sump area to the terminal end of the driveway. Clearance samples were collected from the newly excavated sidewalls and submitted for laboratory analysis. Refer to Appendix C for Laboratory Documents.

2.3 Quantitative Analysis

Independent laboratory analyses were performed by Environmental Services Network (ESN), 7110 38th Drive SE, Lacey, Washington 98503. All laboratory reports and chain-of-custody documents are enclosed with this report.

To reasonably ensure the purity of AEG's samples, the following actions were taken (1) N-DEX gloves were used in handling all sampling jars and sampling devices; (2) The sampling equipment was scrubbed with ADALOX detergent and triple-rinsed with distilled water prior to each sample extracted; and (3) When gathered, all samples were immediately placed in a storage cooler packed with ice and transported to ESN laboratories in accordance to the Department of Ecology regulations for analysis. The results from our laboratory analysis are presented in the Appendix C: Laboratory Documents.

3.0 CONCLUSIONS

Based on field and laboratory sampling, and site observations, AEG has concluded the following:

- Soil contamination was found in the UST area to a depth of eleven feet bgs; the excavation pit extended 23 feet, east to west and 36 feet, north to south.

- Soil contamination was found at the former AST locations in the areas identified by SECOR. The contamination extended beyond SECOR's delineated limits in the sump area and boring location designated B-4. The contamination extended from the sump area north one hundred eighteen feet to the driveway. The extent of contamination extended from two feet east of the concrete retaining wall to varying distances to the west ranging from twenty to thirty-six feet.

- Based on the six soil samples taken from UST excavation pit walls and bottom and the ten soil samples taken from the former AST area, all petroleum affected soil has been excavated and disposed off site.

4.0 LIMITATIONS

This report summarizes the findings of services authorized under our agreement. It has been prepared using generally accepted professional practices, related to the nature of the work accomplished. This report was prepared for the exclusive use of John O'Connell Estate, Arco and Washington State Department Ecology for specific application to the project purpose.

Recommendations, opinions, site history and proposed actions contained in this report apply to conditions and information available at the time this report was created. Since conditions and regulations beyond our control can change at any time after completion of this report, or our proposed work, we are not responsible for any impacts of any changes in conditions, standards, practices and/or regulations subsequent to our performance of services. We cannot warrant or validate the accuracy of information supplied by others, in whole or in part.

Table 1. Hydrocarbon Identification/Semivolatile Petroleum Products Soil Sample Analytical Results
Former IPD and Port Property
1117 West Bay Drive, Olympia, Washington
Boring 18 Area

Sample Location (Reporting → Limits)	NWTPH-HCID				NWTPH-Gx / NWTPH-Dx (mg/Kg)		
	20	50	100	100			
	Gasoline Range	Diesel Range	Heavy Oil Range	Mineral Oil Range	TPH-Gx	TPH-Dx	TPH-Ox
Method Blank	ND	ND	ND	ND	--	--	--
B18E	ND	ND	ND	ND	--	--	--
B18N	ND	ND	ND	ND	--	--	--
B18W	ND	ND	ND	ND	--	--	--
B18S	ND	ND	ND	ND	--	--	--
B18S (Dup)	ND	ND	ND	ND	--	--	--
B18BS	ND	ND	ND	ND	--	--	--
B18BN	ND	ND	ND	ND	--	--	--
Site Remediation Levels (mg/Kg)					--	--	--

Note: Soil samples were collected from the limits of the excavation around boring B18

Table 2. Hydrocarbon Identification/Semivolatile Petroleum Products Soil Sample Analytical Results
Former IPD and Port Property
1117 West Bay Drive, Olympia, Washington
Boring 9 and Sump Area

Sample Location	NWTPH-HCID				NWTPH-Gx / NWTPH-Dx (mg/Kg)		
	20 Gasoline Range	50 Diesel Range	100 Heavy Oil Range	100 Mineral Oil Range	TPH-Gx	TPH-Dx	TPH-Ox
Method Blank	ND	ND	ND	ND	--	--	--
B9N	ND	ND	ND	ND	--	--	--
B9S	ND	ND	ND	ND	--	--	--
B9E	ND	ND	ND	ND	--	--	--
B9W	ND	DET	DET	ND	--	880	320
B9B	ND	ND	ND	ND	--	--	--
Sump N	ND	ND	ND	ND	--	--	--
Sump S	ND	ND	ND	ND	--	--	--
Sump E	ND	ND	ND	ND	--	--	--
Sump E (Dup)	ND	ND	ND	ND	--	--	--
Sump W	ND	DET	DET	ND	--	180	200
Sump BN	ND	ND	ND	ND	--	--	--
SumpBS	ND	DET	DET	ND	--	450	200
Site Remediation Levels (mg/Kg)					--	2000	2000

Note: Soil samples were collected from the limits of excavation around boring B9 and the sump area

Table 3. Total Metals Soil Sample Analytical Results
Former IPD and Port Property
1117 West Bay Drive, Olympia, Washington
Boring 9 and Sump Area

Sample Location	Total Metals per EPA 7000 Series Methods (mg/Kg)							
	Arsenic	Barium	Cadmium	Chromium	Mercury	Lead	Selenium	Silver
B9N	ND	ND	ND	ND	ND	ND	ND	ND
B9S	ND	ND	ND	ND	ND	ND	ND	ND
B9S (Dup)	ND	ND	ND	ND	ND	ND	ND	ND
B9E	ND	ND	ND	ND	ND	ND	ND	ND
B9W	ND	ND	ND	ND	ND	ND	ND	ND
B9B	ND	ND	ND	ND	ND	ND	ND	ND
Sump N	ND	ND	ND	ND	ND	ND	ND	ND
Sump S	ND	ND	2.7	ND	ND	ND	ND	ND
Sump E	ND	ND	ND	ND	ND	ND	ND	ND
Sump W	ND	ND	ND	ND	ND	ND	ND	ND
Sump BN	ND	ND	ND	ND	ND	11	ND	ND
Sumps BS	ND	ND	ND	ND	ND	ND	ND	ND
Site Remediation Levels (mg/Kg)	NE	NE	NE	NE	NE	NE	NE	NE
MDL	5	20	1	5	0.5	5	20	20

Note: Soil samples were collected from the limits of excavation around boring B9 and the sump area

Table 4. Polynuclear Aromatic Compound Soil Sample Analytical Results
Former IPD and Port Property
1117 West Bay Drive, Olympia, Washington
Borning 9 and Sump Area

Sample Number	PAHs per EPA Method 8270M-SIM (mg/Kg)															
	Acenaphthene	Acenaphthylene	Anthracene	Benzo (a)anthracene	Benzo (a) pyrene	Benzo (b) fluoranthene	Benzo (ghi) perylene	Benzo (k) fluoranthene	Chrysene	Dibenz (a,h) anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) pyrene	Naphthalene	Phenanthrene	Pyrene
Method Blank	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9N	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9S	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9E	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sump N	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sump S	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sump E	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sump W	ND	ND	ND	**0.22**	ND	ND	ND	ND	**0.21**	ND	ND	ND	ND	ND	ND	**0.44**
Sump BS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.12**
SumpBN	ND	ND	ND	**0.08**	ND	ND	ND	ND	**0.08**	ND	ND	ND	ND	ND	ND	ND
Site Remediation Levels (mg/Kg)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

Reporting Limits 0.10 mg/Kg →

Note: Soil samples were collected from the limits of excavation around boring B9 and the sump area

Table 5. Hydrocarbon Identification/Semivolatile Petroleum Products Soil Sample Analytical Results
Former IPD and Port Property
1117 West Bay Drive, Olympia, Washington
Excavated Soil Stockpile

Sample Location	NWTPH-HCID				NWTPH-Gx / NWTPH-Dx (mg/Kg)		
	Gasoline Range	Diesel Range	Heavy Oil Range	Mineral Oil Range	TPH-Gx	TPH-Dx	TPH-Ox
Method Blank	ND	ND	ND	ND	--	--	--
6-20	ND	DET	ND	ND	--	370	--
Site Remediation Levels (mg/Kg)					--	2000	--

Note: Soil samples were collected from the excavated soil stockpile around boring B9 and the sump area

Table 6. Hydrocarbon Identification/Semivolatile Petroleum Products Soil Sample Analytical Results
Former IPD and Port Property
1117 West Bay Drive, Olympia, Washington
Excavated Soil Stockpile

Sample Location	NWTPH-HCID				NWTPH-Gx / NWTPH-Dx (mg/Kg)		
	Gasoline Range	Diesel Range	Heavy Oil Range	Mineral Oil Range	TPH-Gx	TPH-Dx	TPH-Ox
Method Blank	ND	ND	ND	ND	--	--	--
62401	ND	DET	ND	ND	--	230	--
62402	ND	DET	ND	ND	--	12800	--
62403	ND	DET	ND	ND	--	13000	--
62403-Dup	ND	DET	ND	ND	--	13400	--
Site Remediation Levels (mg/Kg)					--	2000	--

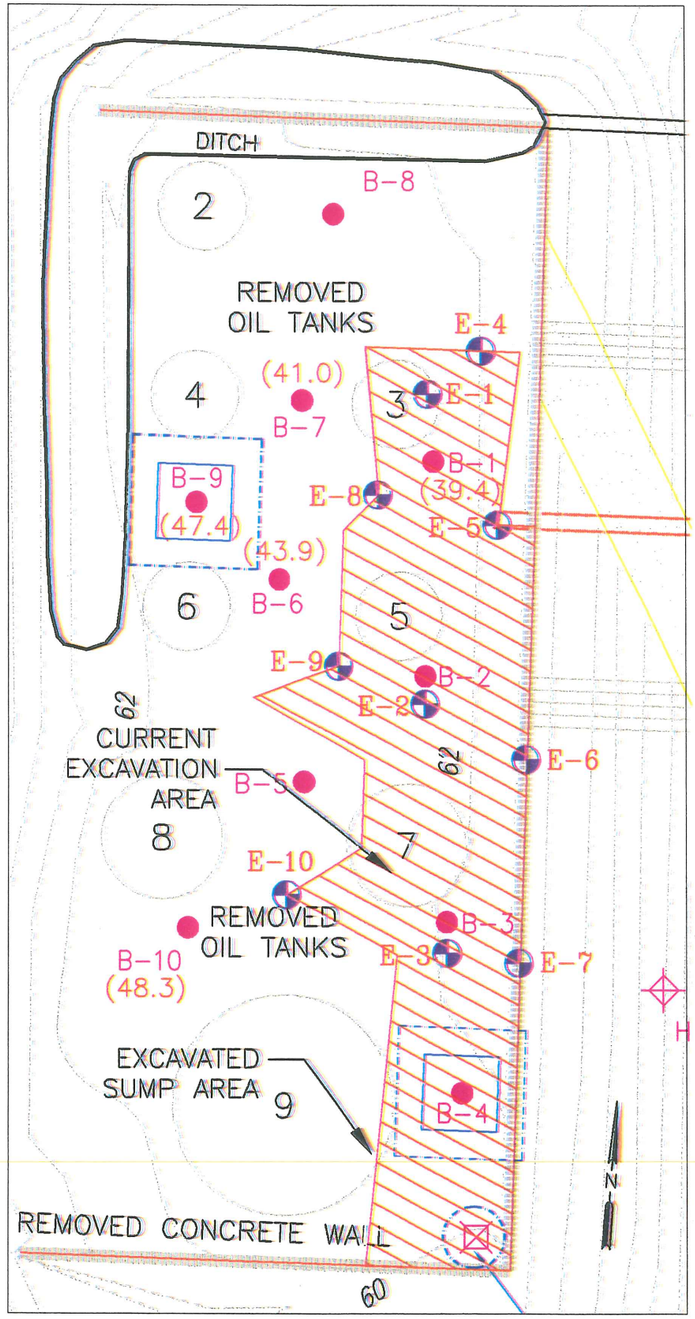
Note: Soil samples were collected from the excavated soil stockpile north of boring B4 area

Table 7. Hydrocarbon Identification/Semivolatile Petroleum Products Soil Sample Analytical Results
Former IPD and Port Property
1117 West Bay Drive, Olympia, Washington
Excavation Area

Sample Number	NWTPH-HCID				NWTPH-Gx / NWTPH-Dx (mg/Kg)		
	Gasoline Range	Diesel Range	Heavy Oil Range	Mineral Oil Range	TPH-Gx	TPH-Dx	TPH-Ox
Method Blank	ND	ND	ND	ND	--	--	--
E1	ND	ND	ND	ND	--	--	--
E1 Dup	ND	ND	ND	ND	--	--	--
E2	ND	ND	ND	ND	--	--	--
E3	ND	ND	ND	ND	--	73	58
E4	ND	ND	ND	ND	--	--	--
E5	ND	ND	ND	ND	--	--	--
E6	ND	ND	ND	ND	--	--	--
E7	ND	ND	ND	ND	--	--	--
E8	ND	ND	ND	ND	--	--	--
E9	ND	ND	ND	ND	--	280	140
E10	ND	ND	ND	ND	--	--	--
Site Remediation Levels (mg/Kg)					--	2000	2000

Note: Soil samples were collected from the limits of excavation north of boring B4 area

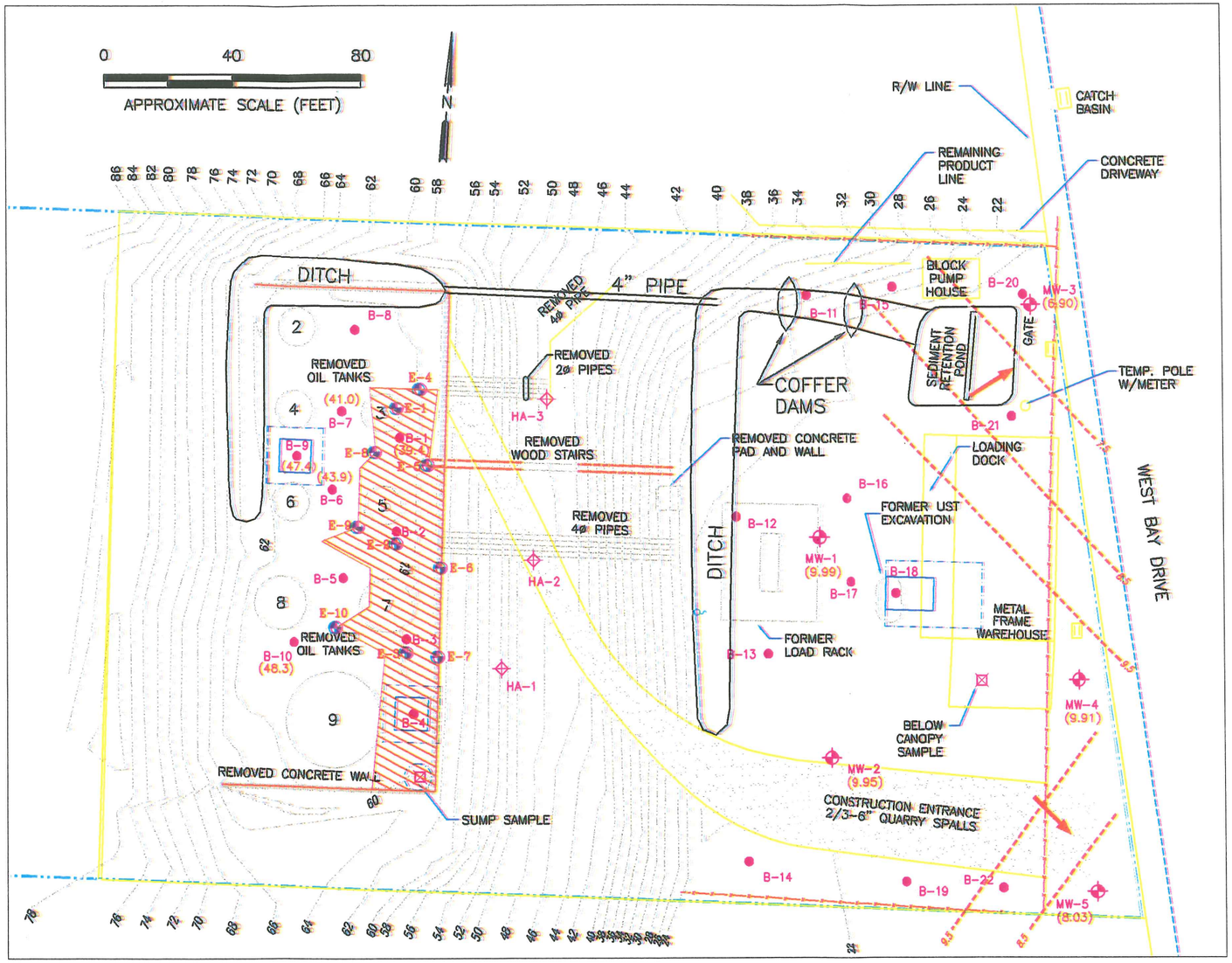
APPENDIX A – Site Photographs



DETAIL

0 20 40

APPROXIMATE SCALE (FEET)



LEGEND

- AEG EXTENT OF EXCAVATION
- ARCO EXTENT OF EXCAVATION
- GROUNDWATER CONTOUR LINES
- APPROXIMATE PROPERTY BOUNDARY
- FENCE
- INFERRED GROUNDWATER FLOW DIRECTION
- BORING LOCATION
- SAMPLE LOCATION
- (39.4) ESTIMATED GROUNDWATER ELEVATION AT TIME OF DRILLING
- HANDAUGER LOCATION
- MONITORING WELL LOCATION
- (8.03) GROUNDWATER ELEVATION (DATA COLLECTED 10/19/00)
- CATCH BASIN SEDIMENT/ SURFACE SOIL SAMPLE LOCATION
- CATCH BASIN
- SPRING

REF: BASE MAP FROM ASSOCIATED ENVIRONMENTAL GROUP, LLC; EROSION CONTROL PLAN; IPD-SURVEY; 01/12/2000
BORING/WELL LOCATIONS FROM SURVEY BY BRACY & THOMAS (10-20-2000)

No.	Revision/Issue	Date

ASSOCIATED ENVIRONMENTAL GROUP, LLC
Environmental Consulting and Contracting
120 East Union Avenue, Suite 214
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(360) 352-9835 Fax: (360) 352-8164

EXCAVATION PLAN VIEW

IPD
1117 WEST BAY DRIVE
OLYMPIA, WA

Project: #20-170-01	Date: 08/01/02
File: IPDExcJuly02	Sheet 3 of 3

UST removal

UST removal

Side view of UST pit

Side wall of UST pit

Subject property looking southeast

Subject property looking northwest

Subject property looking southwest

Subject property looking north

Subject property looking east during excavation

Excavation wall

Excavation wall close-up

PCS Stockpile

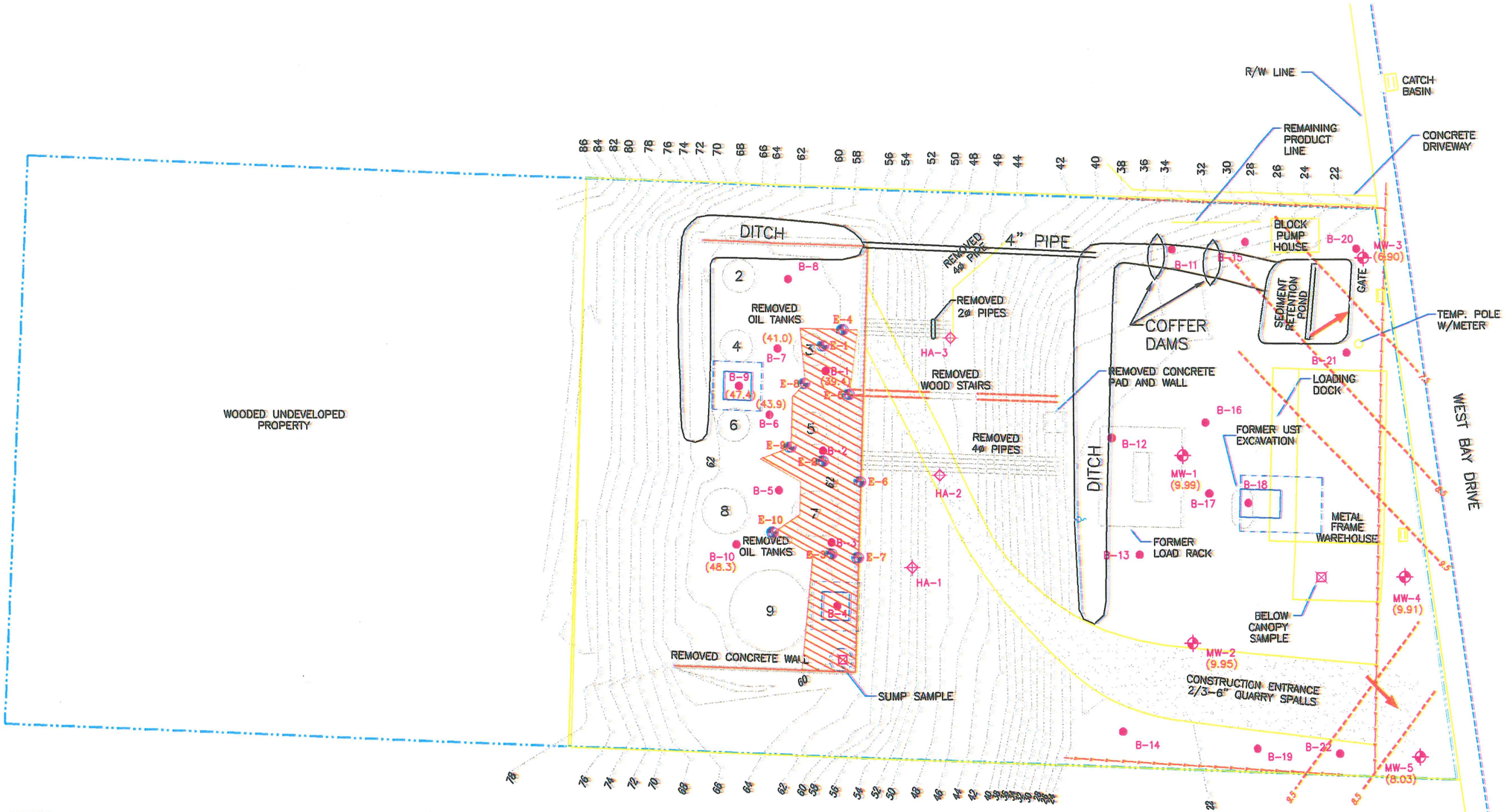
Subject property after fill looking east

Subject property after fill looking southeast

Top of subject property after fill

Top of subject property after fill

APPENDIX B – Tables and Site Diagrams



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- CATCH BASIN
- SPRING
- INFERRED GROUNDWATER FLOW DIRECTION

N

0 40 80

APPROXIMATE SCALE (FEET)

REF: BASE MAP FROM ASSOCIATED ENVIRONMENTAL GROUP, LLC; EROSION CONTROL PLAN; IPD-SURVEY; 01/12/2000
BORING/WELL LOCATIONS FROM SURVEY BY BRACY & THOMAS (10-20-2000)

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EXCAVATION PLAN VIEW

IPD
1117 WEST BAY DRIVE
OLYMPIA, WA

Project #20-170-01 | Date: 08/01/02
File: IPD | Sheet 2 of 3