May 12, 2010

Project 101310100

Mr. Panjini Balaraju
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, Washington 98504

Subject: Upland Investigation Work Plan—MJB Properties North Dock Area (20th to 22nd Streets)
MJB Properties North Dock Area
Anacortes, Washington

Dear Mr. Balaraju:

On behalf of MJB Properties, LLC (MJB), AMEC Geomatrix, Inc. (AMEC), prepared this upland investigation work plan (Work Plan) for the southern portion of the MJB North Area, located on Fidalgo Bay between 20th Street and 22nd Street in Anacortes, Washington (Figure 1).

This work plan describes the background of the MJB North Dock Area (the subject site), which is the term that will be used henceforth for the property between 20th Street and 22nd Street and east of R Avenue. This work plan outlines field activities to characterize the nature and extent of potential impacts to soil from historical industrial activities at MJB North Dock.

MJB North Dock Area is south of the former plant area of the historic Scott Paper facilities. The portions of the former Scott Paper operations owned by MJB, and extending from 17th Street to 22nd Street, have been referred to in previous documents as the MJB North Yard Area. The southern portion of the MJB North Yard is currently listed on the Washington State Department of Ecology (Ecology) Hazardous Sites List as Facility Site ID# 2690, and this area will be referred to as the MJB North Dock (Figure 2). The Ecology listing for the MJB North Dock specifies SIC codes 2611 (Pulp Mill) and 4493 (Marina). However, neither industry ever existed on this portion of the MJB properties. Log sorting and storage associated with the historical Scott pulp and paper mill to the north did take place on the subject site. In addition, an active marina is located south of the subject site, but the marina has no operations at the subject site.

The first part of this work plan discusses the potential historical and current sources of contamination on the subject site and in the adjacent off-site areas. Based on this historical information, a work plan is developed to investigate the likely areas and types of contamination. Results obtained from conducting the investigation will be used in the process of developing a feasibility study, if necessary, of remedial options and recommendations for future cleanup.

Offshore sediments have been characterized during numerous previous environmental or dredging characterization studies, including a dredge disposal analysis characterization immediately offshore of the site (Geomatrix, 2006) and a Baywide sediment study sponsored by Ecology (SAIC, 2008). A barge channel is located offshore of the subject site. This barge channel was last dredged in circa 1975. The 2006 dredge disposal characterization study was

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conducted to support additional dredging of the channel, which has been postponed. The results from both these investigations are discussed further in Section 1.3.

1.0 BACKGROUND AND GEOLOGY

The MJB North Yard property is divided into two subareas: the former Scott Paper Consent Decree Area (between 17th Street and 20th Street) and the MJB North Dock Area (between 20th Street and 22nd Street) (Figure 2). The former Scott Paper Mill site is listed as a separate site on Ecology's hazardous sites list and is currently undergoing cleanup under an existing Consent Decree.

This section provides a brief summary of the history and setting of the MJB North Dock Area, including:

- A history of the land uses for the subject site;
- A brief discussion of the geology that is anticipated under the subject site, based on studies on nearby sites;
- A synopsis of previous sampling and analysis conducted in the aquatic lands portion of the MJB North Dock Area; and
- A discussion of potential sources of contamination in the areas west, and presumably upgradient, of the subject site based on a background report prepared by Environmental Data Resources, Inc. (EDR).

1.1 Land-Use History

The subject site extends from 20th to 22nd Streets; R Avenue is the western boundary, and the inner harbor line is the eastern boundary. The upland area is approximately 500 feet by 650 feet, or approximately 7.5 acres. Currently, most of the upland area is unused, although a small portion of the subject site is being used for equipment storage. The industrial history of the uplands portion of the subject site over the past 100 years has varied depending on location. The northeastern quadrant has had a history different from the southeastern quadrant and the western half.

Northeastern Quadrant (20th to 21st Streets, east of S Avenue): Early maps of Anacortes indicate that a planing and wood shingle mill was located between S Avenue and the shoreline, and between 20th and 21st Streets, from 1907 to at least 1956. A 1966 aerial photograph appears to show the operation was in a state of disrepair or dismantling. By 1969, the major buildings were gone but some foundation remnants remained. An aerial photograph from 1974 showed the waterfront area of the subject site east of S Avenue graded and relatively unused except for small craft access to the water. An aerial photograph from 1975 showed the area fully graded with a well-developed access area from S Avenue to the beach. This quadrant is not currently in use.

Southeastern* Q*uadrant (21st to 22nd Streets, east of S Avenue): An aerial photograph from 1956 indicates that most of the center portion of this quadrant was undeveloped at that time. Several small buildings, possibly sheds or small dwellings situated next to 21st Street or 22nd, Street, are visible. By 1969, this entire quadrant was undeveloped and mostly graded flat, with a few trees along 21st Street. S Avenue appears at that time to have been a small dirt road. The 1974 aerial photo shows an undeveloped area. However, a wide roadway has been created where S Avenue previously was, with a dead end cul-de-sac just south of 20th Street. By 1980, all vestiges of S Avenue had disappeared, and the southeastern quadrant had the same use as the rest of the subject site. Currently, this area is being used for equipment storage.

Western Half (20th to 22nd Streets, R Avenue to S Avenue): The portion of the subject site located between R Avenue and S Avenue was either being used for residential properties or was undeveloped up to the early 1970s. In the early 1970s, this area of Anacortes underwent urban renewal, and many residential properties and older industrial properties were demolished for redevelopment that was never fully realized. By 1974, the western portion of the subject site was being use for log storage, presumably by the Scott operations that appear to be contiguous with the log storage operations to the north. A 1985 photograph shows the western half of the site being used for the construction of portable buildings with other support structures.

1.2 Geology

In the early 1900s, the shoreline area of Anacortes was extensively filled during construction and demolition of numerous sawmills and shingle mills. However, based on a 1922 shoreline map (Slotemaker, 2007) it appears that the current shoreline at the subject site has not substantially changed in the last 90 years. Based on work conducted at nearby sites, the subsurface geology at the subject site is anticipated to consist of a silty sand top soil layer potentially up to 8 feet thick followed by a glacial till deposit of unknown thickness. Fill material may be heterogeneous and contain debris. Detailed lithologic logging of test pits will be conducted during the upcoming investigation. The nature and extent of debris will be documented carefully.

1.3 Results from Previous Sediment Studies

Two previous offshore investigations have been conducted in the vicinity of the subject site. The results from those two investigations are briefly presented below.

Geomatrix, 2006 (North Dock Maintenance Dredging: Existing Barge Channel 2)

An east/west-trending barge channel exists in the center of the aquatic lands area on the subject site. In 2006, Geomatrix Consultants, Inc. (Geomatrix), collected sediment samples in the barge channel to determine the suitability of potentially dredged sediments for offshore disposal. A total of eight subsurface sediment cores were collected, and sediment samples were analyzed for Puget Sound Dredge Disposal Analysis (PSDDA) characterization (Figure 2).

Samples were analyzed for PSDDA conventionals (total solids, total volatile solids, total organic carbon, ammonia, total sulfides, and grain size), PSDDA chemicals of concern (COCs) (metals, semivolatile organic compounds [SVOCs], volatile organic compounds (VOCs), pesticides, and polychlorinated biphenyls [PCBs]), tributytin, and dioxin.

All of the detected analytes from the PSDDA COC list were found at levels well below the PSDDA screening levels (SLs). Detection limits for all undetected analytes were below PSDDA SLs as well.

SAIC, 2008 (Fidalgo Bay Sediment Investigation)

As part of this study, surface sediment samples were collected from 118 locations within Fidalgo Bay and analyzed for chemistry and biological toxicity. Two samples were collected approximately 600 feet offshore and another two samples were collected approximately 1,500 feet offshore from the subject site. The samples collected from 600 feet offshore were archived and not analyzed for chemical constituents. The samples collected 1,500 feet offshore in the vicinity of the subject site had no elevated concentrations of Sediment Management Standards (SMS) COCs above the SMS SLs.

1.4 EDR Regulatory Database Results

A regulatory database report was ordered from Environmental Data Resources, Inc., to provide information needed to assess existing off-site issues impacting the subject site. The database report (EDR, 2010) indicates a potential historic source of petroleum compounds from an upgradient location within 1/8 mile of the property boundary at Commercial Avenue and 21st Street. This site, termed the Red Lion Tavern, is listed in the EDR report as having had two small underground storage tanks: one with a capacity of 111 to 1,100 gallons and the other with a capacity of 1,101 to 2,000 gallons. The smaller tank was removed in 2003, and the larger tank was closed in place at approximately the same time. The database does not indicate the contents, other than petroleum, and there is no record of additional cleanup. The likelihood is low that petroleum has migrated from that site to the subject site. However, to verify that gasoline-range compounds have not migrated onto the subject site, soil samples will be collected using EPA Method 5035 sampling techniques at sampling locations where photoionization detector (PID) readings indicate the presence of gasoline-related hydrocarbons during the proposed investigation. Analyses for diesel and heavier petroleum compounds are planned in all samples.

2.0 PROPOSED INVESTIGATION

No environmental investigations have been conducted previously on the upland portion of the MJB North Dock Area. In the absence of any known contamination, test pits locations will be spaced closer together on the northeastern quadrant of the site (20th to 21st Streets and east of S Avenue), where historical industrial activities were concentrated. However, all areas of the site will be investigated. The spacing of test pits in the southeastern quadrant and western half

of the site will be randomly spaced because historical research has not indicated a likely source of contamination in those areas.

This investigation will include the following activities:

- Locate utilities at all proposed sampling locations using a private service.
- Excavate 10 test pits to the depth of the native clay unit (approximately 6 to 15 feet in depth) using an excavator.
- Collect two samples from each test pit. Sample locations within each test pit will be selected based on lithologic changes, observations, and PID readings.

The test pits will be dug to characterize the lithology of the soils in the test pits, and to determine the depth of the native clay/silt unit. All field activities and lithological logging will be supervised by a geologist licensed in the State of Washington. Soil samples will be collected from each test pit based on observations at the time of excavation. If PID readings are zero and if no change in lithology is observed, then one sample will be collected from the upper 4 feet and a second sample will be collected below 4 feet to the bottom of the test pit. Particular attention will be given to the soil at the top of the saturated zone because it is the most likely depth where petroleum hydrocarbons would be present. Sampling procedures are discussed further in the project-specific Sampling and Analysis Plan (SAP) included in Appendix A.

Samples will be analyzed for arsenic, cadmium, total chromium, copper, lead, mercury, nickel, and zinc. Up to three samples with lead concentrations greater than 20 times the Washington State dangerous waste criteria will also be analyzed for leachable lead using the toxicity characteristic leaching procedure (TCLP). Three samples with the highest concentration of chromium will be analyzed for hexavalent chromium (Table 1). In addition to the inorganic constituents, the samples will be analyzed for total petroleum hydrocarbons in the diesel range (TPH-Dx). Any sample with a TPH-Dx concentration in excess of 460 milligrams per kilogram (mg/kg) will be analyzed for SVOCs. (The criterion of 460 mg/kg is used because it is the cleanup level for TPH-Dx, based on exposure of terrestrial ecological organisms.) Proposed analytical methods, associated laboratory reporting limits, and quality control procedures are discussed in further detail in the project-specific Quality Assurance Project Plan (QAPP) included in Appendix B.

All soil samples will be screened in the field with a photoionization detector. If there are any detections on the PID, the sample will be analyzed for TPH as gasoline and benzene, toluene, ethylbenzene, and xylenes (TPH-G/BTEX). Dioxins and furans will not be analyzed, but if ash is found, the location (depth and horizontal coordinates) of the ash will be noted.

An AMEC archaeologist will be present during the test pit digging to identify potential historical or archaeological artifacts. Prior to the digging, the archaeologist will notify, in writing, the tribal representatives in the area. The notice will provide the tribes with a brief discussion of the

nature of the work, and the date and time. Field notes and pictures of the test pit monitoring will be maintained by the archaeologist and provided upon request. In the event that artifacts are discovered, the archaeologist will discuss the requirements for follow-on work with Ecology's tribal liaison.

Field activities will be conducted in accordance with the site-specific Health and Safety Plan (HASP), included as Appendix C.

3.0 REPORTING AND SCHEDULE

We intend to mobilize to the site and conduct the soil investigation in June 2010. The field activities should require one day. Based on this proposed schedule, preliminary findings will be made available to Ecology in July 2010. Analytical results from the soil testing will be compared to Model Toxics Control Act (MTCA) Method A and Method B cleanup levels, indicated in the attached Table 2.

4.0 REFERENCES

Geomatrix (Geomatrix Consultants, Inc.), 2006, Puget Sound Dredged Disposal Analysis Sediment Characterization, North Dock Maintenance Dredging (Existing Barge Channel 2), Anacortes, Washington: Prepared for MJB Properties, Inc., Seattle, Washington.

SAIC (Science Applications International Corporation), 2008, Fidalgo Bay Sediment Investigation Fidalgo Bay, Washington, Data Report: Prepared for Washington State Department of Ecology, Olympia.

Slotemaker, Terry (Anacortes Museum), 2007, From Logs to Lumber: On Fidalgo, Guemes, Cypress, Burrows, and Sinclair Islands, Anacortes Museum, Anacortes, Washington.

Please do not hesitate to contact us, either via phone or email, if you have questions or comments regarding the proposed investigation efforts.

Sincerely yours,
AMEC Geomatrix, Inc.

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Attachments: Table 1 – Soil Sample Locations, Depths, and Analytes
Table 2 – Soil Screening Levels
Figure 1 – Vicinity Map
Figure 2 – North Dock Area Sample Locations
Appendix A – Sampling and Analysis Plan
Appendix B – Quality Assurance Project Plan
Appendix C – Health and Safety Plan

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Project File

TABLES

TABLE 1

SOIL SAMPLE LOCATIONS, DEPTHS, AND ANALYTES
MJB Properties North Dock Area
Anacortes, Washington

Proposed Sample ID	Proposed Sample Location	Sample Medium	Soil Sample Depth Interval (feet bgs)	Metals[1]	TPH-Dx[2]	TPH-Gx and BTEX[3]	SVOCs[4]	TCLP Metals[5]
NDA-1s	NDA-1	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-1d	NDA-1	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-2s	NDA-2	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-2d	NDA-2	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-3s	NDA-3	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-3d	NDA-3	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-4s	NDA-4	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-4d	NDA-4	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-5s	NDA-5	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-5d	NDA-5	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-6s	NDA-6	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-6d	NDA-6	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-7s	NDA-7	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-7d	NDA-7	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-8s	NDA-8	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-8d	NDA-8	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-9s	NDA-9	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-9d	NDA-9	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-10s	NDA-10	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-10d	NDA-10	Soil	4 to 15	X	X	As needed	As needed	As needed
Duplicate	Duplicate	Soil		X	X			

Notes
1. Metals: arsenic, cadmium, total chromium (not speciated), copper, lead, mercury, nickel, and zinc using element-specific EPA Methods
2. TPH-Dx: total petroleum hydrocarbons in the diesel extended range (which includes diesel and oil) by NWTPH-Dx.
3. NWTPH-Gx and BTEX: total petroluem hydrocarbons in the gasoline range compounds by NWTPH-Gx and BTEX compounds by EPA Method 8260B; samples collected using EPA Method 5035 sample collection methods.
4. SVOCs: semivolatile organic compounds by EPA Method 8270D/SIM only if TPH-Dx result is over 460 mg/kg.
5. TCLP Metals: analysis for selected metals by Toxicity Characteristic Leaching Procedure for exceedances of 20 times dangerous waste criteria.

Abbreviations
bgs = below ground surface

TABLE 2

SOIL SCREENING LEVELS
North Dock Area Investigation
Anacortes, Washington

Analyte	MTCA Method B Soil-Direct Contact Unrestricted Land Use Carcinogen (mg/kg)	MTCA Method B Soil-Direct Contact Unrestricted Land Use Noncarcinogen (mg/kg)	MTCA Method B Protective of Groundwater as Marine Surface Water[1] (mg/kg)	Area Background (mg/kg)	MTCA Method B Protective of Terrestrial Ecological Receptors [2] (mg/kg)	Laboratory Reporting Limit (mg/kg)	Selected Screening Level (mg/kg)	Henrys Law Constant (unitless) (H_{cc}) (unitless)	K_d (Distribution Coefficient for Metals) (L/kg)	K_{oc} (Soil Organic Carbon-Water Partitioning Coefficient) (L/kg)
Metals										
Arsenic	0.67	24	0.08	8.47	20	13	**13** [6]	0E+00	2.90E+01	--
Cadmium	2 [5]	80	1.21	1.2	25	0.66	**1.21**	0E+00	--	--
Chromium (total)	2,000 [5]	--	--	117	42		**117** [4]	--	--	--
Copper	--	3,000	1.07	52.9	100		**52.9** [4]	0E+00	2.20E+01	--
Lead	250 [5]	--	1,620	--	220	6.4	**220**	0E+00	1.00E+04	--
Mercury	2 [5]	24	0.03	0.13	9	0.031	**0.13** [4]	4.70E-01	5.20E+01	--
Nickel	--	1,600	10.7	54.2	100		**54.2** [4]	0E+00	6.50E+01	--
Zinc	--	24,000	101	85.6	270		**101**	0E+00	6.20E+01	--
TPH										
Gasoline range hydrocarbons (no benzene)	100 [5]				200		**100**			
Gasoline range hydrocarbons (with benzene)	30 [5]				200		**30**			
Diesel range hydrocarbons	460 [2]	--	--		460		**460**	--	--	--
Lube oil	2,000 [5]	--	--		--		**2,000**	--	--	--
BTEX										
Benzene	18	320	0.29				**0.29**	0.23		62
Ethylbenzene		8,000	17.96				**17.96**	0.32		200
Toluene		6,400	109		460		**109**	0.27	--	140
m, p-xylenes		16,000					**16000**	0.28		230
o-xylenes		160,000	--		--		**160,000**	0.21	--	240
SVOCs										
1,2-Dichlorobenzene	--	7,200	15.26		--		**15.26**	7.80E-02	--	3.80E+02
1,2-Dinitrobenzene	--	32	--		--		**32**	--	--	--
1,2-Diphenylhydrazine	1.3	--	--		--		**1.3**	--	--	--
1,3-Dichlorobenzene	--	--	13.04		--		**13.04**	--	--	--
1,3-Dinitrobenzene	--	8	--		--		**8**	--	--	--
1,4-Dichlorobenzene	42	--	3.15		--		**3.15**	1.00E-01	--	6.20E+02
1,4-Dinitrobenzene	--	32	--		--		**32**	**--**	**--**	**--**
1-Methylnaphthalene	--	--	--		--		**--**	--	--	--
2,3,4,6-Tetrachlorophenol	--	2,400	--		--		**2,400**	--	--	2.80E+02
2,3,5,6-Tetrachlorophenol	--	--	--		--		**--**	**--**	**--**	**--**
2,3-Dichloroaniline	--	--	--		--		**--**	**--**	**--**	**--**
2,4,5-Trichlorophenol	--	8,000	129.6		--		**129.6**	1.80E-04	--	1.60E+03
2,4,6-Trichlorophenol	91	--	0.03		--		**0.03**	3.20E-04	--	3.80E+02
2,4-Dichlorophenol	--	240	2.03		--		**2.03**	1.30E-04	--	1.50E+02
2,4-Dimethylphenol	--	1,600	6.97		--		**6.97**	8.20E-05	--	2.10E+02
2,4-Dinitrophenol	--	160	21.2		--		**21.2**	1.80E-05	--	1.00E-02
2,4-Dinitrotoluene	--	160	0.02		--		**0.02**	3.80E-06	--	9.60E+01
2,6-Dinitrotoluene	--	80	--		--		**80**	3.10E-05	--	6.90E+01
2-Chloronaphthalene	--	6,400	42.56		--		**42.56**	1.27E-07	--	1130
2-Chlorophenol	--	400	1.15		--		**1.15**	1.60E-02	--	3.90E+02
2-Methyl-4,6-dinitrophenol	--	--	--		--		**--**	--	--	--
2-Methylnaphthalene	--	320	--		--		**320**	--	--	--
2-Methylphenol	--	4,000	--		--		**4,000**	--	--	--
2-Nitroaniline	--	--	--		--		**--**	--	--	--
2-Nitrophenol	--	--	--		--		**--**	--	--	--

TABLE 2

SOIL SCREENING LEVELS
North Dock Area Investigation
Anacortes, Washington

Analyte	MTCA Method B Soil-Direct Contact Unrestricted Land Use Carcinogen (mg/kg)	MTCA Method B Soil-Direct Contact Unrestricted Land Use Noncarcinogen (mg/kg)	MTCA Method B Protective of Groundwater as Marine Surface Water[1] (mg/kg)	Area Background (mg/kg)	MTCA Method B Protective of Terrestrial Ecological Receptors [2] (mg/kg)	Laboratory Reporting Limit (mg/kg)	Selected Screening Level (mg/kg)	Henrys Law Constant (unitless) (H_{cc}) (unitless)	K_d (Distribution Coefficient for Metals) (L/kg)	K_{oc} (Soil Organic Carbon-Water Partitioning Coefficient) (L/kg)
SVOCs (Continued)										
3-Methylphenol	--	4,000	--		--		**4,000**	--	--	--
4-Methylphenol	--	400	--		--		**400**	--	--	--
3,3'-Dichlorobenzidine	2.2	--	0.001		--		**0.001**	1.60E-07	--	7.20E+02
3-Nitroaniline	--	--	--		--		**--**	--	--	--
4-Bromophenyl phenyl ether	--	--	--		--		**--**	--	--	--
4-Chloro-3-methyl phenol	--	--	--		--		**--**	--	--	--
4-Chloroaniline	--	320	--		--		**320**	1.40E-05	--	6.60E+01
4-Chlorophenyl phenyl ether	--	--	--		--		**--**	--	--	--
4-Nitroaniline	--	--	--		--		**--**	--	--	--
4-Nitrophenol	--	--	--		--		**--**	--	--	--
Acenaphthene	--	4,800	100.99		--		**100.99**	6.40E-03	--	4.90E+03
Acenaphthylene	--	--	--		--		**--**	--	--	--
Aniline	180	--	--		--		**180**	--	--	--
Anthracene	--	24,000	18,560		--		**18,560**	2.70E-03	--	2.30E+04
Benzidine	0.0043	240	0.0007		--		**0.0007**	--	--	--
Benzo[a]anthracene	--	--	0.13		--		**0.13**	1.40E-04	--	3.60E+05
Benzo[a]pyrene	0.14	--	0.35		30		**0.14**	4.60E-05	--	9.70E+05
Benzo[b]fluoranthene	--	--	0.43		--		**0.43**	4.60E-03	--	1.20E+06
Benzo(g,h,i)perylene	--	--	--		--		**--**	--	--	--
Benzo[k]fluoranthene	--	--	0.43		--		**0.43**	3.40E-05	--	1.20E+06
Benzyl alcohol	--	24,000	--		--		**24,000**	--	--	--
bis(2-Chloroethoxy) methane	--	--	--		--		**--**	--	--	--
bis(2-Chloroethyl) ether	0.91	--	0.003		--		**0.003**	7.40E-04	--	7.60E+01
bis(2-Chloroisopropyl) ether	--	3,200	--		--		**3200**	--	--	--
bis(2-Ethylhexyl) phthalate	71	1,600	4.85		--		**4.85**	4.20E-06	--	1.10E+05
bis(2-Ethylhexyl adipate	830	48,000	--		--		**830**	--	--	--
Butyl benzyl phthalate	--	16,000	539.6		--		**539.6**	5.20E-05	--	1.40E+04
Carbazole	50	--	--		--		**50**	6.30E-07	--	3.40E+03
Chrysene	--	--	0.14		--		**0.14**	3.90E-03	--	4.00E+05
Dibenzo[a,h]anthracene	--	--	0.65		--		**0.65**	6.00E-07	--	1.80E+06
Dibenzofuran	--	160	--		--		**160**	--	--	--
Diethyl phthalate	--	64,000	248		--		**248**	1.90E-05	--	8.20E+01
Dimethyl phthalate	--	80,000	5,280		--		**5,280**	--	--	--
Dibutyl phthalate	--	8,000	162		200		**162**	3.90E-08	--	1.60E+03
Di-n-octyl phthalate	--	1,600	--		--		**1600**	2.70E-03	--	8.30E+07
Fluoranthene	--	3,200	137.8		--		**137.8**	6.60E-04	--	4.90E+04
Fluorene	--	3,200	837.4		--		**837.4**	2.60E-03	--	7.70E+03
Hexachlorobenzene	0.63	64	0.0005		31		**0.0005**	5.40E-02	--	8.00E+04
Hexachlorobutadiene	13	16	19.52		--		**13**	3.30E-01	--	5.40E+04
Hexachlorocyclopentadiene	--	480	4,407		--		**480**	1.10E+00	--	2.00E+05
Hexachloroethane	71	80	0.13		--		**0.13**	1.60E-01	--	1.80E+03
Indeno[1,2,3-cd]pyrene	--	--	1.26		--		**1.26**	6.60E-05	--	3.50E+06
Isophorone	1,100	16,000	2.96		--		**2.96**	2.70E-04	--	4.70E+01
Naphthalene	--	1,600	137.4		--		**137.4**	2.00E-02	--	1.20E+03
Nitrobenzene	--	40	4.42		--		**4.42**	9.80E-04	--	1.20E+02

TABLE 2

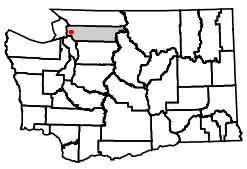
SOIL SCREENING LEVELS
North Dock Area Investigation
Anacortes, Washington

Analyte	MTCA Method B Soil-Direct Contact Unrestricted Land Use Carcinogen (mg/kg)	MTCA Method B Soil-Direct Contact Unrestricted Land Use Noncarcinogen (mg/kg)	MTCA Method B Protective of Groundwater as Marine Surface Water[1] (mg/kg)	Area Background (mg/kg)	MTCA Method B Protective of Terrestrial Ecological Receptors [2] (mg/kg)	Laboratory Reporting Limit (mg/kg)	Selected Screening Level (mg/kg)	Henrys Law Constant (unitless) (H_{cc}) (unitless)	K_d (Distribution Coefficient for Metals) (L/kg)	K_{oc} (Soil Organic Carbon-Water Partitioning Coefficient) (L/kg)
SVOCs (Continued)										
N-Nitrosodimethylamine	0.02	--	--		--		**0.02**	--	--	--
N-Nitroso-di-n-propylamine	0.14	--	0.002		--		**0.002**	9.20E-05	--	2.40E+01
N-Nitrosodiphenylamine	200	--	0.48		--		**0.48**	2.10E-04	--	1.30E+03
Pentachlorophenol	8.3	2,400	0.05		11		**0.05**	1.00E-06	--	5.90E+02
Phenanthrene	--	--	--		--		**--**	--	--	--
Phenol	--	48,000	7,786		--		**7,786**	1.60E-05	--	2.90E+01
Pyrene	--	2,400	5,456		--		**2,400**	4.50E-04	--	6.80E+04
Pyridine	--	80	--		--		**80**	--	--	--
Total cPAHs - benzo(a)pyrene TEQ [7]	0.14	--	0.35		30		**0.14**	--	--	--

Notes
1. Calculated using fixed-parameter three-phase partitioning model WAC 173-340-747(4).
2. Based on simplified terrestrial evaluation in WAC 173-340-7492, criteria listed in Table 749-2.
3. -- = value not available.
4. The screening level for some metals is adjusted for regional background concentrations within Skagit/Whatcom counties or Western Washington as reported by Ecology (1994).
5. Method A value if no Method B available.
6. Screening level based on the laboratory practical quantitation limit

Abbreviations
L/kg = liters per kilogram
mg/kg = milligrams per kilogram
MTCA = Model Toxics Control Act
SVOCs = semivolatile organic compounds
TEQ = toxicity equivalent concentration
TPH = total petroleum hydrocarbons
WAC =Washington Administrative Code

FIGURES



Washington

N

0 750 1,500

Feet

VICINITY MAP
MJB Properties North Dock Area
Anacortes, Washington

By: APS	Date: 04/29/10	Project No. 10131
AMEC Geomatrix		Figure 1

S:\10131\006_SouthDockRamp\MJB-VicinityMap2.mxd

Plot Date: 05/12/10 - 11:41am, Plotted by: adam.stenberg
Drawing Path: S:\10131\006_SouthDockRamp\, Drawing Name: MJB-SouthDockRamp_ProposedMJBareas_042910.dwg

LEGEND

- MJB NORTH YARD
- PROJECT BOUNDARY
- NDA-01 PROPOSED TEST PIT LOCATION
- NDB2-S4 PREVIOUS SEDIMENT CORE LOCATION (GEOMATRIX, 2006)

N

0 100 200
APPROXIMATE SCALE IN FEET

NORTH DOCK AREA SAMPLE LOCATIONS
MJB Properties
Anacortes, Washington

By: GSM	Date: 05/12/10	Project No. 101310100
AMEC Geomatrix		Figure 2

APPENDIX A

Sampling and Analysis Plan

SAMPLING AND ANALYSIS PLAN

MJB Properties North Dock Area

Anacortes Washington

Prepared for:

MJB Properties, LLC
Seattle, Washington

Prepared by:

AMEC Geomatrix, Inc.
600 University Street, Suite 1020
Seattle, Washington 98101
(206) 342-1760

May 2010

Project No. 101310100.00000

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TABLES

FIGURES

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SAMPLING AND ANALYSIS PLAN
MJB Properties North Dock Area
Anacortes, Washington

1.0 INTRODUCTION

AMEC Geomatrix, Inc. (AMEC), prepared this Sampling and Analysis Plan (SAP) on behalf of MJB Properties, LLC (MJB), the current owner of the site. This document presents the proposed sampling methodology for conducting soil investigation sampling in the vicinity of the site located east of R Avenue between 20th Street and 22nd Street on the western shore of Fidalgo Bay in Anacortes, Washington.

1.1 BACKGROUND

The MJB North Yard property is divided into two subareas: the former Scott Paper Consent Decree Area (between 17th Street and 20th Street) and the MJB North Dock Area (between 20th Street and 22nd Street) (Figure A-1). As discussed above, the former Scott Paper Mill site is listed as a separate site on Ecology's hazardous sites list and is currently undergoing cleanup under an existing Consent Decree.

The subject site extends from 20th to 22nd Streets; R Avenue is the western boundary, and the inner harbor line is the eastern boundary. The upland area measures approximately 500 feet by 650 feet. Currently, a small area on the upland portion of the subject site is being used to store equipment. The industrial history of the uplands portion of the subject site over the past 100 years has varied depending on location. The northeastern quadrant has had a history different from the southeastern quadrant and the western half. Historical land use is discussed in more detail in the work plan.

1.2 OBJECTIVES AND SCOPE

The objectives of the work to be performed under this SAP are to collect soil samples to characterize the nature and extent of potential impacts to soil from historical industrial activities at the site.

The following field tasks will be performed to gather the necessary data to meet these objectives:

- Dig 10 test pits within the footprint of the upland portion of the site;
- Lithologically log the soils observed in the test pits for soil type, color, grain size, and signs of debris or potentially hazardous substances;

- Screen soil samples from with photoionization detector (PID), and use visual and olfactory observations;
- Collect two soil samples from each of 10 soil sampling locations; based on lithological observation;
- Survey the elevation and horizontal locations of the testpits; and
- Document the activities and results and submit them to the Washington State Department of Ecology (Ecology).

This SAP outlines how these tasks will be performed. Approximate sampling locations are shown on Figure A-1.

1.3 ORGANIZATION

The names of the sampling contractor and the analytical laboratory are provided below:

Sampling Contractor:
AMEC Geomatrix , Inc.
600 University Street, Suite 1020
Seattle, Washington 98101
Contact: Ms. Kathleen Goodman
Phone: (206) 342-1760

Data Validation Contractor:
AMEC Geomatrix, Inc.
600 University Street, Suite 1020
Seattle, Washington 98101
Contact – Ms. Crystal Neirby
Phone: (206) 342-1760

Analytical Laboratory for Soil and Groundwater Sampling:
OnSite Environmental Inc.
14648 NE 95th Street
Redmond, Washington 98052
Contact: Mr. David Baumeister
Phone: (425) 883-3881

Ecology's Contact for Sampling Coordination:
Panjini Balaragu
Site Manager
Washington State Department of Ecology
Toxics Cleanup Program
P.O. Box 47600
Olympia, Washington 98504-7600
Phone: 360-407-6161
email: pbal461@ecy.wa.gov

1.4 HEALTH AND SAFETY

The proposed field activities will be conducted in accordance with a Site-Specific Health and Safety Plan (HASP) to be prepared for the start of the field work.

2.0 SOIL INVESTIGATION

This section describes the methods that will be used to collect and analyze soil samples as part of the uplands soil investigation. There is no known contamination in the uplands area; however, the area has had a history of industrial use. Table A-1 summarizes the field activities to be conducted and samples to be collected.

Depending on the sample depth, soil samples will be collected using an excavator to reach the desired sample depth. Except for samples to be analyzed for VOCs, soil samples will be collected using stainless steel spoons and homogenized in a stainless steel bowl. Following homogenization the material will be placed into precleaned glass jars supplied by the analytical laboratory. All sampling equipment will be properly decontaminated between each confirmation sample location, as discussed in Section 3.0.

Samples will be analyzed in accordance with the methods described in the Table A-2.

2.1 SITE PREPARATION

Prior to the commencement of digging, the following procedures will be followed for site preparation.

- Inspect each potential sampling location in the field for potential access problems (e.g., obstructions or hazards, excessive slopes, soft ground, on-site materials or equipment obstructing access, etc.).
- Clear each sampling location of any brush or debris that may be present.
- Remove any equipment or materials that may be stored in the immediate vicinity of the sampling location.
- Mark the ground locations of the proposed sampling sites.
- Contract an independent service (and if necessary government agencies) to locate underground utilities in the vicinity of each proposed sampling location. Based on the outcome of the search for underground obstructions, it may be necessary to modify the location of one or more proposed sampling sites.

After the locations of test pits have been finalized, and any required permits have been obtained, AMEC will begin final site preparations. The following steps will be included.

- Mark the final digging locations on the ground.
- Set up receptacles for temporary storage of investigation-derived waste (IDW).

2.2 FIELD SAMPLING TECHNIQUES

Figure A-1 shows the proposed sample locations at the site. Soil samples will be collected from ten soil sample locations that were selected based on the current draft plan map for as depicted on Figure A-1.

The samples will be collected from depths above 15 feet below ground surface (bgs; as shown on Table A-1 and Figure A-1). Sample collection will proceed as follows:

- An excavator will be used to perform soil sampling to the maximum desired depth at each soil sample location. The excavating and soil sampling will be supervised by a geologist licensed in Washington State.

- For each sample (except for volatile analyses), a portion of soil will be collected from the designated sample depth interval and placed into a stainless steel bowl for homogenization prior to being placed into a labeled, precleaned sample jar. Each sample jar will be sealed and retained on ice until transported to the contract laboratory.

- If the dense clay layer is encountered at a sample location, a sample will be collected immediately above that layer.

- The sampling equipment will be decontaminated between each sampling location using the decontamination procedures outlined in Section 3.0.

- AMEC's project geologist will be responsible for noting any changes in sampling methods caused by sampling difficulties and for ensuring that field observations, sample locations, and lithologic logs of each testpit are properly recorded in the field logbook and on individual field logs.

The sampling equipment will be cleaned prior to conducting test pits at the site and decontaminated before sampling begins at each sample location. A global positioning system (GPS) unit will be used to log the approximate coordinates of the sample locations and any locations where buried waste is identified. The margin of error will be 2 to 3 feet using Coast Guard radio beacon correction.

The soil samples will be delivered to OnSite Environmental Inc.'s (OnSite) laboratory in Redmond, Washington, for analysis. Standard procedures will be followed using chain-of-custody (COC) forms for all samples sent to the laboratory.

2.3 SOIL LITHOLOGIC LOGGING

All test pits will be logged continuously by a field geologist to the total depth. The lithologic log for each test pit will be based on visual observation and description of the corresponding soil samples in accordance with American Society for Testing and Materials (ASTM D2488). Each sample lithologic description will contain the following information:

- Location identifier;

- Sample depth interval, in feet bgs;

- Color (based on Munsell® color chart);

- Signs of weathering (e.g., rust-colored stains or coatings);

- Texture (particle size, angularity/roundness, and degree of sorting);

- Soil type, based on the Unified Soil Classification System (USCS) (ASTM D2487-98);
- Estimated moisture content (qualitative);
- Organic matter (e.g., plant detritus, woody or fibrous vegetative matter, shell fragments), if any;
- PID reading;
- Noticeable odor, if any; and
- Sheen test results and observations regarding heaviness of the sheen or free product.

2.4 SURVEYING

The horizontal position of all sample locations will be surveyed following the sampling event using a high-accuracy GPS unit. Survey data will be based on the horizontal Washington State Plane North American Datum of 1988 (NAD88) coordinate system that will be compatible with Environmental Information Management (EIM) submission requirements. The survey shall use such practices that result in horizontal errors no greater than 0.10 feet.

2.5 SAMPLE LABELING AND CHAIN-OF-CUSTODY

A sample label will be affixed to each soil sample container. Each label will include:

- sample number;
- sampling event location;
- date and time of sample collection;
- sample name;
- preservatives added to the sample; and
- parameter(s) for which the sample is to be analyzed.

After sampling is completed for the day, all samples will be packed for shipping and placed in iced transport containers. The transport containers will consist of sturdy, insulated, commercially produced coolers. All bottle caps will be secured tightly. All glass containers will be placed securely into position within the shipping container to avoid breakage. The COC form will be taped to the inside lid of the cooler or shipping container, unless the container is hand-delivered to the analytical laboratory.

During sample collection or at the end of each day and prior to shipping or storage, COC forms will be completed for all samples collected by AMEC. The COC form should include information such as sample names, sample times, sample dates, the type of media, and the analyses requested. Any necessary changes to COC forms, sample container labels, or the field log book will be made by striking out the error with one line, initialing and dating the error, and reentering the correct information. Samples with extra volume for laboratory quality control procedures (matrix spike/matrix spike duplicate [MS/MSD] and laboratory duplicates) will be designated as such on the COC form. The field team will ensure that analyte method numbers and analyte lists required for the project are listed on, attached to, or referred to on the COC form. Every person who takes possession of the samples while transporting the samples from the field to the laboratory must sign the COC form.

AMEC personnel will transport the samples to the laboratory at the end of the sampling day. Upon receipt of the sample transport containers by the analytical laboratory, laboratory personnel will open the containers and examine the contents for problems such as damaged transport containers, broken custody seals, missing or broken sample bottles, COC discrepancies, and documentation errors. Problems will be reported immediately to AMEC. After the samples are analyzed by the analytical laboratory, laboratory personnel will store the samples in a secure location at the laboratory for the remainder of their holding times.

3.0 DECONTAMINATION

Decontamination is performed as a quality assurance measure and a safety precaution to prevent cross-contamination between samples and to maintain a clean working environment. The purpose of decontamination is to remove contaminated materials clinging to gloves, boots, equipment, and sample containers prior to their removal from the work area. Decontamination also includes the removal and disposal of contaminated clothing and gloves.

Decontamination is achieved mainly by rinsing with soap or detergent solutions, tap water, and deionized water. Equipment will be allowed to air dry after being cleaned. Decontamination will be accomplished between each sample collection station and/or depth.

The following is a list of supplies needed to decontaminate equipment and personnel:

- Clean gloves: inner and outer;
- Cleaning liquids and dispensers: soap and/or a powdered detergent solution such as Alconox, tap water, and deionized water;
- Waste storage containers: drums, boxes, and plastic bags;

- Plastic ground cover;
- Chemical-free paper towels;
- Cleaning containers: plastic or stainless steel buckets and pans; and
- Cleaning brushes.

3.1 SAMPLING EQUIPMENT

At a minimum, sampling equipment will be decontaminated prior to initial use and between sampling stations. Sampling equipment (i.e., spoons, bowls) decontaminated prior to field use will be wrapped in aluminum foil and stored in a sealed plastic bag to prevent contamination. Decontamination procedures will include washing and scrubbing with an Alconox soap solution, rinsing with tap water, rinsing with distilled water, and air drying. If heavy, oily substances are found on sampling equipment, Simple Green, dilute acids, or acetone will be used to clean the equipment. Cross-contamination will be minimized by sequencing sampling events from areas expected to have lower concentrations of suspected contaminants to areas suspected of relatively higher concentrations.

3.2 PERSONNEL

The investigation will be conducted under Level D protection (disposable coveralls, steel-toe boots, hard hat, and protective gloves). Currently, there is no known contamination within the investigation area; however, if the excavation encounters unusual or unexpected materials, the field personnel may upgrade to full Level C protective equipment (Level D plus respirator). Decontamination procedures will be established within the HASP.

3.3 HEAVY EQUIPMENT

Contractors will be required to bring decontaminated equipment to the site. It is the responsibility of the site geologist/engineer to ensure that all heavy equipment (e.g., excavator) removed from the work area is properly decontaminated. An equipment decontamination area will be designated. Most heavy equipment (e.g., excavator) will be decontaminated by brushing, scraping, and hot water pressure washing as necessary.

4.0 ANALYTICAL PROCEDURES

The analyses and applicable methods to be performed on all samples, including quality assurance samples to be collected, are described in the quality assurance project plan and Table A-2.

5.0 MANAGEMENT OF INVESTIGATION-DERIVED WASTE

The sampling methods described in this SAP will generate IDW that may include soil and decontamination water. Based on site history, potential contaminants in IDW may include petroleum hydrocarbons and metals. All IDW generated by field investigations will be properly handled and disposed of according to local, state, and federal laws.

TABLES

TABLE A-1

SOIL SAMPLE LOCATIONS, DEPTHS, AND ANALYTES
MJB Properties North Dock Area
Anacortes, Washington

Proposed Sample ID	Proposed Sample Location	Sample Medium	Soil Sample Depth Interval (feet bgs)	Metals[1]	TPH-Dx[2]	TPH-Gx and BTEX[3]	SVOCs[4]	TCLP Metals[5]
NDA-1s	NDA-1	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-1d	NDA-1	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-2s	NDA-2	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-2d	NDA-2	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-3s	NDA-3	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-3d	NDA-3	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-4s	NDA-4	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-4d	NDA-4	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-5s	NDA-5	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-5d	NDA-5	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-6s	NDA-6	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-6d	NDA-6	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-7s	NDA-7	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-7d	NDA-7	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-8s	NDA-8	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-8d	NDA-8	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-9s	NDA-9	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-9d	NDA-9	Soil	4 to 15	X	X	As needed	As needed	As needed
NDA-10s	NDA-10	Soil	0 to 4	X	X	As needed	As needed	As needed
NDA-10d	NDA-10	Soil	4 to 15	X	X	As needed	As needed	As needed
Duplicate	Duplicate	Soil		X	X			

Notes
1. Metals: arsenic, cadmium, total chromium (not speciated), copper, lead, mercury, nickel, and zinc using element-specific EPA Methods
2. TPH-Dx: total petroleum hydrocarbons in the diesel extended range (which includes diesel and oil) by NWTPH-Dx.
3. NWTPH-Gx and BTEX: total petroluem hydrocarbons in the gasoline range compounds by NWTPH-Gx and BTEX compounds by EPA Method 8260B; samples collected using EPA Method 5035 sample collection methods.
4. SVOCs: semivolatile organic compounds by EPA Method 8270D/SIM only if TPH-Dx result is over 460 mg/kg.
5. TCLP Metals: analysis for selected metals by Toxicity Characteristic Leaching Procedure for exceedances of 20 times dangerous waste criteria.

Abbreviations
bgs = below ground surface

TABLE A-2

SOIL ANALYSIS LIST, METHODS AND REPORTING LIMITS

MJB Properties North Dock Area
Anacortes, Washington

Analyte	Analytical Method[1]	Reporting Limit (mg/kg)[2]	Sample Container	Preservation Temperature	Holding Time
Organic Analyses					
BTEX[3]	EPA 8021B	0.05 [4]	Method 5035A - 40 mL glass vial with septum	4°C	14 days
SVOCs[5]	EPA 8270D (PAHS by 8270D SIM)	0.033 to 0.83 (PAHs = 0.0067)	8 oz. wide-mouth glass jar	4°C	14 days
TPH - gasoline	Ecology NWTPH-Dx	5.0	Method 5035A - 40 mL glass vial with septum	4°C	14 days
TPH - diesel	Ecology NWTPH-Dx	25	4 oz. wide-mouth glass jar	4°C	14 days
TPH - motor oil	Ecology NWTPH-Dx	50	4 oz. wide-mouth glass jar	4°C	14 days
Inorganic Analyses					
Arsenic	EPA 6010B	10	4 oz. wide-mouth glass jar	4°C	6 months
Cadmium	EPA 6010B	0.5	4 oz. wide-mouth glass jar	4°C	6 months
Chromium	EPA 6010B	0.5	4 oz. wide-mouth glass jar	4°C	6 months
Chromium (VI)[6]	EPA 7197	1.0	4 oz. wide-mouth glass jar	4°C	28 days
Copper	EPA 6010B	0.5	4 oz. wide-mouth glass jar	4°C	6 months
Lead	EPA 6010B	5.0	4 oz. wide-mouth glass jar	4°C	6 months
Mercury	EPA 7470A	0.025	8 oz. wide-mouth glass jar	4°C	analysis: 28 days
Nickel	EPA 6010B	2.5	4 oz. wide-mouth glass jar	4°C	6 months
Zinc	EPA 6010B	2.5	4 oz. wide-mouth glass jar	4°C	6 months

TABLE A-2

SOIL ANALYSIS LIST, METHODS AND REPORTING LIMITS

MJB Properties North Dock Area
Anacortes, Washington

Analyte	Analytical Method[1]	Reporting Limit (mg/kg)[2]	Sample Container	Preservation Temperature	Holding Time
Inorganic Analyses (Continued)					
TCLP Lead[7]	EPA 6010B	0.2	4 oz. wide-mouth glass jar	4°C	6 months
Total Organic Carbon	EPA 9060	0.042 (%)	4 oz. wide-mouth glass jar	4°C	28 days

Notes

1. Method numbers refer to EPA SW-846 or other EPA-approved analytical methods; Washington State Department of Ecology analytical methods; or as noted.
2. Reporting limits based on wet weight and will be slightly higher on a dry weight basis, including matrix interference
3. Samples will be analyzed for TPH-gasoline and BTEX if there is a positive PID detection
4. The reporting limit for benzene is 0.02 ppm, all other BTEX analytes are 0.05 ppm.
5. Samples will be analyzed for SVOCs if the total diesel concentration exceeds 460 mg/Kg.
6. Up to three samples will be analyzed for hexavalent chromium based on the three highest concentrations of total chromium, as determined by the task manager.
7. Up to three samples will be analyzed for TCLP lead based on the three highest concentrations of total lead as determined by the task manager.

Abbreviations

BTEX - Benzene,Toluene, Ethylbenzene, and Xylenes
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
cPAHs - carcinogenic polynuclear aromatic hydrocarbons
EPA - Environmental Protection Agency
SIM - Selected Ion Monitoring
oz - ounce
TCLP - Toxicity Characteristic Leaching Procedure
mg/Kg - milligrams per kilogram

FIGURES

Plot Date: 04/30/10 - 8:57am, Plotted by: kat.mcpherson
Drawing Path: S:\10131\006_SouthDockRamp\, Drawing Name: MJB-SouthDockRamp_ProposedMJBareas_042910_km_A-1.dwg

LEGEND

- MJB NORTH YARD
- PROJECT BOUNDARY
- NDA-01 PROPOSED TEST PIT LOCATION
- NDB2-S4 PREVIOUS SEDIMENT CORE LOCATION (GEOMATRIX, 2006)

N

0 100 200
APPROXIMATE SCALE IN FEET

NORTH DOCK AREA SAMPLE LOCATIONS
MJB Properties
Anacortes, Washington

By: GSM	Date: 04/30/10	Project No. 101310100
AMEC Geomatrix		Figure A-1

APPENDIX B

Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN

MJB Properties North Dock Area

Anacortes, Washington

Prepared for:

MJB Properties, LLC
Seattle, Washington

Prepared by:

AMEC Geomatrix, Inc.
600 University Street, Suite 1020
Seattle, Washington 98101
(206) 342-1760

May 2010

Project No. 0101310100.00000

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TABLES

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QUALITY ASSURANCE PROJECT PLAN
MJB Properties North Dock Area
Anacortes, Washington

1.0 INTRODUCTION

AMEC has prepared this Quality Assurance Project Plan (QAPP) on behalf of MJB Properties, LLC (MJB), to document the planning, implementation, and assessment procedures for quality assurance and quality control (QA/QC) activities associated with the uplands investigation field activities at the MJB North Dock Area that lies between 20th and 22nd Streets in Anacortes, Washington (site). This QAPP is part of the Sampling and Analysis Plan (SAP) that is an appendix to the Investigation Work Plan. The SAP documents the proposed scope of work and methodologies for further soil characterization.

The project manager for remedial action work at the site is Niklas Bacher, PG, the AMEC project director overseeing all investigation work is Kathleen Goodman, LG, LHg, and the data validator is Crystal Neirby of AMEC.

2.0 BACKGROUND AND PURPOSE

Historical land use is discussed in more detail in the Investigation Work Plan. The bulk of the cleanup work on the MJB North Yard will be completed within 12 to 24 months by the Port of Anacortes and Kimberly-Clark. This work is being conducted under a separate Consent Decree and encompasses MJB's property from 17th to 20th Streets. The contiguous area of MJB-owned property that lies between 20th and 22nd Streets (the site) has not been investigated and is the focus of this proposed investigation

3.0 PROJECT DESCRIPTION

In the absence of any known contamination, but with the industrial history concentrated on the northeastern (20th to 21st Streets and east of S Avenue) portion of the site, investigation activities will focus on the northeast portion, but the other areas will also be checked. Activities that will be conducted for this phase of the remedial investigation include:

- Locate utilities at all proposed sampling locations using a private service.
- Excavate 10 test pits to the depth of the native clay unit (approximately 6 to 15 feet in depth) using an excavator.
- Collect to 2 samples will be collected from each test pit based on lithologic changes, observations, and photoionization detector (PID) readings.

4.0 DATA QUALITY OBJECTIVES

The sampling design, field procedures, laboratory procedures, and QC procedures are set up to provide high-quality data for use in this project. Specific data quality factors that may affect data usability include precision, bias, accuracy, representativeness, comparability, completeness, and reporting limits.

4.1 PRECISION

Precision is the agreement among a set of replicate measurements without assuming knowledge of the true value. Precision is measured for this project by calculating the relative percent difference (RPD) for field duplicate and lab duplicate results. Precision is optimized by collecting data at multiple locations and adhering to strict procedural guidelines that minimize possible sample contamination. RPD results of >50% for soils, or outside control limits if specified by the laboratory, will be assessed as having poor precision and qualified appropriately during data validation.

4.2 BIAS

Bias is the systematic deviation of a measured value from the true value, often due to matrix effects. Bias can be assessed by comparing a measured value to an accepted reference value in a sample of known concentration or by determining the recovery of a known amount of contaminant spiked into a sample. Bias is minimized for this project by standardizing field activity methodologies, including equipment decontamination, sample collection methods, field observation and documentation, sample transport, and chain-of-custody control. Descriptions of the methodologies are described in the SAP.

4.3 ACCURACY

Accuracy is the degree of agreement between an observed value and an accepted reference value. When applied to a set of observed values, accuracy will depend on a combination of random error and of common systematic error (or bias). Accuracy will be evaluated for this project by reviewing components of accuracy, bias, and precision, as well as by evaluating laboratory spike sample recoveries that represent the difference between an observed value and an accepted reference value. Control limits for spike recoveries will be specified by the laboratory. Results showing poor accuracy will be qualified appropriately during data validation. Accuracy will be optimized for this project by using procedures designed to reduce potential error that might impact the accuracy of results. Proper decontamination methods and equipment are used during field activities to ensure accurate results. The laboratory QC procedures, described in Section 8.3, also reduce error to improve accuracy.

4.4 REPRESENTATIVENESS

Representativeness is the measure of how well data reflect the actual environment and the conditions under which the data are collected. Representativeness will be optimized for this project by using general historical and investigative information to determine proper locations of new sampling points that represent the areas of concern surrounding the site. The methodologies used to collect samples and measurements, as detailed in the SAP, are also designed to collect representative data with minimal disturbance of the environment from which they are collected.

4.5 COMPARABILITY

Comparability is how well multiple data sets can be used for a common interpretation. Comparability will be optimized for this project by using the same standards for data collection at each location, and the same analytical procedures and QA procedures that are used during other sampling events at the site.

4.6 COMPLETENESS

Completeness is a measure of the amount of data collected that is found to be valid in relation to the total amount of data intended to be collected according to the sampling design. Completeness will be optimized for this project by having all analytical results validated by an expert data validator to assess the validity of the data. The data quality objective for completeness for this project is 100%. Completeness below 100% will require review of the sampling objectives in order to determine whether further sampling may be required.

4.7 REPORTING LIMITS

The laboratory's reporting limits must be low enough to compare to potential cleanup levels for the facility. Reporting limit goals for analytical samples will be consistent with the preliminary screening levels in the Investigation Work Plan.

5.0 SAMPLING DESIGN

The sampling design, including figures showing fieldwork locations and tables of samples to be collected, are included in the SAP.

6.0 FIELD PROCEDURES

Procedures for all field activities are described in the SAP. All field personnel will have completed 40-hour Occupational Safety and Health Administration (OSHA) Hazardous Waste Site Operations training, as specified in the Site-Specific Health and Safety Plan (HASP) (Appendix C of the Investigation Work Plan).

All instruments used in the collection of samples will be properly calibrated according to the manufacture's recommendations and decontaminated between samples if the instrument is reusable and comes in contact with samples. All samples will be placed in iced coolers immediately following sample collection and strict chain-of-custody control will be maintained at all times. Samples will be delivered or shipped to OnSite Environmental in Redmond, Washington, as specified in the SAP.

7.0 LABORATORY PROCEDURES

A list of analyses and reporting requirements for this project are provided in Table B-1. Standard analytical and QA/QC procedures will be used by the laboratory.

8.0 QUALITY CONTROL

This section outlines QC procedures to be followed both by the field personnel as well as the analytical laboratory. Following these QC procedures will ensure the development of a complete and accurate data set following laboratory analysis and data validation.

8.1 FIELDWORK QUALITY CONTROL

In this section we describe fieldwork QC procedures for sample identification, sample labeling, and maintenance of field logs.

8.1.1 Sample Identification

Each sample will be assigned a unique alphanumeric identification code (identifier) that contains sufficient information to identify the sample location and date (e.g., "MJB-12-0610" for a sample at location 12 collected in June 2010). The sample identifier will consist of alphanumeric strings separated by hyphens.

Equipment blanks and trip blanks will be named "Equipment Blank" and "Trip Blank," respectively, and will be uniquely identified by date and time.

8.1.2 Sample Labeling

A label will be securely attached to every sample container. Each label will include the following information:

- sample identifier;
- facility name;
- date and time of collection (using 24-hour time clock to minimize potential confusion about a.m. and p.m.; e.g., "1300" vs. "1:00 p.m."); and

- analyses to be performed.

8.1.3 Field Log Maintenance

All sample location descriptions, sample identifiers, and analyte lists will be recorded in the field log. The field log will record, but not be limited to, the following information:

- all incidents observed during each sampling event;
- the names of all personnel on site involved in the sampling event;
- the major events that occurred during the day;
- details about field procedures conducted; and
- details about samples collected or problems that occurred.

The field book will be maintained in accordance with AMEC Geomatrix's standard field protocols.

8.2 SAMPLE HANDLING

In this section we describe QC procedures for sample handling, including specifications for sample containers and preservatives, sample storage and transportation, and chain-of-custody.

8.2.1 Sample Containers and Preservatives

Table B-1 lists the analyses to be performed on all samples. All sample containers will be provided by the laboratory and will include the appropriate preservatives.

Sample containers will be placed in opaque, insulated coolers that are packed with ice to minimize their exposure to light and to cool them approximately to the recommended temperature. The coolers will be packed with sufficient packing material to prevent sample container breakage and/or leakage during transport.

The project leader and field personnel will plan sampling activities, and coordinate sample delivery with laboratory personnel, so that the sample holding time limits and temperatures specified in Table B-1 are not exceeded.

8.2.2 Sample Storage and Transportation

The exteriors of all sample containers will be wiped clean after they have been closed. Blank samples will be packaged with the regular samples that they control. Any vacant space in the

cooler will be filled with ice or packing material. If the cooler has a drain, it will be taped shut. Then each cooler will be secured.

8.2.3 Sample Chain of Custody

Chain-of-custody (COC) procedures will be followed by all project personnel to document sample transfer, sample possession, and sample integrity, from the time of sample collection through the completion of sample analysis. A COC form will be initiated at the time of sampling, and will accompany the samples at all times until sample analysis is complete. The COC form has blank fields for entering the sample identifier, the date and time of sample collection, the name of the person who collected the sample, and the requested laboratory analyses. Each COC form will be signed by every person who handles the sample containers. Sample transfers will be noted on the COC form for each sample.

The COC form documents sample identifications, locations, sample times, and the analyses required for each sample. This is the only document shared by the sample generator and the laboratory. Therefore accuracy and completeness are extremely important. Personnel initiating the COC form will refer to the field forms and the field log (described below) to access the required information. This continuity will help to insure that the various forms of documentation are consistent and reduce the risk of transcription error. The COC form will accompany all samples during transport. The field sampler also will keep a copy of the COC form for the project file.

All samples will be delivered directly to those laboratory personnel who are authorized to receive samples (sample custodians). When the laboratory receives the samples, the sample custodian will inspect the condition of the shipping container's exterior. Then the sample custodian will open and examine the interior of the shipping container. Next the sample custodian will examine the sample containers and check the contents of the shipping container against the COC form. The sample custodian will record any inconsistencies or problems with the sample shipment (breakage or signs of leakage, and missing or extra samples) on the COC record, and notify the AMEC project manager for immediate resolution. Official acceptance of sample custody will be documented by the sample custodian's signature on the COC form. The samples will then be tracked through the laboratory by the laboratory's internal custody procedures.

8.3 ANALYTICAL LABORATORY QUALITY CONTROL

The chemical analysis laboratories use the following QC procedures to verify the validity of data being produced:

- Holding times;

- Instrument tuning;
- Initial calibrations and continuing calibration verification;
- Method blanks;
- Surrogate spike compounds;
- Matrix spike samples and matrix spike duplicates (MS/MSD);
- Laboratory control samples (LS);
- Laboratory duplicates (LD); and
- Internal standards.

8.4 FIELD QC SAMPLES

Field QC samples are collected and analyzed to assess sample collection techniques, possible sources of contamination, interferences that may be attributed to the sample matrix, and, to some degree, the bias and precision of the reported results. Field QC will be evaluated, along with laboratory QC, by the independent data validator during data review and validation. Affected data will be qualified in accordance with U.S. Environmental Protection Agency (EPA) Contract Laboratory Guidelines (EPA, 1999 and 2002). A description of each type of QC sample is described below. For the purpose of this discussion, the term "regular sample" is defined to be a field sample of environmental medium (e.g., soil) other than a field QC sample.

Multiple sample locations have been selected for this project to produce more representative data for the site and high quality results.

8.4.1 MS/MSD

Extra sample volume must be collected to enable the lab to run this lab QC procedure. MS/MSD sample volume is collected at a rate of one per 20 samples collected, or one per field mobilization at a minimum, and is noted on the COC form. MS samples are analyzed to assess the effects of the sample matrix on the accuracy of analytical measurements. MSD samples are used to assess both accuracy and precision.

8.4.2 Trip Blanks

Trip blanks will be collected at a rate of one per day for all volatile analyses in soil and are used to assess potential contamination that may impact samples during transport. Trip blanks consist of a sample container that comes from the laboratory full of clean deionized water.

Trip blanks remain sealed during sampling and are kept in the sample transport container at all times.

9.0 DATA MANAGEMENT PROCEDURES

The sampling and reporting schedule is described in the associated Work Plan and SAP. The laboratory will deliver final data within approximately 30 days of the end of sampling, unless a shorter turnaround time is requested. AMEC will validate the chemical data within approximately 30 days of receipt from the laboratory. Data transfer will be performed using electronic data deliverables (EDDs), beginning with laboratory reports and including data validation activities.

9.1 LABORATORY DATA REPORTS

OnSite Environmental will complete all analyses as described in the SAP and present the following, at a minimum, in a report to AMEC within approximately 30 days of the last day of sampling, unless a shorter turnaround time is requested:

- Case narrative: The case narrative should describe the analytical methods used and discuss any irregularities encountered during sample analyses and any resulting data qualification.
- Analyte concentrations: A summary of analyte results should be presented for each sample.
- Method reporting limits: Method reporting limits achieved by the laboratory should be presented with the analyte concentrations.
- Laboratory data qualifier codes and a summary of code definition: Data qualifiers should appear next to analyte concentrations and associated definitions should be summarized in the report.
- Lab QC results: Results for method and calibration blanks, MS/MSD, LS/LD, and surrogate recoveries should be provided with final results.
- EDD version of results: A full set of results should be provided in Ecology's Environmental Information Management (EIM) database format.

10.0 REPORTS

As described in Section, 9.0, all data will be independently validated before upload into EIM. All laboratory results reports and data validation reports will be provided as part of the technical memorandum to Ecology. Tabulated data produced from the laboratory EDDs may also be presented to facilitate data interpretation.

11.0 DATA REVIEW, VERIFICATION, AND VALIDATION

AMEC will be in charge of planning all field activities. Field forms, EDDs, and COCs will be reviewed by the project manager after the field work is completed. The forms will be checked to determine if the field staff followed all aspects of the SAP and QAPP methodologies, and any deviations from the specified procedures will be noted. Specifically, the forms will be reviewed for:

- correct documentation of sample location;
- complete and accurate procedures for sample collection or measurement and proper documentation;
- proper COC methodology, including sample shipment and preservation during transport; and
- evaluation of field QC results. Field QC sample contamination could result in data qualification.

The analytical laboratories will complete a data review and verification prior to producing results. This verification will include checking that QC procedures were included at the required frequencies and that the QC results meet control limits as defined in the laboratory's Quality Assurance Manual. Any QA issues found by the lab will be described in the case narrative and may result in qualification of some of the results by the laboratory. After receiving all results from the laboratory, the data validator will prepare an abbreviated data validation report in accordance with EPA Contract Laboratory Guidelines (EPA 1999 and 2002) and review 100% of the concentration data. The report will provide a summary evaluation of:

- COC;
- case narrative;
- analytical holding times;
- laboratory and field/equipment blank contamination;
- System monitoring compound (SMC)/surrogate compounds recoveries;
- MS and LS recoveries; and
- laboratory duplicate sample or MSD results.

12.0 DATA QUALITY ASSESSMENT

The objectives of the Phase 1 ESA Work Plan and associated SAP and QAPP will be reviewed as data are received and used for reporting and other interpretive purposes. Data that do not meet the data quality requirements as described in the RI/FS Work Plan, SAP, and QAPP will be qualified or rejected during data validation. Rejected data will not be used for any purpose.

13.0 REFERENCES

EPA, 1999, USEPA Contract Laboratory Program Functional Guidelines for Organic Data Review, October.

EPA, 2002, USEPA Contract Laboratory Program Functional Guidelines for Inorganic Data Review, July.

TABLES

TABLE B-1

SOIL ANALYSIS LIST, METHODS AND REPORTING LIMITS

MJB Properties North Dock Area
Anacortes, Washington

Analyte	Analytical Method[1]	Reporting Limit (mg/kg)[2]	Sample Container	Preservation Temperature	Holding Time
Organic Analyses					
BTEX[3]	EPA 8021B	0.05 [4]	Method 5035A - 40 mL glass vial with septum	4°C	14 days
SVOCs[5]	EPA 8270D (PAHS by 8270D SIM)	0.033 to 0.83 (PAHs = 0.0067)	8 oz. wide-mouth glass jar	4°C	14 days
TPH - gasoline	Ecology NWTPH-Dx	5.0	Method 5035A - 40 mL glass vial with septum	4°C	14 days
TPH - diesel	Ecology NWTPH-Dx	25	4 oz. wide-mouth glass jar	4°C	14 days
TPH - motor oil	Ecology NWTPH-Dx	50	4 oz. wide-mouth glass jar	4°C	14 days
Inorganic Analyses					
Arsenic	EPA 6010B	10	4 oz. wide-mouth glass jar	4°C	6 months
Cadmium	EPA 6010B	0.5	4 oz. wide-mouth glass jar	4°C	6 months
Chromium	EPA 6010B	0.5	4 oz. wide-mouth glass jar	4°C	6 months
Chromium (VI)[6]	EPA 7197	1.0	4 oz. wide-mouth glass jar	4°C	28 days
Copper	EPA 6010B	0.5	4 oz. wide-mouth glass jar	4°C	6 months
Lead	EPA 6010B	5.0	4 oz. wide-mouth glass jar	4°C	6 months
Mercury	EPA 7470A	0.025	8 oz. wide-mouth glass jar	4°C	analysis: 28 days
Nickel	EPA 6010B	2.5	4 oz. wide-mouth glass jar	4°C	6 months
Zinc	EPA 6010B	2.5	4 oz. wide-mouth glass jar	4°C	6 months

TABLE B-1

SOIL ANALYSIS LIST, METHODS AND REPORTING LIMITS

MJB Properties North Dock Area
Anacortes, Washington

Analyte	Analytical Method[1]	Reporting Limit (mg/kg)[2]	Sample Container	Preservation Temperature	Holding Time
Inorganic Analyses (Continued)					
TCLP Lead[7]	EPA 6010B	0.2	4 oz. wide-mouth glass jar	4°C	6 months
Total Organic Carbon	EPA 9060	0.042 (%)	4 oz. wide-mouth glass jar	4°C	28 days

Notes

1. Method numbers refer to EPA SW-846 or other EPA-approved analytical methods; Washington State Department of Ecology analytical methods; or as noted.
2. Reporting limits based on wet weight and will be slightly higher on a dry weight basis, including matrix interference
3. Samples will be analyzed for TPH-gasoline and BTEX if there is a positive PID detection
4. The reporting limit for benzene is 0.02 ppm, all other BTEX analytes are 0.05 ppm.
5. Samples will be analyzed for SVOCs if the total diesel concentration exceeds 460 mg/Kg.
6. Up to three samples will be analyzed for hexavalent chromium based on the three highest concentrations of total chromium, as determined by the task manager.
7. Up to three samples will be analyzed for TCLP lead based on the three highest concentrations of total lead as determined by the task manager.

Abbreviations

BTEX - Benzene,Toluene, Ethylbenzene, and Xylenes
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
cPAHs - carcinogenic polynuclear aromatic hydrocarbons
EPA - Environmental Protection Agency
SIM - Selected Ion Monitoring
oz - ounce
TCLP - Toxicity Characteristic Leaching Procedure
mg/Kg - milligrams per kilogram

APPENDIX C

Health and Safety Plan

SITE SPECIFIC HEALTH AND SAFETY PLAN

MJB North Dock Area Investigation

Anacortes, Washington

Prepared for:

MJB Properties, LLC
Seattle, Washington

Prepared by:

AMEC Geomatrix, Inc.
600 University Street, Suite 1020
Seattle, Washington 98101
(206) 342-1760

May 2010

Project No.0101310100.00000

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ATTACHMENTS

SITE-SPECIFIC HEALTH & SAFETY PLAN
MJB North Dock Area Investigation
Anacortes, Washington

1.0 ADMINISTRATIVE INFORMATION

Project Name: MJB North Dock

Project Start Date: May 2010 Project Number: 0101310100.00000

Project Address: R Avenue and 20th Street, Anacortes, Washington

Project Manager: Kathleen Goodman (AMEC Geomatrix)

Telephone No.: (206) 342-1760 office/(425) 301-2700 cell

Project Health & Safety Officer: Tim Reinhardt, CIH (AMEC Geomatrix)

Telephone No.: (206) 342-1760 office/(425) 241-5816 cell

Site Safety Officer: Nick Bacher (AMEC Geomatrix)

Site Supervisor: Nick Bacher (AMEC Geomatrix)

Telephone No.: Nick: (206) 342-1760 office/(206) 351-0951cell

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2.0 PURPOSE

This Site-Specific Health and Safety Plan (HASP) outlines the health and safety procedures that shall be followed during the field work conducted on the MJB North Dock Area (the site). The observance and practice of the procedures in this plan are mandatory for all AMEC Geomatrix, Inc. (AMEC), employees at the site. All contractors and site visitors shall be made aware of the requirements of this plan; however, contractors are responsible for the health and safety of their own employees and for following all applicable federal, state, and local regulations. All contractors shall develop their own HASPs as necessary to be in compliance with Washington Administrative Code (WAC) 296-843. AMEC will review their HASPs well in advance of fieldwork.

This plan defines site-specific hazards and controls to prevent injury and illness among AMEC personnel for tasks performed by AMEC. Its implementation is in concert with the written AMEC Accident Prevention Program.

This plan has been reviewed by the Project Manager and Project Health and Safety Officer. Prior to entering the site, AMEC personnel shall read this plan and be familiar with health and safety procedures required when working on site. A copy of the plan shall be available on site for inspection and review.

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3.0 PROJECT DESCRIPTION

This HASP addresses the hazards associated with excavation and soil sampling tasks associated with the field work for the portion of the site (Figure 2 of the Investigation Work Plan). The study area was modified during the 1970s when the former Scott Paper mill buildings were demolished north of the study area. AMEC will perform the following field tasks in the uplands portion of the site.

1. Observe excavation of test pits throughout the study area to a maximum depth of approximately 15 feet or to the native clay layer, if shallower.
2. Collect soil samples to determine lithology, and for chemical analysis.
3. Use GPS to collect coordinates of test pits.

3.1 ANTICIPATED FIELD WORK

The objective of the work to be performed to observe excavation and soil sampling of MJB North Dock. The objective includes:

- Excavate hot spots to a maximum depth of 15 feet throughout the study area. Previous sampling in this area has not been conducted and so the presence of contaminated soil is unknown.
- Collect soil samples for analytical testing from excavated test pits.

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4.0 PRIMARY RESPONSIBILITIES

The field responsibilities of the primary representatives who will oversee health and safety during site activities are described in this section.

4.1 PROJECT MANAGER

The Project Manager (PM) will have overall responsibility for the success of the project, including the successful implementation of this HASP. The PM will review health and safety issues as needed and as consulted and will have the authority to reallocate resources and personnel to safely accomplish the field work.

In addition the PM shall:

1. Direct all AMEC personnel involved in investigative, monitoring, and remedial activities at the site and vicinity;
2. Make the Project Health and Safety Officer aware of all pertinent project developments and plans;
3. Make available the resources that are necessary for a safe working environment;
4. Maintain communications with the client, as necessary; and
5. Verify that all AMEC project personnel have received required training, are aware of the potential hazards associated with site operations, have been instructed in the work practices necessary for personal health and safety, and are familiar with the site HASP's procedures for all scheduled activities and for dealing with emergencies.

4.2 PROJECT HEALTH AND SAFETY OFFICER

The Project Health and Safety Officer (PHSO) shall:

1. Advise project manager and project personnel on all health and safety aspects of investigative, monitoring, and remedial activities conducted by AMEC personnel at the site and vicinity;
2. Specify required exposure monitoring to assess site health and safety conditions;
3. Review any accident/incident reports and make corrective action recommendations;
4. Modify the site HASP as required based on accidents/incidents and findings regarding site hazards and work practices;
5. Report all accidents/incidents and findings regarding personnel exposure, site hazards, and work practices to the PM; and

6. Suspend hazardous site work if the PHSO believes that AMEC or a contractor's personnel are or may be exposed to an immediate health hazard.

4.3 SITE SAFETY OFFICER

The Site Safety Officer (SSO) may be a person dedicated to this task, or the SSO functions may be a collateral duty of the Site Supervisor. The SSO shall:

1. Ensure that appropriate personal protective equipment is available for AMEC site personnel and enforce proper utilization of personal protective equipment by all on-site AMEC personnel;

2. Ensure that all AMEC personnel have received required training, are aware of the potential hazards associated with site operations, have been instructed in the work practices necessary for personal health and safety, and are familiar with the site HASP's procedures for all scheduled activities and for dealing with emergencies;

3. Observe AMEC's and contractor's procedures with respect to health and safety. If the SSO believes that AMEC or a contractor's personnel are or may be exposed to an imminent health hazard, the SSO shall suspend the hazardous site work. If site personnel do not have required protective equipment, the SSO shall consult with the PHSO before proceeding with the work;

4. Implement the site HASP and report any observed significant differences from the site conditions anticipated in the plan to the project manager;

5. Conduct daily site safety briefings and additional briefings as needed;

6. Calibrate monitoring equipment daily and properly record and file calibration and monitoring results;

7. Under direction of the PHSO perform required exposure monitoring;

8. Maintain monitoring equipment or arrange maintenance as necessary;

9. Assume other duties as directed by the PHSO; and

10. Prepare reports of any observed accidents/incidents or inadequate work practices and communicate them to the PM and PHSO.

4.4 SITE SUPERVISOR

The Site Supervisor (SS) shall:

1. Maintain control of the site and direct daily site operations to be consistent with applicable environmental and health and safety regulations, site work plans and this project HASP, and enforce safe work practices and proper utilization of personal protective equipment by all on-site AMEC and contractor personnel;

2. With guidance from the PHSO, observe AMEC and contractor's procedures with respect to health and safety. If the SS believes that AMEC or a contractor's personnel are or may be exposed to an imminent health hazard, the SS shall suspend the hazardous site work coordinating that suspension through the subcontractor's site supervisor. If site personnel do not have required protective equipment, the SS shall consult with the PHSO before proceeding with the work;

3. Implement the site HASP and report any observed significant differences from the site conditions anticipated in the plan to the project manager;

4. Conduct site safety briefings as needed;

5. Ensure that required personal protective, monitoring, and emergency equipment is provided and maintained in effective working condition at all times when work occurs on site; and

6. Report observed accidents/incidents or inadequate work practices to the project manager and the PHSO.

4.5 PROJECT PERSONNEL

Project personnel involved in on-site investigations and operations shall:

1. Take reasonable precautions to prevent injury to themselves and to their fellow employees;

2. Perform only those tasks that they can do safely and immediately report accidents and/or unsafe conditions to the SSO or PHSO;

3. Follow the procedures set forth in the site HASP and report to the SSO, SS, or PHSO any observed deviations by AMEC or contractor personnel from the procedures described in the plan; and

4. Inform the SSO and PHSO of any physical conditions that might affect their ability to perform the planned field tasks.

4.6 TRAINING REQUIREMENTS

All project personnel must comply with applicable regulations specified in WAC Chapter 296-843, hazardous waste operations (HAZWOPER), administered by the Washington State Department of Labor and Industries (L&I). These include completion of a 40-hour health and safety training course for HAZWOPER, an annual 8-hour refresher training, and participation in AMEC's medical surveillance program and respiratory protection program. In addition to the 40-hour course and 8-hour refreshers, the SS (and SSO, if performing the duties of the SS) will have completed an 8-hour course for hazardous waste site supervisors as required by WAC 296-843-20015. Workers using atmosphere-supplying respirators (self-contained breathing apparatus or airline respirators) will have at least

80 hours of training, with over 40 hours of the training focused on the hazards requiring the use of such respirators and associated chemical protective clothing.

At least one person on site will be current in CPR/First Aid. Documentation of all required training will be maintained on site by the SS. Each site worker will also have a minimum of 3 days of supervised field experience at hazardous waste sites before being allowed to work on site without close direct supervision.

Additional site-specific training that covers on-site hazards; personal protective equipment (PPE) requirements, use, and limitations; decontamination procedures; and emergency response information as outlined in this site HASP will be given by the PHSO or SSO before beginning on-site work. Site-specific training briefings should be documented on the "Project Health and Safety Field Meeting Form" provided at the end of this HASP.

4.7 MEDICAL SURVEILLANCE

All AMEC personnel on site shall participate in AMEC's medical surveillance program, which includes annual audiometric and physical examinations for employees involved in HAZWOPER projects. It requires that all such personnel have medical clearance before being issued a respirator and participating in field activities. Frequency of medical examinations which comply with 29 CFR § 1910.120(f)(3) and WAC 296-843-21005 are:

1. Prior to performing field work;
2. At least once every 12 months;
3. At termination of employment;
4. Upon occurrence of possible unprotected overexposure to chemicals or harmful physical agents; and
5. More frequently if deemed necessary by a physician.

5.0 HAZARD ASSESSMENT

An assessment of the potential hazards that may be encountered during field activities at the site is summarized by field task in the table below and discussed further in this section. These cover the hazards to AMEC staff only. Subcontractors have many additional hazards specific to their activities, which are identified and appropriate controls specified, in their HASP.

ANTICIPATED HAZARDS

Task	Anticipated Hazards														
	Chemical	Slip/Trip/Fall	Excavation	Drums	Biological	Heavy Equipment	Underground Utilities	Electrical	Noise	Heat Stress	Cold Stress	Sunburn	Sharp/Abrasion	Pinch points	Flammable liquids
Site grubbing and clearing		X			X	X			X		X	X	X	X	X
Test pit excavation/soil sampling	X	X	X			X	X	X	X		X	X	X	X	X

5.1 POTENTIAL CHEMICAL HAZARDS AT THE SITE

Listed below are hazardous substances that have been found or are suspected to be present at the site based on preliminary samples of groundwater and leachate. No soils or bulk waste data are available for the upland site. There are no observed indicators of hazardous levels of chemical contaminants from vegetation, biota or existing site history data, but because we do not yet have data to rule them out, AMEC has summarized typical upland chemical contaminant profiles from the adjacent area just north of 20th Street until further site characterization data are obtained. The available information on these suspected chemicals, including their acute exposure effects, is summarized in the table below. Additional details are included at the end of this HASP.

Potential Chemical Hazards on Site

Chemical, Form	Maximum Concentrations Detected Nearby	Routes of Exposure[1]	Acute Exposure Symptoms
METALS (mg/kg)			
Antimony	165	**RI**	Dermatitis, rhinitis, respiratory inflammation, laryngitis, bronchitis, gastritis, septal perforations, alterations of the ECG, especially T-wave abnormalities, myocardial changes, pneumoconiosis, pneumonitis, tracheitis, , pustular skin, and reproductive problems in women
Arsenic	24	**RISE**	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, [potential occupational carcinogen]
Copper	477	**RISE**	Irritation eyes, respiratory system; cough, dyspnea (breathing difficulty), wheezing; [potential occupational carcinogen]
Lead	1,210	**RISE**	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypotension
Thallium	11.1	**RISE**	SKIN, Nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs
Zinc	568	**I**	Metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function

Chemical, Form	Maximum Concentrations Detected Nearby	Routes of Exposure[1]	Acute Exposure Symptoms
PETROLEUM HYDROCARBONS (mg/kg)			
TPH-Motor Oil possible based on site history	No data	**RISE**	Dermatitis; headache and slight giddiness; nausea, vomiting, and cramping; depression of central nervous system ranging from mild headache to anesthesia, coma, and death; kidney and liver damage; and severe lung irritation
TPH-Diesel possible based on site history	No data	**RISE**	Skin irritation, headache, nausea
VOCs (mg/kg)			
None known or suspected	No data	**RISE**	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]
SVOCs (mg/kg)			
cPAHs	0.19	**RIS**	lung cancer; genotoxic; mutagenic; tumorigenic;[potential occupational carcinogen]

Notes
1. Exposures routes: R = respiratory, I = ingestion, S = skin absorption, E = eyes.
   Presence possible due to available historical information and nearby sources.

Air monitoring requirements and action levels related to potential chemical hazards on the site are discussed in Section 6.0. Sampling for site contaminants in soil is discussed in the SAP.

5.2 POTENTIAL PHYSICAL HAZARDS AT THE SITE

Potential physical hazards listed in the table above are discussed below.

5.2.1 Slip, Trip, and Fall Hazards

Walking on uneven ground in the vicinity of equipment, tools, materials, and debris poses a significant trip hazard potential. Work items will be organized to minimize hazards, and holes or other trip hazards will be flagged as needed to alert workers. Wet conditions can pose a significant slip hazard. Appropriate nonskid footwear will be worn on site at all times.

5.2.2 Excavation Hazards

A qualified subcontractor will be engaged to perform the excavation under their own HASP. Test pits will not be made in the vicinity of foundations for aboveground structures. The

excavator position will be monitored for structural support by a competent person as the excavation proceeds. Under no circumstances will the excavated pits be entered without proper sloping or shoring.

After a test pit is completed, or if excavation problems prevent completion of the test pit, the excavation will be backfilled to grade with the stockpiled excavation material from that location only.

5.2.3 Biological Hazards

Wildlife and insects may be encountered when clearing brush and debris from sampling sites and when surveying or sampling. Persons with known allergies to bees will alert the SSO and carry a personal anaphylactic shock kit as prescribed by a physician. Any wildlife encountered on site will not be approached by the field team.

5.2.4 Heavy Equipment Hazards

Personnel working on site in the vicinity of operating heavy equipment (trackhoe, brush hog) will wear high-visibility safety vests and maintain safe distances from the equipment to avoid contact with moving equipment parts, such as the drill rig or boom (be aware of swing radius), tires, and tracks. Site personnel will get positive acknowledgement that the equipment or truck operator approves of their location whenever they are within strike distance of the equipment. Equipment and vehicles will be approached only from the front or side of the cab. Ground personnel will avoid unnecessary proximity to pressurized hydraulic lines, which can unexpectedly burst while working under load.

5.2.5 Underground Utility Hazards

An underground utility check via the Washington State Utilities and Transportation Commission (WUTC) shall be performed prior to initiating any subsurface investigation or work. The check will include:

NA WUTC Note: WUTC must be notified at least 2 working days before any subsurface work begins (800-424-5555). The confirmation number will be recorded in project field notes.

_____ Private Locator: To be arranged.

NA Plans Check. Facility Contact: Jimmy Blais, Gary Merlino Construction

_____ Geophysical Survey.

5.2.6 Electrical Hazards

Whenever possible, site personnel will avoid working under overhead high-voltage lines. The SS is responsible for documenting a determination of the voltage and minimum approach distance to any potentially energized electrical distribution line. Lines will be confirmed to be deenergized when minimum approach distances cannot be met. The following are minimum clearances for overhead high voltage lines.

Minimum Clearances for Overhead High Voltage Lines

Normal Voltage (phase to phase)	Minimum Required Clearance (feet)
less than or equal to 50,000	10
more than 50,000	10 + 0.4 inch per kV

(Reference: WAC 296-24-963)

To prevent electrocution hazards from electrical utilization equipment, all electrical extension cords will be rated for the combined amperage of the equipment they power, and must be factory listed as rated SJOW or STOW (an "-A" extension is acceptable for either) and inspected prior to use for defects in the cord and plugs. Cords showing any reduction in the original jacket or evidence of overheating (cord discoloration or melting) will be destroyed and replaced as necessary. The following safe work practices will also be enforced.

- No exposed energized conductors operating above 50 volts to ground will be allowed on site unless properly guarded from contact by unqualified persons.
- Electrical distribution systems and repairs to utilization equipment operating above 50 volts to ground will be performed only by a qualified licensed electrician.
- All portable power tools will be inspected for defects before use and be a double-insulated design.
- Any generator brought on site will be grounded to a suitable earth and will be equipped with overcurrent protection.
- All extension cords running outside will be protected by a ground-fault circuit interrupter, which will be tested daily.
- No extension cords will be routed through walls, ceilings, doors, or windows.

5.2.7 Noise Hazards

Site personnel will wear hearing protection when working near large heavy equipment, such as drill rigs, or in other noisy conditions. Hearing protection will be worn when two people standing within 3 feet of each other cannot communicate at normal conversational voice levels. This is to prevent hearing loss that can occur when daily 8-hour time weighted average noise exposures meet or exceed 85 decibels (dBA) (WAC 296-817-20015). Work will be limited to the hours of 7 AM to 7 PM during which normal construction noise impacts are permitted.

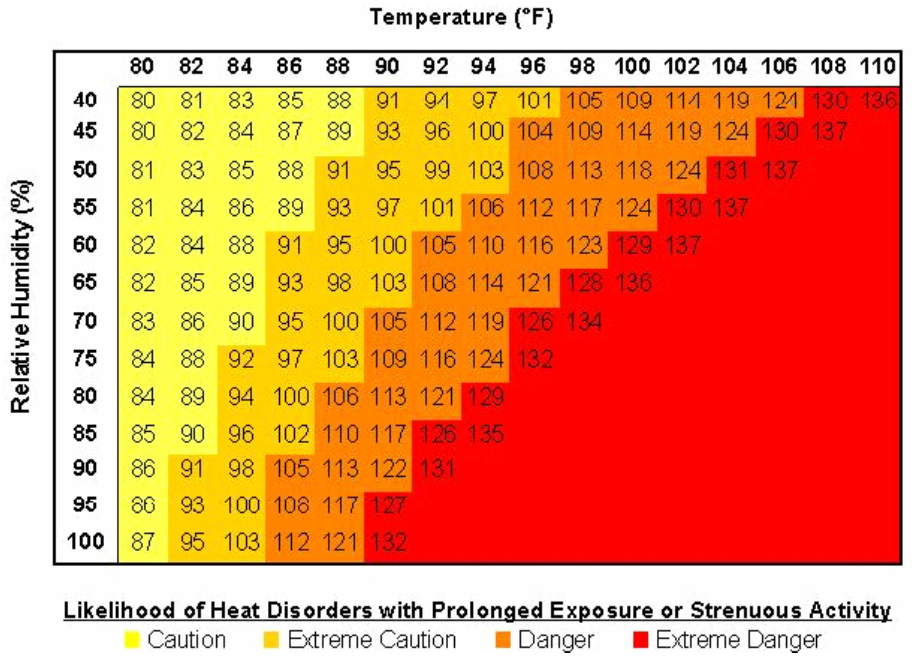
5.2.8 Heat Stress Hazards

Heat stress represents a slight hazard during the summer months in the Pacific Northwest, but it becomes a significant hazard for workers wearing protective clothing if the temperature is higher than 77ºF. To prevent heat stress, at least 1 quart of cool potable water per worker per hour will be readily available, and site personnel will be encouraged to drink plenty of fluids and take periodic work breaks in hot weather. The signs, symptoms, and treatment of heat stress include:

- Heat rash, which may result from exposure to heat or humid air.
- Heat cramps, which are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include muscle spasms and pain in the hands, feet, and abdomen. Persons experiencing these symptoms should rest in a cooler area, drink cool (not cold) liquids, and gently massage cramped muscles.
- Heat exhaustion, which occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include pale, cool, moist skin; heavy sweating; dizziness; nausea; and fainting. Persons experiencing these symptoms should lie down in a cooler area, drink cool (not cold) liquids that include electrolytes (e.g., Gatorade), remove any protective clothing, and cool the body with wet compresses applied to the forehead, back and neck, and/or armpits.
- Heat stroke is the most serious form of heat stress. During heat stroke, temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are red, hot, usually dry skin; reduced or no perspiration; nausea; dizziness and confusion; strong, rapid pulse; and coma.

If site temperatures are forecasted to exceed 77ºF and physically demanding site work will occur (or temperatures will exceed 58ºF degrees while working in impermeable clothing), the SSO will promptly consult with a certified industrial hygienist (CIH) and a radial pulse

monitoring method will be implemented to ensure that heat stress will be properly managed among the affected workers. The following chart indicates the relative risk of heat stress.



Combined temperature and humidity conditions that result in a heat index exceeding 100 will trigger mandatory radial pulse monitoring and heat stress management.

5.2.9 Cold Stress Hazards

Exposure to even moderate levels of cold can cause the body's internal temperature to drop to a dangerously low level (hypothermia). This is a significant hazard in the fall, winter, and spring months in the Pacific Northwest. Exposure to temperatures below freezing can cause frostbite of hands, feet, and face. Symptoms of hypothermia include:

- vague, slow, slurred speech;
- forgetfulness, memory lapses;
- inability to use hands;
- frequent stumbling;
- drowsiness.

To prevent hypothermia, site personnel will avoid unprotected exposure to wet conditions. Site personnel will wear outer clothing that is wind- and waterproof and inner layers sufficient to retain warmth (wool or polypropylene).

5.2.10 Sunburn Hazards

Skin exposure to ultraviolet radiation can result in sunburn. Site personnel will use long-sleeved shirts, hats, and sunscreen to protect against sunburn.

5.2.11 Sharp/Abrasion/Pinch Point Hazards

Site debris, equipment, tools and materials may have sharp edges or abrasive surfaces that pose a hazard to unprotected skin. Heavy leather gloves will be worn when handling such items. When applying force to sharp tools, the travel path of the tool will be anticipated and kept clear should the tool slip under pressure. Heavy items such as well covers and machinery such as drill rig equipment may pose pinch point hazards. Tools such as manhole keys will be used when possible to prevent exposure to the pinch hazard, and personnel will take care to keep hands away from other pinch hazards that cannot be guarded.

5.2.12 Flammable Liquid Hazards

Flammable and combustible liquid hazards may occur from fuels and lubricants brought on site to support generators and heavy equipment. Such products will be stored in containers approved by the Department of Transportation (DOT) in a location not exposed to strike hazards and provided with secondary containment. A minimum 2-A:20-B fire extinguisher will be located within 25 feet of the storage location, and where refueling occurs. Transfers of flammable liquids (e.g., gasoline) will occur only after making positive metal to metal connection between the containers. A bonding strap may be necessary to achieve this. Sources of ignition and combustible materials will be kept away from storage and fueling operations.

5.3 GENERAL SAFE WORK PRACTICES

In working with or around any hazardous or potentially hazardous substances or situations, site personnel should plan all activities before starting any task. Site personnel shall identify health and safety hazards involved with the work planned and consult with the PHSO or SSO as to how the task can be performed in the safest manner, if he/she has any uncertainties.

All field personnel will adhere to the following general safety rules.

1. Wear protective equipment and clothing specified for tasks.
2. Wear a hard hat and safety glasses in all construction areas.
3. Keep materials, equipment, ropes, lines, and debris organized, and flag trip hazards.
4. Do not eat, drink, or use tobacco or cosmetics in restricted work areas.

5. Prevent splashing of liquids containing chemicals, and minimize emissions of dust.

6. Prevent back injury by never lifting or carrying a load that is heavier than you can comfortably handle. When lifting heavy objects, first test the load and get assistance when necessary. Bend the knees, use the leg muscles, and avoid twisting with a load by positioning the feet.

7. Keep all heat and ignition sources away from combustible liquids, gases, or any flammable materials. When working in areas where combustible gases may be present, use only intrinsically safe (nonsparking) equipment. This includes cell phones.

8. Field personnel shall be familiar with the physical characteristics of the site, including:

    - wind direction in relation to restricted work areas;
    - accessibility of other personnel, equipment, and vehicles;
    - areas of known or suspected chemicals in soil and groundwater;
    - site access;
    - nearest water sources; and
    - location of communication devices.

9. When in doubt of your safety, it is better to overprotect.

10. Practice defensive driving.

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6.0 AIR MONITORING

This section defines the air monitoring necessary to protect workers on site from overexposure, in accordance with L&I rules. No site data are available but nearby soil characterization data indicate that semivolatile organic compounds (SVOCs) and metals are present and elevated in limited areas at nearby properties. However, based on existing site characterization data from nearby sites and the unlikely potential for significant dust generation by the planned tasks, no significant inhalation exposure to these chemicals is expected. Dust is readily visible at 1 mg/m^3, which is about 1/3 of the level at which total dust exposure is calculated to pose a potential inhalation hazard, after incorporating a conservative safety factor of 4.0. Dust control measures (work pacing and watering) will be undertaken if sustained visible dusts are created.

6.1 ACTION LEVELS

The applicable L&I permissible exposure limits (PELs) (both 8-hour and 15-minute short-term exposure limits, or STELs) and the American Conference of Governmental Industrial Hygienists (ACGIH) recommended Threshold Limit Values® (TLV®s) for the most likely chemicals of concern at the site are presented below.

TABLE 6-1

Applicable Occupational Exposure Limits

Chemical	L&I PEL (8-hr/15-min. STEL)	ACGIH TLV® (8-hr/15-min. STEL)
Particulate not otherwise regulated (nuisance dust—total fraction)	10 mg/m^3 / 20 mg/m^3	10 mg/m^3 / 30 mg/m^3 [a]
Lead	0.05 mg/m^3 / 0.15 mg/m^3	0.05 mg/m^3 / 0.15 mg/m^3
Mineral Oil (Mist)	5 mg/m^3 / 10 mg/m^3	5 mg/m^3 / 10 mg/m^3

Notes:
a. Generic STEL—30 minute duration maximum exposure recommended.

The lower of these two criteria will be applied, and the mixture exposure will be considered if the air monitoring action levels are exceeded and compound-specific monitoring occurs.

Relatively nontoxic diesel and motor oil was noted in many nearby soil samples, and along with lead pose the most likely possible inhalation hazards to site workers. Lead is not expected to be a widespread hazard at the site, but has been found in discrete areas in the vicinity of the site. At the nonvolatile contaminant levels found in existing nearby samples, respiratory protection is not anticipated to be necessary because AMEC site workers are not

expected to be exposed to sustained high levels of dust while performing the tasks delineated in this plan (because wintertime soils are wet in the excavation areas), and dust has good warning properties that will trigger action to suppress dust and control the hazard. At the average soil concentrations found on nearby sites for each metal and SVOC, the associated airborne dust would have to exceed a total dust concentration of 3.1 mg/m^3 to approach the occupational exposure limit for the combined hazards, after incorporating a safety factor of four appropriate for sites with little site-specific data but no direct evidence of toxicologically significant contamination. Therefore, observation for visual dust will be sufficiently protective of site worker health. Because volatile hazardous site contaminants are considered unlikely based on site characterization and nearby soils and sediments data, a photoionization detector (PID) with a minimum 10 electron volt lamp will be used as a tool for precautionary screening each new test pit, and when handling soil samples.

TABLE 6-2

MINIMUM AIR MONITORING REQUIREMENTS
MJB Properties North Dock Test Pitting
Anacortes, Washington

Task	Instrument	Frequency
Grubbing	None	--
Soil Excavating and Sampling	PID	In each new pit

Because work activities are not expected to create significant airborne dust levels that could pose a hazard to adjacent properties due to transport, no boundary air monitoring is required for the tasks defined in this HASP. The SS or SSO will implement dust control measures if visible dust is observed for a sustained period (>5 minutes).

TABLE 6-3

AIR MONITORING ACTION LEVELS
MJB Properties North Dock Test Pitting
Anacortes, Washington

Air Monitoring Reading[1] (Sustained >1 Minute) in Breathing Zone	Action
PID reading ≤ 5 ppm Dust < visible level	Continue periodic monitoring.
5 ppm < PID reading ≤ 10 ppm or Dust > visible level (5 minutes)	Above PID action level, use colorimetric tube or Draeger Chemical Measurement System to screen for benzene every 30 minutes; if benzene >10 ppm, stop work and implement controls to reduce exposure or consult with PHSO. Above dust action level, improve dust suppression methods.
PID reading > 10 ppm or Benzene reading > 10 ppm or Dust > visible level (15 minutes)	Stop work and consult PHSO to develop additional controls.

Note
1. Air monitoring reading based on photoionization detector calibrated to isobutylene, or combustible gas meter calibrated to methane.

Abbreviations
PHSO = Project Health and Safety Officer
PID = photoionization detector
ppm = parts per million

If at any time workers suspect significant chemical exposures (e.g., detect unusual odors, develop symptoms of occupational exposure to the site contaminants) or have other unexplained adverse health effects (e.g., dizziness, nausea), workers will be encouraged to stop work and notify the PHSO.

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7.0 PERSONAL PROTECTIVE EQUIPMENT

A modified Level D PPE ensemble will be used with the main objective to prevent unnecessary dermal exposure. The PHSO will be consulted to up- or downgrade the PPE requirements. The following PPE is required, unless a change is approved by the PHSO.

PPE Requirements by Task

Task	Steel Toe & shank boots	Safety glasses	Face shield	Ear plugs /muffs	Inner nitrile gloves	Outer leather gloves	Permeable Tyvek coverall	Impermeable coverall	High-visible vest	Full-face PAPR or APR[1], SAR
Site grubbing and clearing	X	X		X		Av			X	
Test pit excavation/soil sampling	X[3]	X		X	X	Av	X	Av	X	

Key:
X = PPE Required
O = PPE Optional
Av = Have available at work site, use as needed
[1] = Combination cartridge: R or P-95/OV-Combo (e.g., North 75SCP95)
[2] = Required in sanitary portion of the landfill, available elsewhere
[3] = Chemical-resistant or with chemical-resistant cover

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8.0 SITE CONTROL

The purpose of site control is to minimize the potential exposure to site hazards, to prevent vandalism at the site and access by children and other unauthorized persons, and to provide adequate facilities for workers. A daily field log will be maintained by the SS. The field log will include a list of all persons present in the work areas, and will be updated with name and time whenever a visitor or contractor arrives or departs the site. The log will be used for an accurate roll call in the event of an emergency.

Work area controls and decontamination areas will be provided to limit the potential for chemical exposure associated with site activities. The support zone for the site is considered to be all areas outside the work area and decontamination areas. Readily available restroom and washing facilities (within 5 minutes) will be identified by the SS and maintained in hygienic conditions at all times.

8.1 WORK AREA

An exclusion zone (EZ) will be set up around each upland work area. Only authorized personnel shall be permitted access to the EZ. The EZ will be demarcated with barrier hazard tape or cones as needed to effectively limit unauthorized access. No eating, drinking, or smoking is allowed in the EZ. Egress from the EZ will only be through a contamination reduction zone (CRZ)—unless warranted for imminent hazards during an emergency. A buddy system will be implemented at all times when workers are in the EZ and CRZ. In this system, for each worker in the EZ or CRZ, either another worker in that zone will be designated to keep an eye on them and maintain alertness for imminent hazards and symptoms of distress, or a standby person in the appropriate PPE will be in the support zone and ready to immediately enter to assist the person in the EZ or CRZ. Any open excavation will be covered at the end of each shift.

8.2 COMMUNICATION

An AMEC field representative will contact the PM or office at the start and end of each day while on site. Upon initial mobilization to the site, cell phone signals will be checked for those phones available to the SS and SSO. On-site communications will be by voice, hand-held radio, or cell phone. Under noisy conditions on site, or when electronic systems are ineffective, a written system of hand signals will be established by the SS and reviewed with all site personnel to enable basic communications among field staff.

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9.0 DECONTAMINATION

Decontamination procedures will be strictly followed to prevent off-site spread of site contaminants. At the CRZ, boots or equipment in contact with contaminated soil or sediments will be brushed off, washed with soapy water, and rinsed with clean water. Decontamination effectiveness will be evaluated by a visual inspection, with PID assessment if residual odors are evident. A PID reading that is 50 percent above background in the CRZ will be cause for further decontamination. Rinsate will be collected and containerized on site for disposal characterization.

9.1 PERSONNEL/HAND EQUIPMENT DECONTAMINATION PROCEDURES

The following decontamination procedure will be followed.

1. Brush off residual soils at exit from EZ; drop equipment on plastic sheeting.

2. Wash and rinse outer gloves; remove them (may be reused on same project).

3. Wipe down equipment with soapy water-moistened paper towels, followed by clean water-moistened paper towels; place trash in bag.

4. Remove inner gloves and place in trash bag.

9.2 DECONTAMINATION PROCEDURES FOR HEAVY EQUIPMENT/SAMPLING GEAR

The excavator components will be swept off before another sampling station is attempted to minimize migration of soil-borne hazards, and will be swept off again before leaving the site.

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10.0 EMERGENCY RESPONSE

This section defines the emergency action plan for the site. It will be rehearsed with all site personnel and reviewed with visitors upon their initial site visit, and whenever the plan is modified or the SS or SSO believe that site personnel are unclear about the appropriate emergency actions.

A muster point of refuge will be identified by the SS and communicated to the field team each day. This point will be clear of adjacent hazards and preferably up- or cross-wind for the entire day. In an emergency, all site personnel and visitors will evacuate to the muster point for roll call versus the daily site log. It is important that each person on site understand their role in an emergency, and that they remain calm and act efficiently to ensure everyone's safety.

After every emergency is resolved, the entire project team will meet and debrief on the incident—the purpose is not to fix blame, but to improve the planning and response to future emergencies. The debriefing will review the sequence of events, what was done well, and what can be improved. The debriefing will be documented in a written format and communicated to the PHSO. Modifications to the emergency plan will be approved by the PHSO.

Reasonably foreseeable emergency situations include medical emergencies, accidental release of hazardous materials (such as gasoline or diesel) or hazardous waste, and general emergencies such as fire, thunderstorm, flooding, and earthquake. Expected actions for each potential incident are outlined below.

10.1 MEDICAL EMERGENCIES

In the event of a medical emergency, the following procedures should be used.

1. Stop any imminent hazard if you can safely do it.

2. Remove ill, injured or exposed person(s) from immediate danger if moving them will clearly not cause them harm, and no hazards exist to the rescuers.

3. Evacuate other on-site personnel to a safe place in an upwind or cross-wind direction until it is safe for work to resume.

4. If serious injury or life-threatening condition exists, call:

   911 – for paramedics, fire department, police

   Clearly describe the location, injury and conditions to the dispatcher. Designate a person to go to the site entrance and direct emergency equipment to the injured

person(s). Provide the responders with a copy of this HASP, to alert them to chemicals of potential concern.

5. Trained personnel may provide first aid/cardiopulmonary resuscitation if it is necessary and safe to do so. Remove contaminated clothing and PPE only if this can be done without endangering the injured person.

6. Call the PHSO or PM.

7. Immediately implement steps to prevent recurrence of the accident.

A map showing the nearest hospital location is attached to this HASP (Attachment A).

Island Hospital
1211 24th Street
Anacortes, WA 98221
(360) 299-1311

Telephone number of nearest Poison Control Center: (800) 222-1222

Other emergency notifications and phone numbers: _____

10.2 ACCIDENTAL RELEASE OF HAZARDOUS MATERIALS OR WASTES

1. Evacuate all on-site personnel to a safe place in an upwind direction until the PHSO determines that it is safe for work to resume.

2. Instruct a designated person to contact the PHSO and confirm a response.

3. Contain the spill, if it is possible and it can be done safely.

4. If the release is not stopped, contact 911 to alert the fire department.

5. Contact the Washington State Emergency Response Commission at 1-800-258-5990 to report the release.

6. Initiate cleanup.

7. The project manager will coordinate follow-up written reporting to the Washington State Department of Ecology in the event of a reportable release of hazardous materials or wastes.

10.3 GENERAL EMERGENCIES

In the case of fire, explosion, earthquake, or other imminent hazard, work shall be halted and all on-site personnel will be immediately evacuated to a safe place. The local police/ fire department shall be notified if the emergency poses a continuing hazard by calling 911.

- In the event of a thunderstorm, outdoor work will be discontinued until the threat of lightning has abated.
- During the incipient phase of a fire, the available fire extinguisher(s) may be used by persons trained in putting out fires, if it is safe for them to do so. Contact the fire department and mill point of contact as soon as feasible.

10.4 EMERGENCY COMMUNICATIONS

In the case of an emergency, the air horn or car horn will be used as needed to signal the emergency. One long (5-second) blast will be given as the emergency/stop work signal. If the air horn is not working, a vehicle horn and/or overhead waving of arms will be used to signal the emergency. In any emergency, all personnel will evacuate to the designated refuge area and await further instruction.

10.5 EMERGENCY EQUIPMENT

The following minimum emergency equipment will be readily available on site and functional at all times:

- First Aid Kit—Contents approved by the PHSO, including two bloodborne pathogen barriers;
- Sorbent material sufficient to contain the volume of the largest single container of hazardous materials (e.g., gas and diesel) brought on site;
- Portable fire extinguisher (2-A:10 B/C min), and;
- Two spare sets of PPE suitable for entering the EZ; and
- A copy of the current site-specific health and safety plan.

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11.0 APPROVALS

Project Manager	Date
Project Health & Safety Officer	Date
Site Safety Officer	Date

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PROJECT HEALTH AND SAFETY FIELD MEETING FORM

Date: _____ Time: _____ Project No.: _____

Project Name: _____

Location: _____

Meeting Conducted by: _____

Topics Discussed:
Physical Hazards:

Chemical Hazards:

Personal Protection:

Decontamination:

Other: _____

_____

_____

_____

_____

Emergency Information: _____

Hospital Location: _____

Attendees

Name/Company (printed)	Signature

Meeting Conducted by: _____

Signature

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ATTACHMENT A

Map and Directions to Nearest Hospital

Google maps

Directions to 1211 24th St, Anacortes, WA 98221
0.5 mi – about **2 mins**
Directions to Island Hospital