

April 3, 2019

Mr. Mahbub Alam
Environmental Engineer, Toxics Cleanup Program
Department of Ecology
PO Box 47600
Olympia, WA 98504

Re: Addendum to Source Control Evaluation Work Plan to Assess Data Gaps for Completion of RI/FS for Former E.A. Nord Facility, Everett, Washington (FS ID 2757)

Dear Mahbub,

SLR International Corporation (SLR) has prepared the following addendum to the December 2017 Source Control Evaluation (SCE) Work Plan to Assess Data Gaps for Completion of the Remedial Investigation (RI)/Feasibility Study (FS) for the Former E.A. Nord Door facility. The Former E.A. Nord Door facility (i.e. JELD-WEN Cleanup Site; FS ID 2757) is located at 300 West Marine View Drive in Everett, Washington (Site). This Work Plan Addendum presents proposed investigation areas, sampling activities, and laboratory analyses as part of data gap assessment following SCE and RI activities. The field activities will be completed per the Ecology-approved SCE Work Plan and accompanying Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP), as applicable.

1. INVESTIGATION AREAS

The scope of work presented in this Work Plan Addendum was based on communications and discussions with Washington Department of Ecology (Ecology) following submittal of the January 2019 SCE Summary Report and upon Ecology's review of the October 2016 Final Draft RI/FS. The proposed sampling locations are presented on **Figure 1** and sampling rationale and proposed analytical suite for each sample location is included on **Table 1** and is described below.

In general, proposed investigation areas were selected to assess potential data gaps from the seep sampling/initial SCE activities and historical upland assessments included as part of the RI.

Extent of Existing Groundwater Impacts and Deep Zone Assessment

Data Gap: Previously identified isolated area of soil and groundwater contamination (GP-14 and GP-707). Need to verify the presence and trend of contamination. Help define groundwater flow and gradient for deep zone.

Proposed Additional Assessment: One soil boring will be completed for collection of soil samples and a deep permanent groundwater monitoring well (MW-11B) will be installed for collection of

a groundwater sample. A nested shallow well will be installed adjacent to this deep well as MW-11A (similar design to existing wells MW-8A/8B, MW-9A/9B, and MW10A/10B) for collection of a groundwater sample.

Knoll Area

Data Gap: Previously identified isolated areas of groundwater contamination (GP-601 and GP-603). Need to verify the presence and trend of contamination. Help define groundwater flow gradient and direction in the knoll area. Need to verify PCB impacts observed at adjacent seep sample location S-16.

Proposed Additional Assessment: Three soil borings will be completed for collection of soil samples and three permanent groundwater monitoring wells (MW-12 to MW-14) will be installed for collection of groundwater samples. MW-12 will be located adjacent to former boring GP-601 and former test pit TP-16, MW-13 will be located adjacent to former boring GP-603, and MW-14 will be located adjacent to seep sample location S-16.

Other Area 4 Locations

Data Gap: Previously identified isolated areas (identified as Area 4 in the RI/FS) of soil contamination at former borings GP-311 and GP-34. Need to verify the presence and trend of contamination. Help define groundwater flow gradient and direction and apparent mounding at existing monitoring well MW-1. Need to verify PCB impacts observed at adjacent seep sample location S-1.

Proposed Additional Assessment: Two soil borings will be completed for collection of soil samples and two permanent groundwater monitoring wells (MW-15 and MW-16) will be installed for collection of groundwater samples. MW-15 will be located outside of the existing building in-between former boring GP-311 and seep sample S-1, and MW-16 will be located adjacent to former boring GP-34 and former test pit TP-2.

Stormwater Conveyance System

Data Gap: Potential impacts from previously identified damaged or plugged stormwater lines. Need to verify if leaks have contributed to soil and groundwater impacts or show relationship to sediment sample results from outfall OF-8 and OF-9. Need to better define boundary of salt water intrusion.

Proposed Additional Assessment: Two soil borings will be completed for collection of soil samples and grab groundwater samples from a temporary well (GP-801 and GP-802) and one soil boring will be completed for collection of soil samples and one permanent groundwater monitoring well (MW-17) will be installed for collection of a groundwater sample. GP-801 will be located adjacent to the former maintenance warehouse, GP-802 will be located between the former north and south dry kiln buildings, and MW-17 will be located in a former operation and maintenance area and adjacent to damaged stormwater lines near the center of the Site.

Vertical and Horizontal Groundwater Flow and Gradient

Data Gap: Ecology has identified deep zone groundwater flow and gradient, potential horizontal flow, as well as a better understanding of site-wide groundwater gradient (including the knoll area) as data gaps. A transducer study was completed in 2007; however, fewer monitoring wells were present on-site at the time and no monitoring wells were completed as deep wells.

Proposed Additional Assessment: A follow-up transducer study will be performed by installing pressure transducers in select wells for approximately one week, ideally during a time of elevated tidal changes. Pressure transducers will be installed at all nested well locations (shallow and deep well), as well as all other new and existing monitoring wells, except for wells MW-2, MW-4, MW-5, MW-7, and MW-13. Proposed transducer locations are shown on **Figure 2**.

2. SAMPLING ACTIVITIES

Soil Sampling

Soil borings will be completed with a Geoprobe drilling rig to the estimated final depth of the subsequent groundwater monitoring well. Continuous soil cores produced by the Geoprobe method will be screened with a photoionization detector (PID) and logged for soil lithology and observations. One depth composite soil sample will be collected from surface to twelve (12) feet below ground surface (bgs), with the exception of soil samples collected for volatiles analysis, which will be collected directly from the acetate liner using a purge and trap method (e.g. EPA 5035 method) from an area exhibiting elevated PID readings/observed impacts or from the approximate soil to groundwater interface in lieu of observed impacts.

Temporary Grab Groundwater Sampling

Grab groundwater samples will be collected from two (2) of the proposed Geoprobe soil borings (GP-801 and GP-802). The groundwater samples will be collected with a peristaltic pump via dedicated polyethylene tubing inside a temporary PVC well screen. The temporary wells will be purged until the produced water appears clear, pending recharge rate observed in the field.

Upon completion of the grab groundwater sampling the temporary wells will be removed and the soil borings will be backfilled with bentonite.

Groundwater Monitoring Well Installation

Eight (8) groundwater monitoring wells will be installed following Geoprobe soil boring activities. The groundwater monitoring wells will be installed with a Hollow-Stem Auger (HSA) drilling rig directly over the associated Geoprobe soil boring location. The HSA drilling will be completed via a blank drilling method (i.e. no split spoons) to the appropriate depth for well construction based on observations from the Geoprobe borings. It is anticipated that knoll groundwater monitoring wells will be completed to approximately 20 feet bgs, other on-site monitoring wells will be completed to approximately 13 feet bgs, and the deep zone monitoring well will be completed to approximately 40 feet bgs.

In general, the groundwater monitoring wells will be installed with a 10-foot section of slotted well screen with a silica sand filter pack, bentonite seal, and concrete surface seal. Deep well MW-11B will be constructed with an approximately 2-foot sump to monitor for presence of dense non-aqueous phase liquids (DNAPL). Monitoring wells located on the main Former E.A. Nord property will be installed with a flush-mount well monument while monitoring wells located in the knoll area will be completed as aboveground monuments. Monitoring wells will be installed in accordance with Chapter 173-160 Washington Administrative Code (WAC).

Soil cuttings and decontamination water will be stored on-site in 55-gallon steel drums pending off-site disposal as investigation derived waste (IDW).

Groundwater Monitoring Well Development

Following construction of the groundwater monitoring wells, the wells will be developed per surge and pumping methods per Environmental Protection Agency (EPA) guidance not sooner than 24 hours after construction. Development water will be stored on-site in 55-gallon steel drums pending off-site disposal as IDW.

Surveying

Monitoring well locations and top-of-casing (TOC) elevations will be surveyed by a Washington-licensed land surveyor and tied to existing monitoring well elevation measurements.

Groundwater Monitoring Well Sampling

Following development of the newly installed groundwater monitoring wells, a sampling event will be conducted. Groundwater monitoring and sampling activities will be performed per the October 2016 *Groundwater Monitoring and Sampling Work Plan* that is utilized for the on-going quarterly groundwater sampling program. Sampling events will include depth-to-water measurements, groundwater purging with recording of stabilization parameters (per EPA low-flow procedures), and groundwater sample collection.

Proposed laboratory analyses for the newly installed wells are presented in the following section.

3. LABORATORY ANALYSES

Table 1 presents the proposed laboratory analytical suite for each soil and groundwater sampling location. Proposed laboratory analyses have been developed based on previous sample results from adjacent borings where available, in addition to SCE findings. The following laboratory analytical methods will be utilized for this follow-up assessment. Laboratory practical quantitation limits (PQLs) were provided in the SCE Work Plan, with the exception of low-level cPAH analysis which is provided in **Table 2**.

- Total Petroleum Hydrocarbons (TPH) Diesel and Oil Range per NWTPH-Dx method (soil and groundwater)
- Carcinogenic Polynuclear Aromatic Hydrocarbons (cPAHs) per 8270-SIM (soil only) and 8270-SIM low-level (groundwater only)
- Volatile Organic Compounds (VOCs) per 8260B method (soil and groundwater)

- Priority Pollutant 13 Metals (PPMET) including: Sb, As, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, Tl, Zn, Hg per 6010/7470/7471 methods (groundwater from monitoring wells only)
- Dioxins/Furans per 1613B method (soil and groundwater, groundwater samples to be held pending soil results)
- Polychlorinated Biphenyl (PCB) Congeners per 1668A method (soil and groundwater)

4. SCHEDULE

SLR anticipates initiating field activities for this scope of work in April 2019 per the Cleanup Project Schedule provided by Ecology, pending access and availability of subcontractors. This schedule should allow for evaluation of laboratory data, identification of additional data gaps, and possible completion of follow-up activities prior to scheduled completion of RI activities that is presently set for September 2019.

Sincerely,
SLR International Corporation



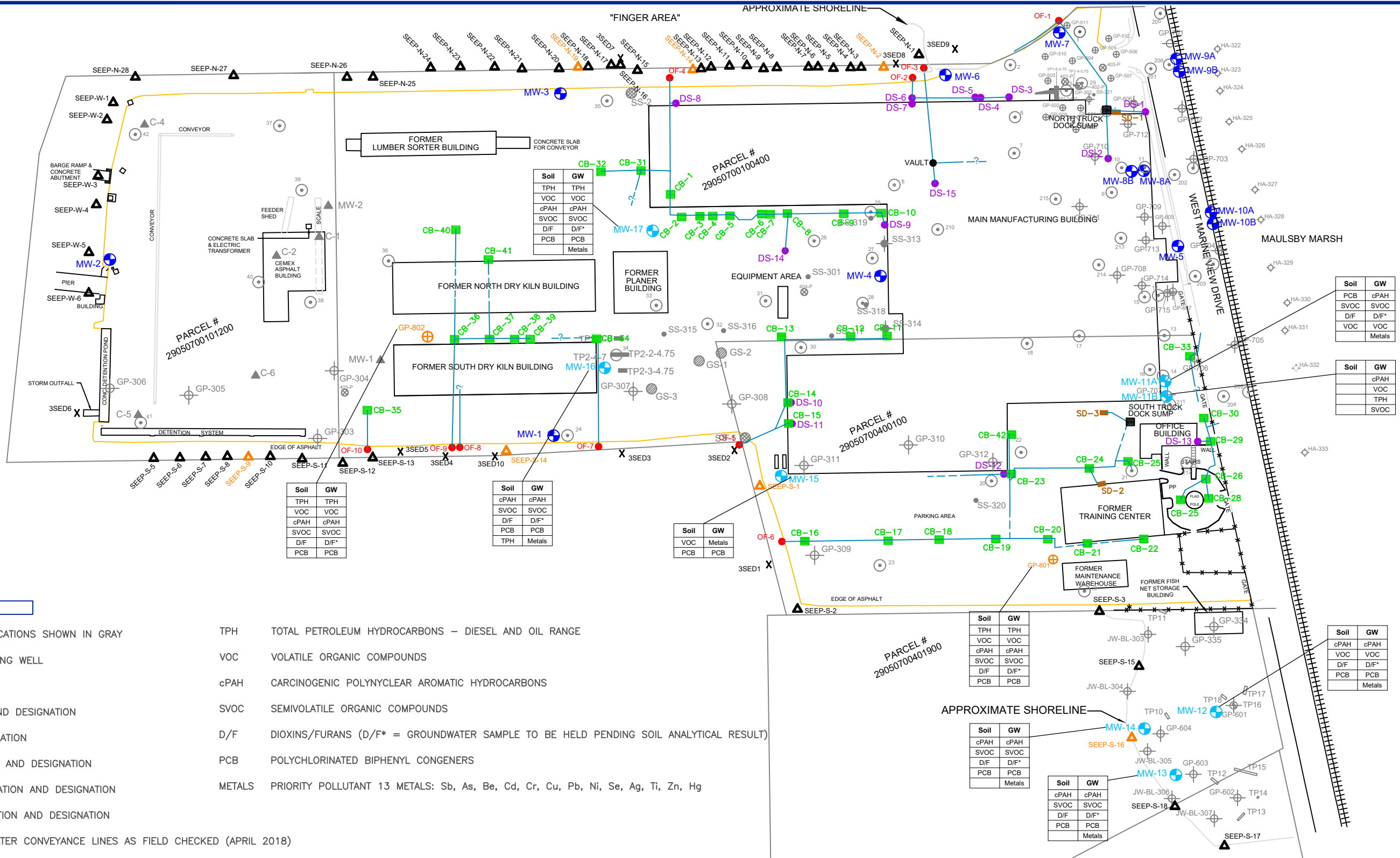
R. Scott Miller, P.E.
Managing Principal



Chris Kramer
Associate Scientist

cc Dwayne Arino, JELD-WEN Inc.
Enc. Figure 1 and Figure 2
Table 1 and Table 2

Figures



LEGEND

- OTHER FORMER RI SAMPLING LOCATIONS SHOWN IN GRAY
- MW-1 EXISTING MONITORING WELL
- SCE INVESTIGATION AREAS:
- SEEP-N-3 SEEP LOCATION AND DESIGNATION
- SEEP-N-2 SEEP SAMPLE LOCATION
- OF-1 OUTFALL LOCATION AND DESIGNATION
- CB-1 CATCH BASIN LOCATION AND DESIGNATION
- DS-1 DOWNSPOUT LOCATION AND DESIGNATION
- EXISTING STORMWATER CONVEYANCE LINES AS FIELD CHECKED (APRIL 2018)
- MW-11 PROPOSED MONITORING WELL LOCATION
- GP-801 PROPOSED GEOPROBE LOCATION

- TPH TOTAL PETROLEUM HYDROCARBONS – DIESEL AND OIL RANGE
- VOC VOLATILE ORGANIC COMPOUNDS
- cPAH CARCINOGENIC POLYNYCLEAR AROMATIC HYDROCARBONS
- SVOC SEMIVOLATILE ORGANIC COMPOUNDS
- D/F DIOXINS/FURANS (D/F* = GROUNDWATER SAMPLE TO BE HELD PENDING SOIL ANALYTICAL RESULT)
- PCB POLYCHLORINATED BIPHENYL CONGENERS
- METALS PRIORITY POLLUTANT 13 METALS: Sb, As, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, Ti, Zn, Hg

Soil	GW
TPH	TPH
VOC	VOC
cPAH	cPAH
SVOC	SVOC
D/F	D/F*
PCB	PCB

Soil	GW
cPAH	cPAH
SVOC	SVOC
D/F	D/F*
PCB	PCB
TPH	Metals

Soil	GW
VOC	Metals
PCB	PCB

Soil	GW
TPH	TPH
VOC	VOC
cPAH	cPAH
SVOC	SVOC
D/F	D/F*
PCB	PCB

Soil	GW
cPAH	cPAH
SVOC	SVOC
D/F	D/F*
PCB	PCB
Metals	Metals

Soil	GW
cPAH	cPAH
SVOC	SVOC
D/F	D/F*
PCB	PCB
Metals	Metals

Soil	GW
PCB	cPAH
SVOC	SVOC
D/F	D/F*
VOC	VOC
Metals	Metals

Soil	GW
	cPAH
	VOC
	TPH
	SVOC

Soil	GW
cPAH	cPAH
VOC	VOC
D/F	D/F*
PCB	PCB
Metals	Metals

FORMER E.A. NORD SITE
 300 WEST MARINE VIEW DRIVE
 EVERETT, WASHINGTON

Report **WORK PLAN ADDENDUM**

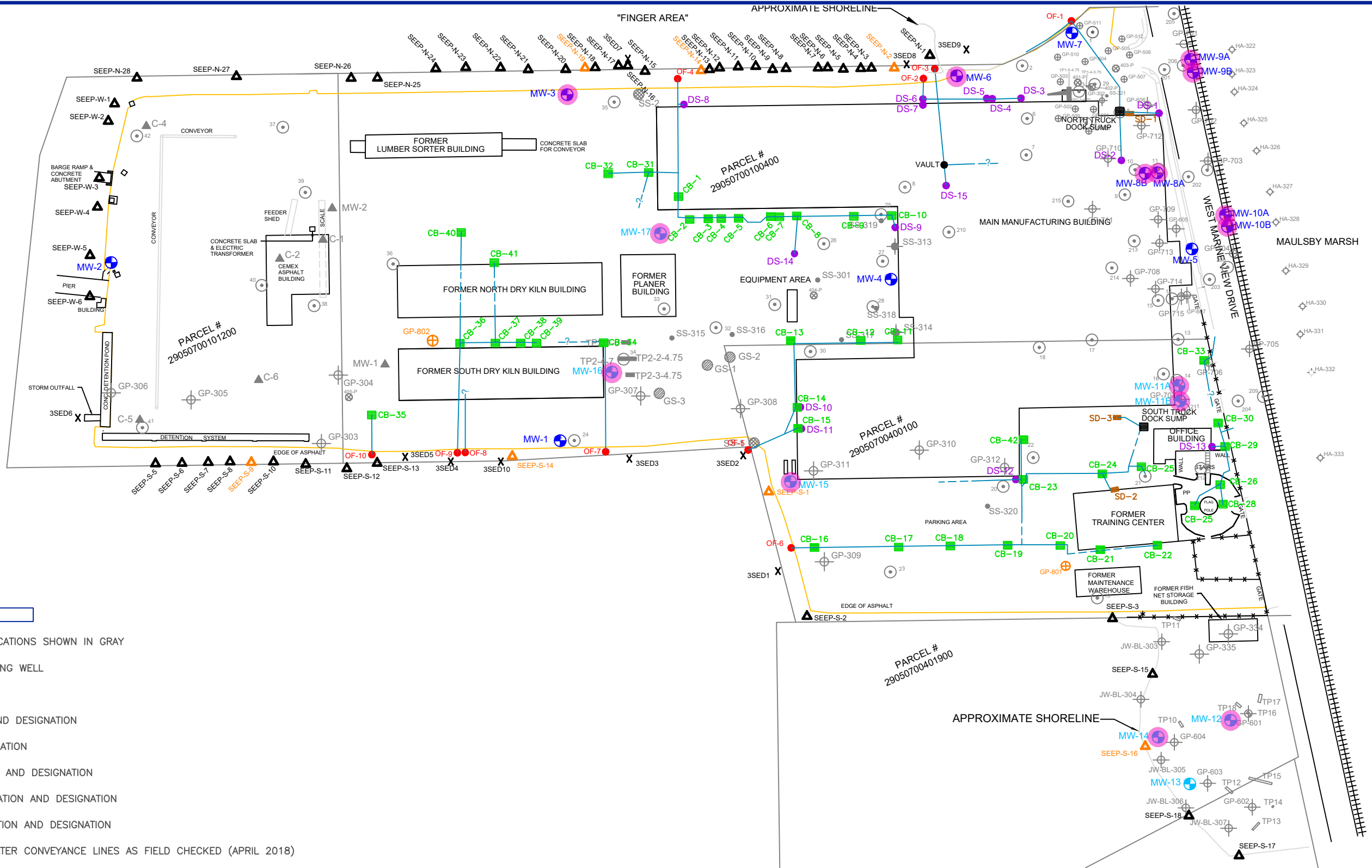
Drawing **PROPOSED SAMPLING LOCATIONS AND LABORATORY ANALYSES**

Date **March 2019** Scale **AS SHOWN** File No. **1**
 File Name **SW_SITE PLAN_NORD_2** Project No. **108.00228.00059**



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OTHER FORMER RI SAMPLING LOCATIONS SHOWN IN GRAY

MW-1 EXISTING MONITORING WELL

SCE INVESTIGATION AREAS:

SEEP-N-3 SEEP LOCATION AND DESIGNATION

SEEP-N-2 SEEP SAMPLE LOCATION

OF-1 OUTFALL LOCATION AND DESIGNATION

CB-1 CATCH BASIN LOCATION AND DESIGNATION

DS-1 DOWNSPOUT LOCATION AND DESIGNATION

EXISTING STORMWATER CONVEYANCE LINES AS FIELD CHECKED (APRIL 2018)

MW-11 PROPOSED MONITORING WELL LOCATION

GP-801 PROPOSED GEOPROBE LOCATION

PROPOSED TRANSDUCER LOCATION (NESTED WELLS WILL HAVE TRANSDUCER IN SHALLOW AND DEEP WELL)

FORMER E.A. NORD SITE
 300 WEST MARINE VIEW DRIVE
 EVERETT, WASHINGTON

Report **WORK PLAN ADDENDUM**

Drawing **TRANSDUCER LOCATIONS**

Date **March 2019**

Scale **AS SHOWN**

Fig. No. **2**

File Name **SW_SITE PLAN_NORD_2**

Project No. **108.00228.00059**



Tables

**Table 1
Proposed Sample Locations and Laboratory Analyses
Work Plan Addendum
Former E.A. Nord Facility**

Proposed Name	Proposed Location	Purpose	Proposed Sampling	Proposed Laboratory Analyses						
				TPH-Dx	VOCs	cPAHs	SVOCs	Metals	Dioxins and Furans	PCBs
Proposed Geoprobe Locations										
GP-801	Adjacent to Former Training Center and Maintenance Warehouse	Stormwater lines appeared plugged, no previous borings in the area	One (1) depth composite soil sample to 12 feet bgs	x	x	x	x		x	x
			One (1) grab groundwater sample	x	x	x	x		H	x
GP-802	Near catch basin CB-36 between former north and south kiln buildings	Outfall 9 sediment sample measured elevated dioxins and furans, no previous borings in the area	One (1) depth composite soil sample to 12 feet bgs	x	x	x	x		x	x
			One (1) grab groundwater sample	x	x	x	x		H	x
Proposed New Monitoring Well Locations										
MW-11A	Northwest of existing office building in paved area between main warehouse and West Marine View Drive, adjacent to former borings B-14 and GP-707	Further delineate groundwater plume, provide additional data point for shallow groundwater gradient	One (1) depth composite soil sample above water table		x		x		x	x
			One (1) low-flow, post-development groundwater sample	x	x	x	x	x	H	
MW-11B	Nested well with MW-11A	Further delineate groundwater plume, provide additional data point for deep groundwater gradient	One (1) low-flow, post-development groundwater sample	x	x	x	x	x		
MW-12	Knoll area, adjacent to former Test Pit TP-16 and former boring GP-601	Assess previous findings in Knoll area and provide data point for knoll groundwater gradient	One (1) depth composite soil sample to 12 feet bgs		x	x			x	x
			One (1) low-flow, post-development groundwater sample		x	x		x	H	x
MW-13	Knoll area, adjacent to former boring GP-603	Assess previous findings in Knoll area and provide data point for knoll groundwater gradient	One (1) depth composite soil sample to 12 feet bgs	x		x	x		x	x
			One (1) low-flow, post-development groundwater sample	x		x	x	x	H	x
MW-14	Knoll area, adjacent to former boring GP-604 and upland of seep sample S-16	Assess previous findings in Knoll area, provide data point for knoll groundwater gradient, assess groundwater to surface water interaction	One (1) depth composite soil sample above water table			x	x		x	x
			One (1) low-flow, post-development groundwater sample			x	x	x	H	x

**Table 1
Proposed Sample Locations and Laboratory Analyses
Work Plan Addendum
Former E.A. Nord Facility**

Proposed Name	Proposed Location	Purpose	Proposed Sampling	Proposed Laboratory Analyses							
				TPH-Dx	VOCs	cPAHs	SVOCs	Metals	Dioxins and Furans	PCBs	
MW-15	Adjacent to former boring GP-311 and seep S-1	Assess isolated area of soil contamination at GP-311 and elevated PCBs at seep S-1, provide additional data point for shallow groundwater gradient	One (1) depth composite soil sample to 12 feet bgs		x						x
			One (1) low-flow, post-development groundwater sample					x		x	
MW-16	Adjacent to former boring GP-34 and test pit TP-2	Assess isolated area of soil contamination at GP-34 and TP-2 and provide additional data point for shallow groundwater gradient	One (1) depth composite soil sample to 12 feet bgs	x		x	x		x	x	
			One (1) low-flow, post-development groundwater sample			x	x	x	H	x	
MW-17	Near catch basin CB-2	Stormwater lines appeared plugged, no previous borings in the area	One (1) depth composite soil sample to 12 feet bgs	x	x	x	x		x	x	
			One (1) low-flow, post-development groundwater sample	x	x	x	x	x	H	x	
Total Soil				5	6	6	6	0	8	8	
Total Groundwater				6	6	9	8	8	7	8	

Notes:
Proposed well locations shown on Figure 1
H = Hold groundwater sample pending soil sample results
TPH-Dx per NWTPH-Dx method
Volatile Organic Compounds (VOCs) per 8260B method
Carcinogenic Polynuclear Aromatic Hydrocarbons (cPAHs) per 8270-SIM method (low-level method for groundwater samples)
Dioxins/Furans per 1613B method
PCB Congeners per 1668A method
Priority Pollutant 13 Metals (Sb, As, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, Tl, Zn, Hg) per 6010/7470/7471 methods

Table 2
Practical Quantitation Limit (PQL) Summary
Former E.A. Nord Door Facility

Analyte	Analytical Method	Laboratory PQL (µg/L)	Selected PCL (µg/L)
Carcinogenic Polynuclear Aromatic Hydrocarbons (cPAHs) ^A			
benzo[a]anthracene	8270-SIM (Low Level)	0.01	TEQ
benzo[a]pyrene	8270-SIM (Low Level)	0.01	TEQ
benzo[b]fluoranthene	8270-SIM (Low Level)	0.01	TEQ
benzo[k]fluoranthene	8270-SIM (Low Level)	0.01	TEQ
chrysene	8270-SIM (Low Level)	0.01	TEQ
dibenzo[a,h]anthracene	8270-SIM (Low Level)	0.01	TEQ
indeno[1,2,3-cd]pyrene	8270-SIM (Low Level)	0.01	TEQ
TEQ for cPAHs	TEF	0.015	0.015

Notes:

A - Practical Quantitation Limit (PQL) from Analytical Resources, Incorporated (ARI)