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DRAFT MEMORANDUM

To:	Barry Rogowski, Adam Harris, Pete Adolphson, and Kevin MacLachlan, Washington State Department of Ecology	**Date:**	February 14, 2013
From:	Clay Patmont and Nathan Soccorsy, Anchor QEA, LLC	**Project:**	120909-01.01
cc:	Dwayne Arino and Diane Keith, Jeld-Wen Scott Miller, SLR International		
Re:	Jeld-Wen Former Nord Door Site Sediment Quality Assurance Project Plan Addendum		

This addendum to the *Quality Assurance Project Plan Marine and Maulsby Marsh Sediments Characterization* (QAPP; Anchor QEA 2012) describes the procedures that will be used to complete the characterization of the sediments adjacent to the Jeld-Wen Former Nord Door Facility ("Site") located in Everett, Washington. This QAPP addendum describes additional surface and subsurface sampling and analysis needed to complete a Remedial Investigation and Feasibility Study (RI/FS) for the Site.

Marine surface sediments were collected in 2012 and analyzed in accordance with the approved QAPP (Anchor QEA 2012). As determined in consultation with the Washington State Department of Ecology (Ecology), the marine surface sediment analytical results did not sufficiently bound the horizontal extent of surface sediment polychlorinated biphenyl (PCB) and dioxin/furan (D/F) concentrations for the purpose of the RI/FS. Therefore, the following additional collection and analysis will be conducted:

- Collection and analysis of 10 discrete surficial sediments (0 to 10 centimeters [cm]) locations
- Submittal of two archived discrete marine surface sediments (JW-EA03-SS11 and JW-EA03-SS12) locations for D/F analysis
- Additional surficial sediments will be collected and archived for analysis if necessary

As specified in Section 2.1 of the Sampling and Analysis Plan (Attachment 1 of the approved QAPP), sediment coring sample locations have been determined based on the marine surface sediment results. In accordance with the QAPP, five cores will be advanced at the following locations:

- JW-EA04-SS13 for vertical D/F characterization
- JW-EA06-SS23 for vertical D/F characterization
- JW-EA07-SS27 for vertical D/F characterization
- JW-EA10-SS42 for vertical PCB characterization
- JW-EA09-SS38 for vertical D/F and PCB characterization

SURFACE SEDIMENT CHARACTERIZATION

In accordance with the approved QAPP (Anchor QEA 2012), D/F congener analysis was conducted in 2012 on the marine surface sediment collected adjacent to the Site. There are no promulgated Sediment Management Standards (SMS) criteria for D/F. Ecology used a preliminary screening level (PSL) for D/F of 5 nanograms per kilogram (ng/kg) dry weight (dw) toxicity equivalency factor (TEQ) based on the practical quantitation limit for the D/F analytical method. The D/F TEQ results were loaded into ArcGIS and inverse distance weighted (IDW) interpolation was performed to interpolate surface sediment D/F TEQ concentrations, as shown in Figure 1.

PCB congener analysis was also performed on marine surface samples collected adjacent to the Site. None of the total PCB congener results exceeded the promulgated SMS sediment quality standard chemical criterion of 12 milligrams per kilogram (mg/kg) organic carbon normalized (OCN). Ecology calculated a PSL for PCBs of 0.561 mg/kg OCN using a preliminary site-specific biota sediment accumulation factor (BSAF) calculation. The total PCB congener results entered into ArcGIS and IDW interpolation was performed to interpolate surface sediment PCB concentrations, as shown in Figure 2.

PROPOSED SURFACE SEDIMENT SAMPLING PLAN

As shown in Figures 1 and 2, interpolated D/F TEQs and total PCB congener concentrations were greater than the PSLs. Additional sampling has been proposed based on the interpolated PSL IDW contours. Previously collected archived discrete marine surface sediment locations, JW-EA03-SS11 and JW-EA03-SS12, will be submitted for D/F analysis to

constrain elevated concentrations at location JW-EA04-SS13. New marine surface sediment samples will be collected as follows:

- JW-SS101 and JW-SS102 will be collected and analyzed to bound D/F concentrations to the west of Site Exposure Area (EA) 06.
- JW-103 through JW-105 will be collected and analyzed to bound D/F concentrations to the south of EA07 and EA08.
- JW-SS106 and JW-SS107 will be collected and analyzed to bound total PCB congener concentrations at JW-EA09-SS35 and JW-EA09-SS37.
- JW-108 through JW-110 will be collected and analyzed for D/F and PCB congeners at to bound location JW-EA09-SS38.
- JW-201 through JW-215 will be collected and archived for analysis pending the review of results of samples JW-101 through JW-110. If the marine surface sediment results in the adjacent sediments are below the respective PSLs, no archived surface sample volumes will be analyzed.

All QAPP addendum surface sediment sampling locations are presented in Table 1 and Figure 3.

VERTICAL SEDIMENT CHARACTERIZATION

Based on a review of the marine surface sediment sampling results and in consultation with Ecology, five core locations are proposed to characterize the vertical extent of elevated sediment concentrations of D/F TEQ and PCBs for the purposes of the RI/FS. Cores will be advanced at locations JW-EA04-SS13, JW-EA06-SS23, and JW-EA07-SS27 to characterize D/F TEQ levels. Location JW-EA10-SS42 will be advanced to characterize total PCBs. Location JW-EA09-SS38 will be advanced to characterize D/F TEQ and total PCBs. These target subsurface core locations are shown in Figure 3. The sample location nomenclature will be identified with an SC (sediment core) designation (e.g., JW-EA09-SC42).

All QAPP addendum sediment core sampling locations are presented in Table 1 and Figure 3.

REPORTING AND PATH FORWARD

Once chemical testing is completed and the chemical test results are validated, Anchor QEA will upload the data to Ecology's Electronic Information Management (EIM) system. Upon Ecology's review of the results, a meeting will be scheduled to confirm that sufficient marine

sediment environmental data has been collected to produce the RI/FS Report. If sufficient data has been collected, remedial alternatives will also be discussed.

TABLE

Table 1
QAPP Addendum Sampling Locations

Station ID	Northing	Easting	Description
JW-101	373756.5669	1302147.179	Surface Grab - D/F Congener Analysis
JW-102	373626.4412	1302133.377	Surface Grab - D/F Congener Analysis
JW-103	373185.3443	1302317.722	Surface Grab - D/F Congener Analysis
JW-104	373080.1306	1302380.622	Surface Grab - D/F Congener Analysis
JW-105	372981.7788	1302448.096	Surface Grab - D/F Congener Analysis
JW-106	372593.8304	1302354.674	Surface Grab - PCB Congener Analysis
JW-107	372314.1403	1302375.049	Surface Grab - PCB Congener Analysis
JW-108	372136.2221	1302607.962	Surface Grab - D/F and PCB Congener Analysis
JW-109	372034.8555	1302787.753	Surface Grab - D/F and PCB Congener Analysis
JW-110	371903.3383	1302727.141	Surface Grab - D/F and PCB Congener Analysis
JW-EA03-SS11	374137.726	1302840.232	Surface Grab - D/F Congener Analysis[1]
JW-EA03-SS12	374201.549	1302912.309	Surface Grab - D/F Congener Analysis[1]
JW-201	373901.0624	1302021.121	Archive Surface Grab
JW-202	373774.6292	1302009.36	Archive Surface Grab
JW-203	373593.31	1302054.445	Archive Surface Grab
JW-204	373469.8172	1301990.738	Archive Surface Grab
JW-205	373211.6477	1302180.487	Archive Surface Grab
JW-206	373086.9925	1302251.392	Archive Surface Grab
JW-207	372986.3532	1302337.164	Archive Surface Grab
JW-208	372599.3192	1302131.303	Archive Surface Grab
JW-209	372279.3458	1302183.819	Archive Surface Grab
JW-210	372094.3619	1302419.96	Archive Surface Grab
JW-211	371905.3436	1302289.984	Archive Surface Grab
JW-212	371830.0449	1302498.207	Archive Surface Grab
JW-213	371623.1496	1302416.074	Archive Surface Grab
JW-214	371783.2575	1302723.71	Archive Surface Grab
JW-215	371628.8678	1302604.773	Archive Surface Grab
JW-EA04-SC13	374233.712	1302747.917	Subsurface Core - D/F Congener Analysis
JW-EA06-SC23	373522.9765	1302395.4	Subsurface Core - D/F Congener Analysis
JW-EA07-SC27	373317.7446	1302622.479	Subsurface Core - D/F Congener Analysis
JW-EA09-SC38	372184.2357	1302788.425	Subsurface Core - D/F and PCB Congener Analysis
JW-EA10-SC42	372541.8912	1302943.997	Subsurface Core - PCB Congener Analysis

Notes:

1 = Submit existing archive surface sediment

Horizontal Datum: Washington State Plane North, North American Datum of 1983 (NAD 83) feet

D/F = Dioxin/furan

PCB = Polychlorinated Biphenyl

QAPP = Quality Assurance Project Plan

FIGURES

Figure 1
Dioxin/Furan TEQ Dry Weight IDW Analysis
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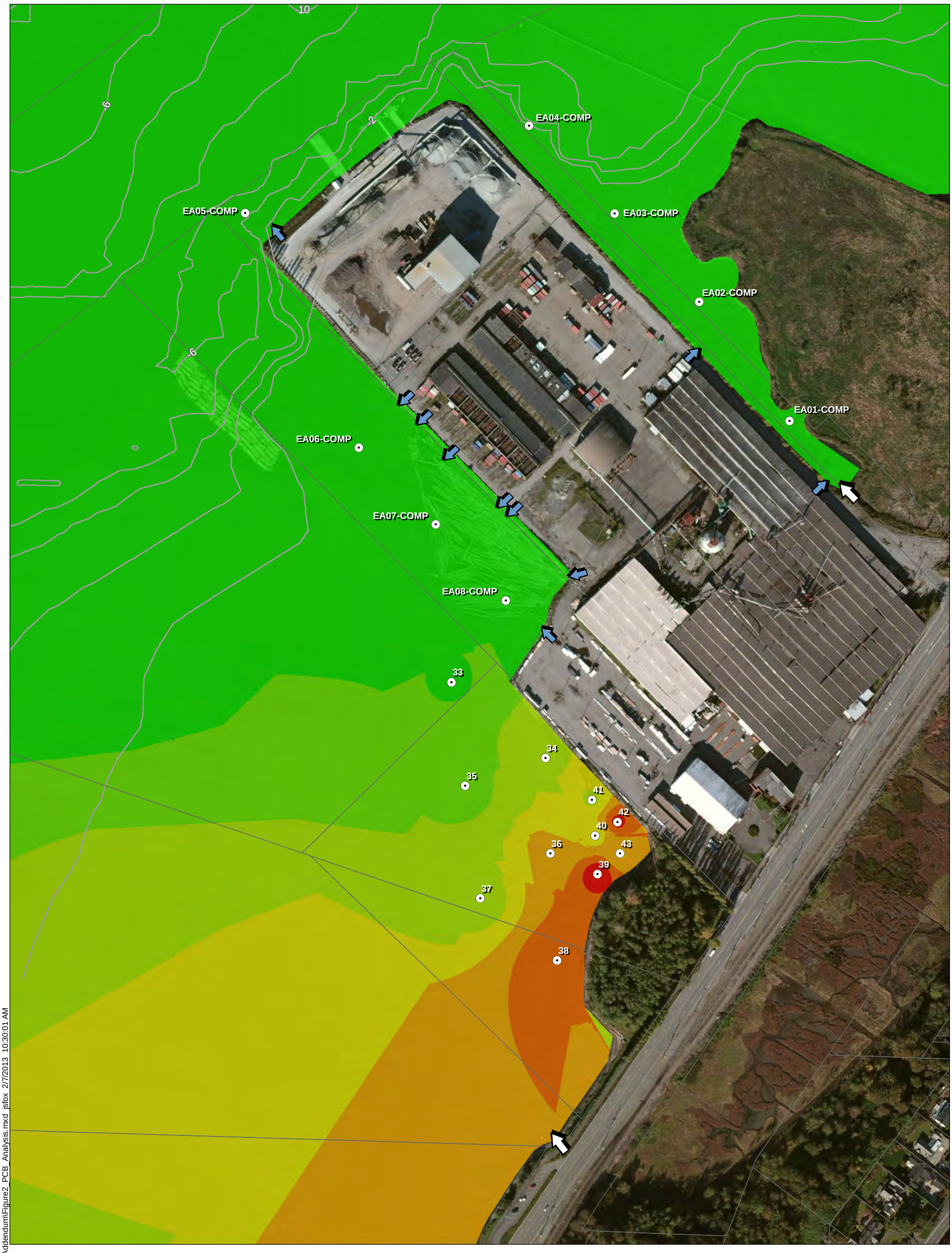

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Figure 2
Total PCB Congener IDW Analysis
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Figure 3
Proposed Sampling Locations
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