

Appendix A
2012 Revised Draft RI/FS of the Former
Pope & Talbot Sawmill Site
(December 2012)

This document is the electronic documents section of
the Port Gamble Bay and Mill Site.

Appendix B
Post-Stockpile Sampling Memorandum
(December 2017)

Memorandum

December 15, 2017

To: Artie Kapell and John Evered, Washington State Department of Ecology

From: Clay Patmont, John Laplante, and Jason Cornetta, Anchor QEA

cc: Linda Berry-Maraist and Stephanie Foster, Olympic Property Group

Re: Port Gamble Bay Cleanup Post-Stockpile Sampling

Introduction

Between September 2015 and January 2017, the in-water construction phase of the Port Gamble Bay and Mill Site cleanup project was successfully completed by Pope Resources, LP/Olympic Property Group, LLC (PR/OPG). The cleanup project was performed in accordance with the requirements of Consent Decree 13 2 02720-0 between the Washington State Department of Ecology and PR/OPG, and also consistent with the regulatory requirements of the Model Toxics Control Act and U.S. Army Corps of Engineers permit conditions (NWS-2013-1270).

Dredged and excavated sediments removed during the in-water construction phase of the cleanup project were temporarily stockpiled on upland areas of the Mill Site. Prior to disposal of these dredged and excavated sediments, upland sparging (rinsing with freshwater) and characterization of stockpiled Port Gamble Bay sediments and leachate was performed to verify the suitability of these materials for placement at the Limited Purpose Landfill (Landfill) at the Model Airplane Field (MAF) in Port Gamble. Leachate suitability characterization were previously provided in the *Port Gamble Stockpile Leachate Suitability Monitoring Memorandum* (Anchor QEA 2017a).

Temporary Stockpile Removal Activities

Sediment stockpiles with elevated chemical concentrations, along with all creosote-treated wood, were protectively separated and disposed at permitted off-site Subtitle D landfill facilities. In August and September 2017, stockpiled sparged sediments at the Mill Site that met Kitsap Public Health District suitability criteria were transported to the MAF Landfill, where they were placed, compacted, and capped in accordance with applicable permits as described in the *Port Gamble Model Airplane Field Limited Purpose Landfill Permitting Summary Memorandum* (Anchor QEA 2017b).

As material was transported from the Mill Site, visual inspections were conducted to confirm that all temporarily stockpiled material was successfully removed. An additional 6 to 12 inches of underlying soil was subsequently removed from below the temporary stockpiles to further ensure no residual stockpile material remained. Following removal of the temporary stockpiles at the Mill Site,

non-hardscape areas beneath the stockpiles were sampled to further verify that anti-degradation criteria were achieved.

Post-Stockpile Sampling and Analysis

From October 3 to 6, 2017, 13 five-point composite samples of surficial soils beneath the former Mill Site stockpile areas were collected (Figure 1). Samples were obtained and processed following the procedures described in the *Post-Stockpile Removal – Sampling and Quality Assurance Project Plan* (Anchor QEA 2017c). All 13 samples, along with additional field duplicates and other quality control samples, were analyzed for Port Gamble Bay chemicals of concern (CoCs) including cadmium, carcinogenic polycyclic aromatic hydrocarbons, and dioxins/furans. Laboratory analysis was performed at Analytical Resources, Inc., in Tukwila, Washington. Independent validation by Laboratory Data Consultants, Inc., in Carlsbad, California, confirmed that these data are suitable for site characterization. Table 1 presents validated analytical results for CoCs.

The post-stockpile removal characterization data summarized in Figure 1 are consistent with existing surface soil concentration data collected prior to the Port Gamble Bay Cleanup project. As these data help to refine characterization of the extent of soil contamination remaining at the Mill Site, post-stockpile removal sampling data are being incorporated into the ongoing, separate remedial investigation/feasibility study of the upland area of the Port Gamble Bay and Mill Site. No additional activities are required as part of the in-water cleanup stockpile removal.

References

- Anchor QEA, 2017a. *Port Gamble Stockpile Leachate Suitability Monitoring Memorandum*. Prepared for Pope Resources, LP/OPG Properties, LLC, and Kitsap Public Health District. September 2017.
- Anchor QEA, 2017b. *Port Gamble Model Airplane Field Limited Purpose Landfill Permitting Summary Memorandum*. Prepared for Pope Resources, LP/OPG Properties, LLC, and Kitsap Public Health District. November 2017.
- Anchor QEA, 2017c. *Post-Stockpile Removal – Sampling and Quality Assurance Project Plan*. Prepared for Pope Resources, LP/OPG Properties, LLC, and Washington State Department of Ecology. February 2017.

Table 1
Port Gamble Post-Stockpile Surface Soil Data

FINAL VALIDATED DATA

Task	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile
Location ID	PG-SO-01	PG-SO-02	PG-SO-03	PG-SO-05	PG-SO-06	PG-SO-07	PG-SO-08	PG-SO-09	PG-SO-09
Sample ID	PG-SO-01-20171006	PG-SO-02-20171006	PG-SO-03-20171006	PG-SO-05-20171005	PG-SO-06-20171005	PG-SO-07-20171005	PG-SO-08-20171005	PG-SO-09-20171003	PG-SO-09-20171003
Sample Date	10/6/2017	10/6/2017	10/6/2017	10/5/2017	10/5/2017	10/5/2017	10/5/2017	10/3/2017	10/3/2017
Depth	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft
Sample Type	N	N	N	N	N	N	N	N	N
Matrix	SO	SO	SO	SO	SO	SO	SO	SO	SO
X	1211090	1211186	1211116	1211309	1211142	1211238	1211344	1211431	1211431
Y	316730	316704	316826	316774	316923	316897	316868	316845	316845
MTCA									
Unrestricted*									
Conventional Parameters (pct)									
Total solids	--	93.98	95.12	92.50	94.77	95.04	92.92	93.63	94.41
Metals (mg/kg)									
Cadmium	2	0.11	0.15	0.12	0.16	0.12	0.14	0.16	0.15
Semivolatile Organics (µg/kg)									
1-Methylnaphthalene	--	16.7 J	20.8	39.2	17.6 J	20.3	29.8	29.1	29.2
2-Methylnaphthalene	--	32.0	38.6	59.7	24.5	33.6	37.9	47.5	43.9
Acenaphthene	--	64.3	69.8	101	46.3	57.4	86.3	82.6	75.4
Acenaphthylene	--	18.1 J	22.3	21.4	22.5	15.6 J	21.4	30.0	32.5
Anthracene	--	60.0	80.9	73.8	67.6	95.7	80.6	71.7	86.5
Benzo(a)anthracene	--	84.9	78.9	102	117	72.8	84.9	90.6	140
Benzo(a)pyrene	--	79.9	69.7	71.4	90.9	54.2	63.9	69.4	109
Benzo(b,j,k)fluoranthenes	--	179	201	184	268	141	167	188	357
Benzo(g,h,i)perylene	--	54.0	64.6	52.9	71.0	38.2	47.1	52.5	109
Chrysene	--	131	151	174	244	122	155	151	284
Dibenzo(a,h)anthracene	--	16.4 J	19.8	17.9 J	30.6	13.6 J	14.4 J	15.3 J	32.5
Fluoranthene	--	297	311	386	266	260	370	340	468
Fluorene	--	79.9	77.3	108	52.7	77.2	92.7	90.4	65.6
Indeno(1,2,3-c,d)pyrene	--	43.3	54.0	40.8	65.6	32.0	38.4	45.6	93.0
Naphthalene	--	101	170	270	111	145	184	211	198
Phenanthrene	--	238	242	297	178	199	255	261	276
Pyrene	--	269	260	337	238	227	315	293	406
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 0)	140	114 J	107	108 J	141	81.4 J	95.9 J	105 J	174
Dioxin Furans (ng/kg)									
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	--	0.314 J	0.246 J	0.244 J	0.328 J	0.296 J	0.375 J	0.516 J	0.623 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	--	1.53	1.11	1.08	1.22	1.12	1.08 J	2.15	3.31
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	0.938 J	0.859 U	1.00	1.56 J	1.13	1.30 J	3.29	7.94
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	6.43	7.60	5.87	12.7	6.06	6.53	36.5	59.5
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	--	2.90	2.77 J	2.29	3.09	2.42	2.66	5.19	12.2
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	--	161	237	138	304	124	249	636	1300
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	--	1660	2590	1430	3380	1440	3500	6040 J	17100 J
Total Tetrachlorodibenzo-p-dioxin (TCDD)	--	22.9	11.7	15.4	25.2	38.0	18.0	45.7 J	27.8
Total Pentachlorodibenzo-p-dioxin (PeCDD)	--	20.3	14.2	17.4	25	29.4	18.8	40.0	41.5
Total Hexachlorodibenzo-p-dioxin (HxCDD)	--	82.1	82.8	81.4	146	74.7	129	319	430
Total Heptachlorodibenzo-p-dioxin (HpCDD)	--	584	836	711	1600	585	1520	1580	3820
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	--	4.13	0.606 J	0.891 J	0.699 J	0.561 J	0.773 J	1.31	1.09
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	--	11.8	0.584 J	0.924 J	0.677 J	0.488 J	0.656 J	1.31	1.43 J

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Task	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile
Location ID	PG-SO-10	PG-SO-11	PG-SO-12	PG-SO-13	PG-SO-14	PG-SO-14
Sample ID	PG-SO-10-20171003	PG-SO-11-20171003	PG-SO-12-20171003	PG-SO-13-20171003	PG-SO-140-20171003	PG-SO-14-20171003
Sample Date	10/3/2017	10/3/2017	10/3/2017	10/3/2017	10/3/2017	10/3/2017
Depth	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft
Sample Type	N	N	N	N	FD	N
Matrix	SO	SO	SO	SO	SO	SO
X	1211528	1211167	1211264	1211361	1211554	1211554
Y	316819	317019	316994	316968	316916	316916
MTCA						
Unrestricted*						
Conventional Parameters (pct)						
Total solids	--	95.04	92.76	95.35	95.03	96.73
Metals (mg/kg)						
Cadmium	2	0.12	0.12	0.070 J	0.12	0.10
Semivolatile Organics (µg/kg)						
1-Methylnaphthalene	--	85.8	13.1 J	10.8 J	34.7	48.2
2-Methylnaphthalene	--	102	20.7	15.9 J	56.8	61.6
Acenaphthene	--	235	27.6	25.1	81.3	158
Acenaphthylene	--	46.0	9.90 J	7.7 J	23.6	28.1
Anthracene	--	179	24.6	22.9	84.6	117
Benzo(a)anthracene	--	189	34.5	26.9	93.5	126
Benzo(a)pyrene	--	134	25.8	21.5	72.5	80.1
Benzo(b,j,k)fluoranthenes	--	364	68.1	53.8	201	221
Benzo(g,h,i)perylene	--	110	26.0	17.1 J	63.6	58.0
Chrysene	--	306	52.1	40.8	163	179
Dibenzo(a,h)anthracene	--	38.4	7.00 J	19.0 U	22.4	20.3
Fluoranthene	--	854	134	114	415	521 J
Fluorene	--	234	32.9	30.9	82.3	162
Indeno(1,2,3-c,d)pyrene	--	87.5	19.6	14.2 J	49.4	46.3
Naphthalene	--	514	90.8	81.5	233	308
Phenanthrene	--	668	104	88.1	260	424 J
Pyrene	--	687	113	97.2	353	454
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 0)	140	205	39.2 J	31.4 J	111	123
Dioxin Furans (ng/kg)						
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	--	9.76 J	0.533 J	0.277 J	1.35	0.421 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	--	45.2	1.89	0.465 J	2.25 J	1.67
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	127	1.57 J	0.454 U	10.7 J	3.64 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	1170	7.01	2.53	100	18.2
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	--	120	2.69	1.10 U	7.69	3.85
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	--	21100	104	59.2	1680	391
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	--	347000 J	1200	670	30800 J	5240 J
Total Tetrachlorodibenzo-p-dioxin (TCDD)	--	104	67.6	9.35	19.6	36.6
Total Pentachlorodibenzo-p-dioxin (PeCDD)	--	230	51.6	7.69	18.9	32.7
Total Hexachlorodibenzo-p-dioxin (HxCDD)	--	3460	83.6	27.4	309	149
Total Heptachlorodibenzo-p-dioxin (HpCDD)	--	36100	362	254	3080	1340
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	--	2.42 J	1.90	0.307 J	0.721 J	0.913 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	--	7.84 J	1.11 J	0.301 UJ	1.01	0.761 J

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Task	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile
Location ID	PG-SO-01	PG-SO-02	PG-SO-03	PG-SO-05	PG-SO-06	PG-SO-07	PG-SO-08	PG-SO-09	
Sample ID	PG-SO-01-20171006	PG-SO-02-20171006	PG-SO-03-20171006	PG-SO-05-20171005	PG-SO-06-20171005	PG-SO-07-20171005	PG-SO-08-20171005	PG-SO-09-20171003	
Sample Date	10/6/2017	10/6/2017	10/6/2017	10/5/2017	10/5/2017	10/5/2017	10/5/2017	10/3/2017	
Depth	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	
Sample Type	N	N	N	N	N	N	N	N	
Matrix	SO	SO	SO	SO	SO	SO	SO	SO	
X	1211090	1211186	1211116	1211309	1211142	1211238	1211344	1211431	
Y	316730	316704	316826	316774	316923	316897	316868	316845	
MTCA Unrestricted*									
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	--	2.08 J	0.603 J	0.521 J	0.727 J	0.401 J	0.643 J	0.943 J	1.41
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	--	20.6	1.48	1.83	2.20	1.12	1.89	7.24	8.75
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	4.39	0.935 J	0.870 J	1.32	0.796 J	0.785 J	3.74	4.68
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	--	0.821 J	0.557 U	0.344 U	0.839 J	0.510 U	0.557 U	3.74	18.2
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	1.39	1.49	1.13	1.29 J	1.31	1.23	8.37	11.4
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	--	61.3	43.4	26.8	96.3	30.5	28.0	455	572
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	--	2.63	1.90	1.01 J	3.04	1.24	1.52	18.7	22.7
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	--	238	210	48.6	177	52.3	81.0	723	1050
Total Tetrachlorodibenzofuran (TCDF)	--	29.2	10.1	14.2	12.5	10.1	12.1	21.5	21.3
Total Pentachlorodibenzofuran (PeCDF)	--	39.2	14.2	13.3	15.6	11.7	11.7	26.5	42.8
Total Hexachlorodibenzofuran (HxCDF)	--	72.7	53.4	35.1	106	41.2	37.9	545	847
Total Heptachlorodibenzofuran (HpCDF)	--	235	191	79.2	308	96.4	99.2	1730	2170
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0)	12	9.80 J	6.71 J	5.00 J	9.26 J	4.90 J	7.04 J	23.1 J	41.2 J

Table 1
Port Gamble Post-Stockpile Surface Soil Data

FINAL VALIDATED DATA

Task	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	2017SedStockpile	
Location ID	PG-SO-10	PG-SO-11	PG-SO-12	PG-SO-13	PG-SO-14	PG-SO-14	
Sample ID	PG-SO-10-20171003	PG-SO-11-20171003	PG-SO-12-20171003	PG-SO-13-20171003	PG-SO-140-20171003	PG-SO-14-20171003	
Sample Date	10/3/2017	10/3/2017	10/3/2017	10/3/2017	10/3/2017	10/3/2017	
Depth	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	
Sample Type	N	N	N	N	FD	N	
Matrix	SO	SO	SO	SO	SO	SO	
X	1211528	1211167	1211264	1211361	1211554	1211554	
Y	316819	317019	316994	316968	316916	316916	
MTCA Unrestricted*							
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	--	5.53 J	0.994 J	0.260 J	0.818 J	0.559 J	0.527 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	--	198	1.28 J	0.486 J	15.7	3.10	7.38
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	97.4	1.15	0.399 U	8.07	1.89	2.46
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	--	74.3	0.533 U	0.333 U	7.17	1.63	2.74
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	259	1.55	0.298 U	21.9	3.70	6.39
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	--	16500	32.0	16.7	1380	189	422
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	--	754	1.53	0.697 U	50.8	7.23	26.8
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	--	26700	58.2	31.2	2160	329	1010
Total Tetrachlorodibenzofuran (TCDF)	--	54.8	30.6	5.31	13.8	17.3	16.4
Total Pentachlorodibenzofuran (PeCDF)	--	418	19.7	5.20	28.2	15.7	16.9
Total Hexachlorodibenzofuran (HxCDF)	--	18800	47.7	19.1	1750	244	577
Total Heptachlorodibenzofuran (HpCDF)	--	64400	107	54.1	5100	700	1960
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0)	12	757 J	6.22 J	2.12 J	62.1 J	13.5 J	25.8 J

Notes:

RED: Detected concentration is greater than MTCA Unrestricted criteria*

Bold: Detected result

µg/kg: micrograms per kilogram

FD: field duplicate sample

J: Estimated value

mg/kg: milligram per kilogram

MTCA: Model Toxics Control Act

N: normal environmental sample

ng/kg: nanograms per kilogram

pct: percent

SO: soil matrix

U: Compound analyzed, but not detected above detection limit

UJ: Compound analyzed, but not detected above estimated detection limit

*The cadmium criterion is MTCA Method A unrestricted; dioxin/furan TEQ and cPAH TEQ criteria are MTCA Method B unrestricted.

Horizontal coordinate datum is NAD 1983 State Plane Washington North FIPS 4601 (US Survey Feet).

Totals are calculated as the sum of all detected results (U=0). If all results are not detected, the highest reporting limit value is reported as the sum.

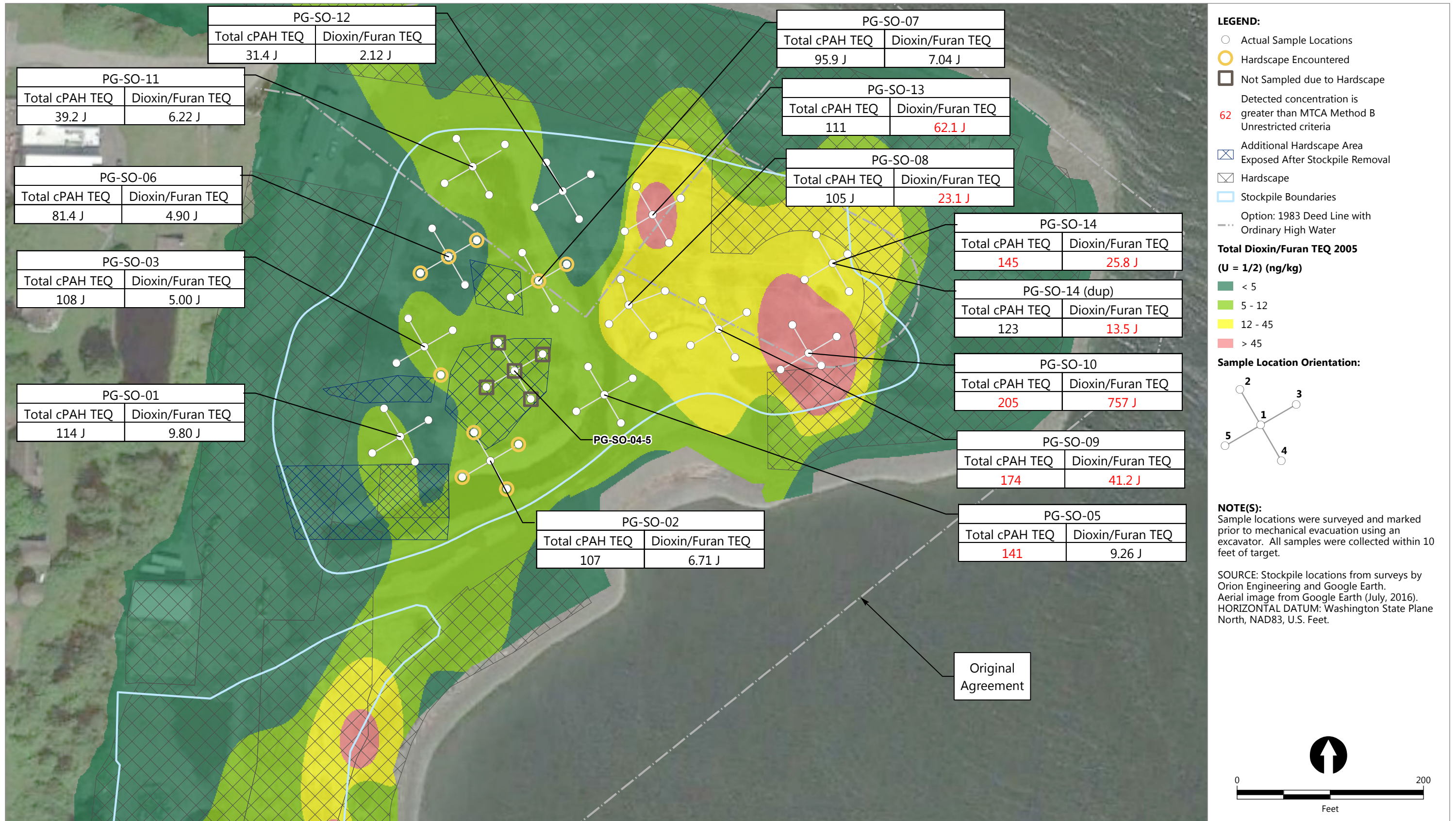
Total cPAH TEQ (7 minimum CAEPA 2005) calculation includes benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-c,d)pyrene. Per MTCA cleanup Regulation, Table 708-2

"Toxicity Equivalency Factors for Minimum Required Carcinogenic Polyaromatic Hydrocarbons (cPAHs) under WAC 173-340-708(e).

Dioxin/furan TEQ values were calculated with 2005 World Health Organization toxicity equivalency factor values for mammals.

USEPA Stage 4 data validation on the dioxin/furan data and USEPA Stage 2B data validation on the rest of the data were completed by Laboratory Data Consultants.

FINAL VALIDATED DATA



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Figure 1
Post-Stockpile Surface Soil Sample Results
 Data Report
 Port Gamble Bay Cleanup Project

Appendix C
Supplemental RI/FS Data
Memorandum (February 2018)

Due to size restrictions this appendix
(data report) cannot be loaded.

Please email:
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for an electronic version.