

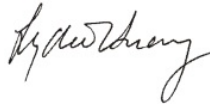
MEMORANDUM

Date: 6 June 2016

Job No.: 12315-27.02308

To: Douglas Herman, Port of Oakland

From: Lydia Huang, P.E.



Subject: June 2016 Updated Addendum to 2010 Port-Wide Soil Management Protocol

This memorandum serves as a June 2016 Updated Addendum to the *Final Port-Wide Soil Management Protocol, Part of the Port of Oakland Materials Management Program*, dated February 2010 (“2010 Port-Wide SMP”). The 2010 Port-Wide SMP provided procedures for the Port to use for determining whether soil excavated from certain Port property is acceptable for reuse on other Port properties, and listed restrictions for soil reuse. A February 2015 Addendum to the 2010 Port-Wide SMP was previously prepared, but is no longer entirely applicable due to a recent major reorganization made by the Regional Water Quality Control Board (“RWQCB”), San Francisco Bay Region to their document, *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater* (“RWQCB Document”). Most of the screening values in the February 2015 Addendum were based on Environmental Screening Levels (“ESLs”) in the December 2013 version of the RWQCB Document. The reorganization of the February 2016 update to the RWQCB Document relative to the prior December 2013 version has caused parts of the February 2015 Addendum to no longer be applicable.

This June 2016 Updated Addendum to the 2010 Port-Wide SMP (“June 2016 Updated Addendum”) supersedes the February 2015 Addendum in its entirety. Portions of the February 2015 Addendum that are still relevant and applicable have been revised, as necessary, and are included in this memorandum. A modified flow chart illustrating the evaluation process is presented in Figure 1 of this June 2016 Updated Addendum.

The Port’s experience in applying the 2010 Port-Wide SMP has identified additional factors that should be considered during development of sampling plans for soil reuse evaluations and evaluation of chemical data. This June 2016 Updated Addendum modifies certain aspects of the 2010 Port-Wide SMP based on this experience, changes in regulatory guidance, and standard industry practices.

As a significant effort is required to assess the suitability of soil reuse under the 2010 Port-Wide SMP, as a general rule, the minimum volume of soil for which the reuse evaluation effort may be cost-effective is on the order of 100 cubic yards; this is also the case for this June 2016

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Updated Addendum. There is, however, no *de minimis* soil volume that can be reused on a different property without testing and evaluation.

1. UPDATED SOIL REUSE SCREENING VALUES

Table 1 in Section 2.1 of the 2010 Port-Wide SMP listed the Screening Values to be used for comparison against total constituent concentrations for soil reuse evaluations. All but one of the Screening Values were based on ESLs in the May 2008 version of the RWQCB Document. The exceptions were those for arsenic, which were based on background concentrations that the Port had established. The values in Table 1 of the 2010 Port-Wide SMP were intended to be dynamic to reflect the ESLs as they are updated periodically by the RWQCB. The most recent update is revision 3 of the February 2016 RWQCB Document. The values listed in Table 1 should be updated to be consistent with the most current version of the RWQCB Document before each evaluation, as needed.

In the 2010 Port-Wide SMP, the soil Screening Values based on ESLs were intended to be the lower of the values protective of shallows soils under a commercial/industrial land use scenario where the groundwater is not a current or potential drinking water resource, and the values protective of direct contact by construction/trench workers. These values were found in Tables B and K3 of the December 2013 RWQCB Document and were the basis of all but one of the Screening Values listed in the February 2015 Addendum to the 2010 Port-Wide SMP.

In the reorganized February 2016 RWQCB Document, these values are found among those presented in the "Summary of Soil ESLs" table. To maintain consistency with the 2010 Port-Wide SMP, Table 1 of this June 2016 Updated Addendum presents the current Soil Screening Values which are the lowest of the following four sets of values listed in the "Summary of Soil ESLs" table: (1) direct exposure human health risk levels, commercial/industrial shallow soil exposure; (2) direct exposure human health risk levels, any land use/any depth soil exposure, construction worker; (3) leaching to groundwater levels, non-drinking water; and (4) gross contamination levels.

Note that the Screening Values for arsenic are not based on ESLs, but are based on background concentrations and remain unchanged from the 2010 Port-Wide SMP.

2. SILICA GEL CLEANUP FOR EXTRACTABLE TOTAL PETROLEUM HYDROCARBON ANALYSIS

For extractable total petroleum hydrocarbons ("TPH") (e.g., TPH as diesel and TPH as motor oil), Section 2.2.3 of the 2010 Port-Wide SMP specified that silica gel cleanup be performed prior to analysis. However, the February 2016 *User's Guide: Derivation and Application of Environmental Screening Level* ("February 2016 ESL User Guide"), prepared by the staff of the RWQCB, contains an in-depth discussion on the appropriateness of using silica gel

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cleanup prior to extractable TPH analysis in Section 9-7. The February 2016 ESL User Guide states that routine use of silica gel cleanup is not appropriate because this preparation method removes polar intermediates resulting from the breakdown of petroleum hydrocarbons, if present. Silica gel cleanup came into common use as a means to remove polar compounds that were assumed to have originated from the decay of biological materials rather than from petroleum hydrocarbons. As the silica gel cleanup method removes all polar compounds regardless of origin, the February 2016 ESL User Guide states that its use should be discussed with the overseeing regulatory agency.

In response to the February 2016 ESL User Guide, this June 2016 Updated Addendum modifies the 2010 Port-Wide SMP to require analysis of extractable TPH without silica gel cleanup, with the option of also analyzing extractable TPH with silica gel cleanup, if appropriate. In general, those cases where evidence of petroleum contamination are observed (e.g., odor, staining) during drilling and/or sampling, the extractable TPH concentrations determined without silica gel cleanup should be used for comparison against Screening Values.

However, if no evidence of petroleum contamination is observed during drilling and/or sampling, then the option of analyzing for extractable TPH with silica gel cleanup could be considered. Additional lines of evidence to demonstrate that the polar compounds removed by silica gel cleanup are of biological origin can include collecting samples outside of petroleum-impacted areas in up- or cross-gradient directions with similar vegetative and hydrologic settings. If it is the opinion of the professional engineer or geologist in charge, based on consideration of all available information, that the polar compounds that would be removed by silica gel cleanup are not of petroleum origin, then extractable TPH analysis with silica gel cleanup could be performed. In this case, the extractable TPH concentrations quantified with silica gel cleanup could be used for comparison against Screening Values.

3. SYNTHETICAL PRECIPITATION LEACHING PROCEDURE (“SPLP”) EXTRACTION

In situations where the representative total constituent concentration(s) exceeds the soil Screening Value, Section 2.2.5 of the 2010 Port-Wide SMP provides the option of determining the leachable concentration using the SPLP extraction method and comparing the soluble concentration against the ESL protective of groundwater. The purpose of the SPLP extraction procedure is to determine the amount of a constituent that could leach from a material and become mobile in groundwater or surface water, and is intended to simulate precipitation percolating through a material under ambient conditions.

The 2010 Port-Wide SMP does not limit which constituents can be further evaluated using leachable concentrations determined using SPLP extraction. To better align with the rationale for the SPLP extraction method, this June 2016 Updated Addendum modifies the

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2010 Port-Wide SMP to limit the constituents for which the SPLP evaluation is an option to only those constituents for which the Screening Value for the total soil concentration is based on groundwater protection of a nondrinking water source, as indicated by “Leaching” as the basis of screening value column in the attached Table 1. The Screening Values for soluble concentrations determined using SPLP extraction listed in Table 1 are the lowest of the following six values listed in the "Summary of Groundwater ESLs" table in the February 2016 RWQCB Document: (1) aquatic habitat goal levels - fresh water ecotox; (2) aquatic habitat goal levels - saltwater ecotox; and (3) aquatic habitat goal levels - seafood ingestion human health; (4) groundwater vapor intrusion human health risk levels, shallow groundwater, commercial/industrial; (5) gross contamination levels; and (6) odor nuisance levels, non-drinking water.

These considerations are incorporated into Figure 1 of this June 2016 Updated Addendum which provides a flow chart of the overall evaluation process.

4. NUMBER OF SAMPLES NEEDED FOR STATISTICAL EVALUATION

Section 2.2.4 of the 2010 Port-Wide SMP specifies the minimum numbers of samples needed to characterize soil considered for reuse depending on the anticipated volume, with a *minimum of four samples regardless of volume*. The frequency is based on the Department of Toxic Substances Control's *Information Advisory for Clean Imported Fill Material*, dated October 2001. Section 2.2.5 of the 2010 Port-Wide SMP provides the option of calculating the upper confidence limit of the mean (“UCL”), a statistically based representative concentration, if one or more of the reported concentrations for a constituent exceed the hazardous waste or reuse screening threshold.

While it is mathematically possible to calculate UCLs with only a few sample results, concentrations from four samples are generally insufficient for calculating credible UCLs. The user guide for statistical software package ProUCL (version 5.0), available from the U.S. Environmental Protection Agency, recommends no fewer than ten data points for calculating statistical estimates of representative concentrations.

If insufficient sample results are available and/or a meaningful UCL cannot be calculated, then the concentration for every sample has to be below the Screening Value being used for comparison. Therefore, in developing a sampling plan, it may be beneficial to collect a greater number of samples than that specified in the 2010 Port-Wide SMP and initially place some samples on hold, in case more data points are needed for statistically calculations. For example, if the total volume of soil being considered for reuse is 1,000 cubic yards, which requires only four samples per Section 2.2.4, one may consider collecting ten samples and initially placing six samples on hold at the laboratory. If one or more concentrations of a particular constituent exceed a threshold and a representative UCL needs to be calculated,

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then the samples initially placed on hold could be analyzed for that constituent (while being cognizant of the holding time).

These considerations are incorporated on Figure 1 of this June 2016 Updated Addendum.

5. NUMBER OF SAMPLES CONSIDERATIONS FOR HETEROGENEOUS CONTAMINATION

Section 2.2.4 of the 2010 Port-Wide SMP specifies that soils to be considered for reuse may be sampled in-situ or from stockpiles, but that different soil types (e.g., fill, native Young Bay Mud) should be segregated and sampled separately. In addition, soils from areas suspected of being contaminated because of known nearby sources should be further segregated and sampled. Each type of segregated soil needs to have the required number of samples for evaluating its suitability for reuse.

There have been some instances where isolated in-situ samples contained constituent concentrations significantly above Screening Values while other samples in the same segregated soil type had low concentrations. Depending on the spatial distribution of the samples with elevated and low concentrations, it may be possible to isolate the area(s) of contaminated soil, and evaluate the soil from the remaining area where the collected samples contained low constituent concentrations for reuse. The main constraints for using this approach are that there needs to be adequate number of samples to characterize the truncated soil volume being evaluated for reuse, and there needs to be data to support the boundary of soil potentially considered for reuse. Similar considerations apply if sampling is conducted from stockpiled soils.

There is often no prior information to indicate that such conditions may be encountered and isolated contamination would only be revealed during drilling and sampling activities. In developing a sampling plan, it may be beneficial to include a contingency for additional sampling to respond to heterogeneous contamination that may be encountered in the field.

6. UPDATE TO APPENDICES B AND C

Appendix B of the 2010 Port-Wide SMP was a fact sheet for the statistical software package ProUCL, version 4.0. The software can be used to calculate the statistics of a data set and UCLs using multiple parametric and nonparametric methods, and is able to handle data sets with some non-detect results. The software is periodically updated and the current version is 5.0. The fact sheet for version 5.0 is provided in the attached "Updated Appendix B". The software and user guide can be downloaded using the following URL:

<http://www.epa.gov/osp/hstl/tsc/software.htm#about>

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Appendix C of the 2010 Port-Wide SMP provided a list of Port-owned sites with regulatory constraints and/or institutional controls. The list was updated in February 2015 and is provided in the attached "Updated Appendix C".

Attachments:

Table 1: Updated Screening Values for Soil Reuse Evaluation

Figure 1: Updated Decision Flowchart for Soil Reuse Evaluation

Updated Appendix B

Updated Appendix C

TABLE 1: UPDATED SCREENING VALUES FOR SOIL REUSE**June 2016 Updated Addendum to the 2010 Port-Wide Soil Management Protocol**

(screening values updated to revision 3 of the February 2016 RWQCB Document)

	Port-Wide SMP Soil Screening Value ¹ (mg/kg)	Basis of Port-Wide SMP Soil Screening Value ²	SPLP Extraction Option Available ³	Screening Value for Soluble Concentration using SPLP (µg/L) ⁴
Antimony	1.4E+02	CW	No	--
Arsenic ⁵	16.4/5.6	Background	No	--
Barium	3.0E+03	CW	No	--
Beryllium	4.2E+01	CW	No	--
Cadmium (soil)	4.3E+01	CW	No	--
Chromium III	5.3E+05	CW	No	--
Chromium VI	2.8E+00	CW	No	--
Cobalt	2.8E+01	CW	No	--
Copper	1.4E+04	CW	No	--
Lead	1.6E+02	CW	No	--
Mercury (elemental)	4.4E+01	CW	No	--
Molybdenum	1.8E+03	CW	No	--
Nickel	8.6E+01	CW	No	--
Selenium	1.7E+03	CW	No	--
Silver	1.8E+03	CW	No	--
Thallium	3.5E+00	CW	No	--
Vanadium	4.7E+02	CW	No	--
Zinc	1.1E+05	CW	No	--
TPH gasoline	1.0E+03	Gross Cont.	No	--
TPH diesel	8.8E+02	CW	No	--
TPH motor oil	5.1E+03	Gross Cont.	No	--
TPH Stoddard solvent	6.3E+02	CW	No	--
Benzene	4.9E-02	Leaching	Yes	9.7E+00
Ethylbenzene	1.4E+00	Leaching	Yes	4.3E+01
Toluene	9.3E+00	Leaching	Yes	1.3E+02
Xylenes	1.1E+01	Leaching	Yes	1.0E+02
1,1,1,2-Tetrachloroethane	1.6E+01	Leaching	Yes	9.3E+02
1,1,1-Trichloroethane	7.8E+00	Leaching	Yes	6.2E+01
1,1,2,2-Tetrachloroethane	2.3E+00	C/I Shallow	No	--
1,1,2-Trichloroethane	4.2E+00	C/I Shallow	No	--
1,1-Dichloroethane	8.1E-01	Leaching	Yes	4.7E+01
1,1-Dichloroethene	4.3E+00	Leaching	Yes	3.2E+00
1,2,4-Trichlorobenzene	7.6E+00	Leaching	Yes	2.5E+01
1,2-dibromo-3-chloropropane	7.2E-02	C/I Shallow	No	--
1,2-Dibromoethane	5.7E-03	Leaching	Yes	7.4E+00
1,2-Dichlorobenzene	1.6E+00	Leaching	Yes	1.4E+01
1,2-Dichloroethane	5.4E-02	Leaching	Yes	5.3E+01
1,2-Dichloropropane	1.9E-01	Leaching	Yes	3.9E+01
1,3-Dichlorobenzene	7.4E+00	Leaching	Yes	6.5E+01

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1,3-Dichloropropene	4.4E-01	Leaching	Yes	3.3E+01
1,4-Dichlorobenzene	1.4E+00	Leaching	Yes	1.5E+01
Acetone	5.0E-01	Leaching	Yes	1.5E+03
Bromodichloromethane	2.3E+00	C/I Shallow	No	--
Bromoform (Tribromomethane)	2.4E+01	Leaching	Yes	3.6E+02
Bromomethane	1.5E+00	Leaching	Yes	1.6E+02
Carbon tetrachloride	4.8E-02	Leaching	Yes	1.9E+00
Chlorobenzene	1.5E+00	Leaching	Yes	2.5E+01
Chloroethane	1.1E+01	Leaching	Yes	1.6E+02
Chloroform	6.8E-02	Leaching	Yes	2.0E+01
Chloromethane	6.8E+01	Leaching	Yes	1.1E+03
cis-1,2-Dichloroethene	3.5E+00	Leaching	Yes	5.9E+02
Dibromochloromethane	3.9E+01	C/I Shallow	No	--
Hexachlorobenzene	1.5E+00	C/I Shallow	No	--
Hexachlorobutadiene	1.6E+01	Leaching	Yes	3.2E+00
Methyl ethyl ketone	1.3E+01	Leaching	Yes	1.4E+04
Methyl isobutyl ketone	3.9E+00	Leaching	Yes	1.7E+02
Methyl tertiary butyl ether (MTBE)	8.4E-01	Leaching	Yes	1.8E+02
Methylene chloride	7.3E-01	Leaching	Yes	4.2E+02
Styrene	1.6E+01	Leaching	Yes	1.1E+02
tert-Butyl alcohol	1.1E+02	Leaching	Yes	1.8E+04
Tetrachloroethene	4.2E-01	Leaching	Yes	8.9E+00
trans-1,2-Dichloroethene	3.9E+01	Leaching	Yes	5.9E+02
Trichloroethene	5.1E-01	Leaching	Yes	4.9E+01
Vinyl chloride	1.0E-02	Leaching	Yes	5.3E-01
Acenaphthene	1.9E+01	Leaching	Yes	2.3E+01
Acenaphthylene	1.3E+01	Leaching	Yes	3.0E+01
Anthracene	2.8E+00	Leaching	Yes	7.3E-01
Benzo(a)anthracene	2.9E+00	C/I Shallow	No	--
Benzo(a)pyrene	2.9E-01	C/I Shallow	No	--
Benzo(b)fluoranthene	2.9E+00	C/I Shallow	No	--
Benzo(g,h,i)perylene	2.5E+00	Gross Cont.	No	--
Benzo(k)fluoranthene	2.6E+00	Gross Cont.	No	--
Chrysene	3.8E+00	Gross Cont.	No	--
Dibenz(a,h)anthracene	2.9E-01	C/I Shallow	No	--
Fluoranthene	6.0E+01	Leaching/Gross Cont.	No	--
Fluorene	8.9E+00	Leaching	Yes	3.9E+00
Indeno(1,2,3-c,d)pyrene	2.9E+00	C/I Shallow	No	--
Naphthalene	3.9E+00	Leaching	Yes	2.4E+01

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Phenanthrene	1.1E+01	Leaching	Yes	4.6E+00
Pyrene	8.5E+01	Leaching/Gross Cont.	No	--
1,1-Biphenyl	6.5E+00	Leaching	Yes	5.0E+00
1,4-Dioxane	3.0E+01	Leaching	Yes	5.0E+04
2,4,5-Trichlorophenol	1.8E-01	Leaching	Yes	1.1E+01
2,4,6-Trichlorophenol	4.7E+01	C/I Shallow	No	--
2,4-Dichlorophenol	3.0E+00	Leaching	Yes	3.0E+00
2,4-Dimethylphenol	7.4E-01	Leaching	Yes	1.1E+02
2,4-Dinitrophenol	2.1E-01	Leaching	Yes	7.5E+01
2,4-Dinitrotoluene	8.6E-01	Leaching	Yes	9.1E+00
2-Chlorophenol	1.2E-01	Leaching	Yes	1.8E+00
2-Methylnaphthalene	2.5E-01	Leaching	Yes	2.1E+00
3,3-Dichlorobenzidine	2.7E+00	C/I Shallow	No	--
Bis(2-chloroethyl) ether	5.3E-01	C/I Shallow	No	--
Bis(2-chloroisopropyl) ether	6.6E-01	Leaching	Yes	6.1E+01
Bis(2-ethylhexyl) phthalate	1.6E+02	C/I Shallow	No	--
Diethyl phthalate	3.5E-02	Leaching	Yes	1.5E+00
Dimethyl phthalate	3.5E-02	Leaching	Yes	1.5E+00
Hexachloroethane	4.1E+01	Leaching	Yes	8.9E+00
p-Chloroaniline	5.3E-02	Leaching	Yes	5.0E+00
Pentachlorophenol	4.0E+00	C/I Shallow	No	--
Perchlorate	2.5E+02	CW	No	--
Phenol	8.8E+00	Leaching	Yes	5.8E+02
Polychlorinated biphenyls (PCBs)	1.0E+00	C/I Shallow	No	--
Aldrin	1.6E-01	C/I Shallow	No	--
Chlordane	2.2E+00	C/I Shallow	No	--
Dichlorodiphenyldichloroethane (DDD)	1.2E+01	C/I Shallow	No	--
Dichlorodiphenyldichloroethene (DDE)	8.5E+00	C/I Shallow	No	--
Dichlorodiphenyltrichloroethane (DDT)	4.3E+00	Leaching/Gross Cont.	No	--
Dieldrin	2.3E-03	Leaching	Yes	1.4E-04
Endosulfan	4.6E-03	Leaching	Yes	8.7E-03
Endrin	6.5E-04	Leaching	Yes	2.3E-03
g-Hexachlorocyclohexane (Lindane)	9.8E-03	Leaching	Yes	1.6E-02
Heptachlor	1.3E-02	Leaching	Yes	2.1E-04
Heptachlor epoxide	1.4E-02	Leaching	Yes	1.1E-04
Methoxychlor	1.9E+01	Leaching/Gross Cont.	No	--
Toxaphene	4.2E-04	Leaching	Yes	2.0E-04
Boron	4.5E+04	CW	No	--
Cyanide	3.6E-03	Leaching	Yes	1.0E+00

TABLE 1: UPDATED SCREENING VALUES FOR SOIL REUSE**June 2016 Updated Addendum to the 2010 Port-Wide Soil Management Protocol**

(screening values updated to revision 3 of the February 2016 RWQCB Document)

	Port-Wide SMP Soil Screening Value ¹ (mg/kg)	Basis of Port-Wide SMP Soil Screening Value ²	SPLP Extraction Option Available ³	Screening Value for Soluble Concentration using SPLP (µg/L) ⁴
Dioxin (2,3,7,8-TCDD)	2.2E-05	C/I Shallow	No	--
Methyl mercury	1.9E+01	CW	No	--

Notes:

SMP = Soil Management Plan.

ESL = Environmental Screening Level. Values listed in this table are based on ESLs in the February 2016

update (revision 3) of Screening for Environmental Concerns at Sites with Contaminated Soil and

Groundwater, California Regional Water Quality Control Board ("RWQCB"), San Francisco Bay Region.

Screening values listed in this table that are based on ESLs need to be updated to reflect the values in the latest version of the document from the RWQCB before applying the SMP to a new project.

SPLP = Synthetic Precipitation Leaching Procedure.

mg/kg = milligram per kilogram.

µg/L = micrograms per liter.

¹ Port-wide SMP Soil Screening Values are the lowest of the following four values listed in the "Summary of Soil ESLs" table: (1) direct exposure human health risk levels, commercial/industrial shallow soil exposure; (2) direct exposure human health risk levels, any land use/any depth soil exposure, construction worker; (3) leaching to groundwater levels, non-drinking water; and (4) gross contamination.

² **C/I Shallow** = Port-wide SMP Soil Screening Value is based on "Summary of Soil ESLs" table for direct exposure human health risk levels for commercial/industrial shallow soil exposure.

CW = Port-wide SMP Soil Screening Value is based on "Summary of Soil ESLs" table for direct exposure human health risk levels for any land use/any depth soil exposure for construction worker.

Leaching = Port-wide SMP Soil Screening Value is based on "Summary of Soil ESLs" table for leaching to groundwater for non-drinking water.

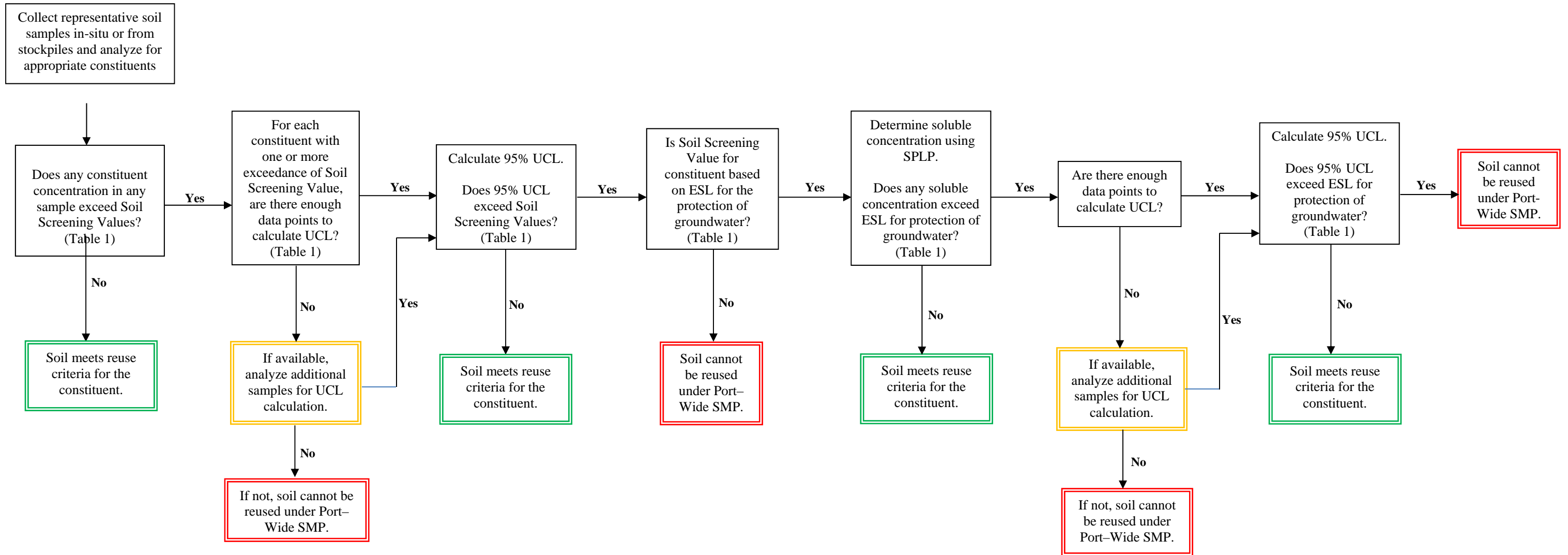
Gross Cont. = Port-wide SMP Soil Screening Value is based on "Summary of Soil ESLs" table for gross contamination.

Background = Background arsenic concentrations established for the Port area (see 2010 Port-Wide SMP).

³ SPLP Extraction Option is available for those compounds where the Port-wide SMP Soil Screening Value is based on leaching to groundwater for non-drinking water.

⁴ SPLP screening values for soluble concentrations are the lowest of the following six values listed in the "Summary of Groundwater ESLs" table: (1) aquatic habitat goal levels - fresh water ecotox; (2) aquatic habitat goal levels - saltwater ecotox; and (3) aquatic habitat goal levels - seafood ingestion human health; (4) groundwater vapor intrusion human health risk levels, shallow groundwater, commercial/industrial; (5) gross contamination levels; and (6) odor nuisance levels, non-drinking water.

⁵ There are two separate screening values for arsenic. The Screening Value for arsenic in fill soils is 16.4 mg/kg, and the Screening Value for native soils is 5.6 mg/kg.



Notes:

A determination that the soil considered for reuse is not a hazardous waste should be made before conducting the evaluation illustrated in this flow chart. Soil Screening Values are listed in Table 1 of the June 2016 Updated Addendum, which should be updated to reflect current ESLs when an evaluation is conducted.

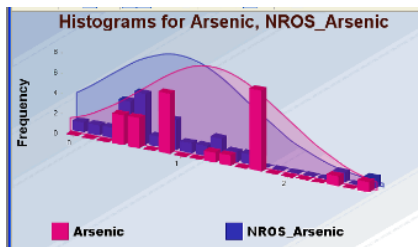
**UPDATED APPENDIX B
to 2010 Port-Wide SMP**

ProUCL Statistical Support Software for Site Investigation and Evaluation

Background

ProUCL is a comprehensive statistical software package initially developed by EPA for computing statistical intervals to respond to concerns at a specific Superfund site. With significant interest, use, and user feedback on the software from the remediation community, EPA has updated the software adding new tools and statistical methods.

EPA regions, states, contractors, and other stakeholders use ProUCL to establish background levels, determine outliers in data sets, and compare background and site sample data sets for site evaluation and risk assessment.



Function

ProUCL provides numerous and varied statistical methods and graphical tools to address many environmental sampling and statistical issues. It can be run on environmental data sets with and without nondetect (ND) data samples. Calculating upper statistical limits is a primary function of the software and the graphical analyses offered includes probability plots, histograms, box plots, and line/trend plots. Results for statistical intervals are offered with several options and relevant cautions. Other available tests that may apply to groundwater

monitoring include single and two-sample hypotheses tests, ANOVA, regression, trend evaluation, outlier, and goodness-of-fit tests.

Ease of Use

ProUCL requires no formal background in statistics, but some statistical training is helpful to understand the assumptions and input requirements for statistical tests used in decision making. Input data sets are straightforward, requiring columns of detected values for contaminants and if each value is a detect or a nondetect at the quantitation limit. The user can also add variables to provide grouping data, regression variables, or sample dates. Desired statistical tests can be selected from drop-down menus, and relevant options from subsequent menus. Results from within the program may be exported to an Excel spreadsheet and graphs can be inserted in documents. Data can be evaluated for fit to normal, lognormal, or gamma distributions. Outputs include recommendations, cautions, and cited references.

User Support and Training

The EPA Site Characterization and Monitoring Technical Support Center (SCMTSC) provides user support for ProUCL when possible. This may include developing or reviewing statistical sampling plans or background/risk numbers for EPA Superfund project managers or technical staff. SCMTSC also provides short term technical support to both internal and external users. The SCMTSC Annual Report documents this support and can provide a snapshot of ProUCL use. The SCMTSC developed and presented webinar training classes through CLU-IN on the use of

ProUCL version 5.0.00 (Sept. 2013) is the most recent update. Users can download the software free of charge from the USEPA Regional Science Program (RSP) webpage
<http://www.epa.gov/osp/hstl/tsc/software.htm>

ProUCL. These courses can be viewed at:

http://www.clu-in.org/conf/tio/ProUCLBasic_030911/ and http://www.clu-in.org/conf/tio/ProUCLAdv_031611/

Additional training is planned for FY14 dependant on budget considerations.

ProUCL 5.0 Modifications

SCMTSC updated ProUCL to version 5.0 in September of 2013. ProUCL now includes:

- Windows 8 compatibility
- Updated guidance and support documents
- UCLs/EPCs and Upper Limits/BTVs modules enhancements
- an upper simultaneous limit (USL) statistic

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UPDATED APPENDIX C
to 2010 Port-Wide SMP

Updated Appendix C

Port Sites with Institutional Control and/or Regulatory Constraints

Updated February 2015

The following is a list of Port-owned sites with Institutional Controls.

Site Name	Alternative/Historical Name	Location
OAKLAND INTERNATIONAL AIRPORT SITES		
SFPP, L.P. Oakland Airport Transfer Station	KMEP metering station	100 Edward White Way
Tank Farm C - Parcel 2	OFFC Fuel Storage Facility	1 Edward White Way
Former Humble PS Trading Tank Farm - Parcel 3	Humble PS Fuel Tank Farm	1 Edward White Way
OFFC Operations and Maintenance Facility	Tank Farm S	1 Edward White Way
MARITIME SITES		
Former Industrial Supply Center	US Navy Supply Center	Near Maritime and 7th streets
Howard Terminal	Berths 67/68	1 Market Street
Oakland Army Base - Economic Development Conveyance Area		Near Maritime Street and West Grand Avenue
Oakland Army Base Sliver Parcel	Subaru Lot - Parcel 2C	Near Maritime Street and West Grand Avenue
Oakland Army Base - Army Reserve	Parcel 18, and Subparcels 19 and 21 (Buildings 762 and 780)	Near 14th and 12th streets, at Midway Street
UP Roundhouse	Union Pacific train maintenance yard	1407 Middle Harbor Road
McGuire Chemical Company	Portion of Berths 25/26	2500 7th Street
COMMERCIAL REAL ESTATE SITES ¹		
Cryer Site		1899 Dennison Street
Union Point Park	Embarcadero and Dennison Street	
Lot 12	Jack London Square Theater	475 Second Street
Embarcadero Cove		Embarcadero, between Livingston and Dennison streets

¹ The 2010 Port-Wide SMP prohibits the reuse of soil on Commercial Real Estate Sites; these Sites are listed here only for information.