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NSTC GREAT LAKES
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U S NAVY RESPONSES TO ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
COMMENTS ON THE DRAFT SAMPLING AND ANALYSIS PLAN FOR THE REMEDIAL
INVESTIGATION FOR SITE 12 HARBOR DREDGE SPOIL AREA NSTC GREAT LAKES IL
12/16/2010
TETRA TECH

RESPONSE TO COMMENTS
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY COMMENTS
DATED NOVEMBER 8, 2010
DRAFT SAMPLING AND ANALYSIS PLAN FOR THE RI FOR SITE 12
NAVAL STATION GREAT LAKES
Date Issued: December 16, 2010

- 1) Worksheet #1, Executive Summary – The last sentence of the second paragraph appears to state that any contamination found at this site is the “result of industries activities upstream of NS Great Lakes.” While this may be accurate, the Navy cannot overlook their own activities which may well have contributed to the contaminant load.

Response: Text similar to the Site 17 RI was added. The following text was added to the end of the second paragraph: “The primary sources of the environmental contaminants in the sediments are from upstream industrial sources (historical discharges and contamination) and storm water discharges within the Pettibone Creek Watershed. Overland runoff and storm water discharges from Naval Station Great Lakes to Pettibone Creek may have contributed pollutants to the watershed, but analytical results do not suggest that a significant point source(s) is(are) impacting the sediment quality of Pettibone Creek.”

- 2) Worksheet #1, Executive Summary – The fourth paragraph states that chemical concentrations will be compared to risk-based human health screening levels. Given the site is on the shore of Lake Michigan, ecological risks must be accounted for as well. The SAP should be revised accordingly throughout.

Response: Ecological risks to macroinvertebrates from erosion into the harbor will be evaluated. The fourth paragraph was modified to include evaluation of ecological risks.

- 3) Worksheet #1, Acronyms and Abbreviations, page 5 – The definition of “ECD” should be electron capture *detector*. Also, the acronym and abbreviation for “HAS hollow-stemmed auger” should be HSA Hollow-stemmed Auger.

Response: Corrected.

- 4) Worksheet #1, Acronyms and Abbreviations, page 6 – Is the acronym for Office of the Chief of Naval Operations accurate? Please review and revise as necessary.

Response: OPNAV is the correct acronym for the Office of the Chief of Naval Operations.

- 5) Worksheet #4 – Under SAP Section Reviewed, the Illinois RPM should read “All.”

Response: Corrected.

- 6) Worksheet #9 - On page 16, following the second bullet, it should also mention that although groundwater will not be sampled, a subsequent decision may be made to collect groundwater samples if the soil data warrants it.

Response: The follow sentence was added: “However, groundwater samples may be collected if review of the soil data by the project team warrants further investigation.”

- 7) Worksheet #9 – After reviewing the Site Background on Worksheet #10, Illinois EPA believes the samples should also be analyzed for PAHs.

Response: Soil will be analyzed for PAHs. The inclusion of PAHs has been updated throughout the SAP.

- 8) Worksheet #10 – If, as stated at the top of page 18, “the filling activities may not be related to the disposition of dredge spoils”, then the selection of contaminants for analysis based upon that assumption may be flawed. In addition, the assumption that the contamination at this site should be fairly homogeneous may also be inaccurate. After reviewing the information provided in the Site Background Section, of which the State was previously unaware, the State believes a significant change in scope may be necessary. Revisions to the scope may include collection of samples in more than 10 locations, at more than 2 depths, and for more contaminants than initially envisioned. Suggest a meeting be scheduled to hash out the details. The entire SAP would then need to be updated accordingly.

Response: Additional fill materials placed above the dredge spoil on Site 12 would appear to primarily be soil materials from construction of the adjacent stormwater pond. Prior to construction of the stormwater pond this area was occupied by tanks associated with the Base’s sanitary water treatment plant. Substantial chemical contamination of soil due to past operations there is not anticipated. No change to this worksheet has been made.

- 9) Worksheet #10, page 18 – See earlier comment regarding possible Navy contribution to the contaminant load.

Response: Refer to the response to comment #1.

- 10) Worksheet #10, page 18 - The first bullet presents an argument for eliminating the need for analysis and evaluation of volatile organic contaminants (VOCs) in soil based upon their absence in a prior sampling and analysis round. Earlier in Section 10.1, it is explained that the prior analyses failed data quality criteria because holding times were exceeded or they could not be validated. The absence of VOCs in sample data that was determined to be not usable is insufficient justification to rule out their potential presence. Therefore, VOCs may still be considered potential contaminants of concern.

Response: No VOCs were reported in excess of applicable criteria in the Site 17 RI, in the Harbor sampling data, and in the Dames and Moore Report (data could not be validated due to administrative reasons). However, it is still possible that VOCs could be present in the Site 12 soil. Therefore, laboratory VOC analysis (using encore sample kits) will be performed on up to 4 samples depending on PID readings that are collected at the 10 proposed soil sample locations.

- 11) Worksheet #10, Section 10.3 – The first sentence is incomplete. Please review and revise as necessary.

Response: The first sentence was revised.

- 12) Worksheet #10, Section 10.3 – The first full paragraph on page 21 begins by discussing the shallow hydrogeology at the site and the perched aquifers found in sand lenses within layers of clay and silty clay. Is this referring to the areas on base located on the bluff overlooking the lake and Site 12 or the areas near the lake below the bluff including Site 12? This should be clarified.

Response: This is for the area overlooking the lake and Site 12 as little site specific hydrology data is available. The following sentences were added: The shallow aquifer located along the shoreline at the installation has a depth to groundwater between 2 and 5 feet bgs due to the proximity of the lake. The overall groundwater flow direction at Site 12 is expected to be strongly influenced by Lake Michigan water levels. This water is not potable and is not utilized at NSGL or the surrounding area. The remaining aquifer system is known as the deep aquifer system, with depths ranging from 900 to 1,900 feet bgs. The shallow aquifer system recharges from local rainfall infiltration, while the deep aquifer system receives sources from areas of central Wisconsin..”

- 13) Worksheet #10, Section 10.3 – Under Potential Receptors, there is no discussion of ecological receptors, only human receptors. As noted above, ecological risks (and receptors) must be accounted for as well.

Response: Ecological receptors were added. The following text was added to Section 10.3: “Potential ecological receptors include aquatic macroinvertebrate in Lake Michigan. Ecological risks to macroinvertebrates from erosion of the contaminated soil into the harbor will be evaluated. No threatened or endangered species are known to occur on or near Site 12. ”

- 14) Worksheet #11, Section 11.1 – The Problem Definition mentions the sediments from Pettibone Creek as the source of contaminated soil. It should also discuss the other possible sources of fill material mentioned in the Site Background Section. In addition, it does not address the characterization of risks to ecological receptors, which must also be evaluated.

Response: The possible additional sources of contamination were added. In addition, characterization of ecological risks will now be evaluated.

- 15) Worksheet #11, Section 11.2 – Following number 1, PAHs should be added to the list for chemical data.

Response: PAHs were added to the list for chemical data.

- 16) Worksheet #11, Section 11.2 – Following number 4 there is discussion of the use of Illinois EPA background concentrations for metals and poly-nuclear aromatic hydrocarbons (PAHs). It should be noted that the regulations in which those values are located, Illinois EPA's Tiered Approach to Corrective Action Objectives (TACO) regulations, are not ARAR at this site, only to be considered regulations (TBCs). In addition, those PAH values were generated using only surface soils and would therefore only be applicable to surface soils. (In its current state, the SAP does not even provide for the analysis of PAHs, although the Agency believes it should.)

Response: PAHs analysis will be conducted under this SAP. The sediment used for fill at this site originated from eroded surface soil that ended up ultimately as dredged sediments from the Boat Basin and harbor. Therefore, the sediment should be considered surface material and comparison to background PAHs is applicable. No change to the text was made.

- 17) Worksheet #11, Section 11.2, Project Action Limits – See previous comments regarding ecological risks and receptors.

Response: Sources for PALs for ecological risks have been added to Section 11.2.

- 18) Worksheet #11, Section 11.2, Project Action Limits – The last paragraph references Appendix B several times and identifies it as the Human Health Assessment Work Plan. The reference should be to Appendix C and it should reference the Human Health *Risk* Assessment Work Plan.

Response: The work "Risk" was added and the reference was changed to Appendix C.

- 19) Worksheet #11, Section 11.3 – In the first full paragraph on page 25, surface soil is defined as the 0 to 2 feet bgs interval. This interval extends too deep. For all but the construction worker receptor, direct contact and dust inhalation will involve soil from the very most top level in the soil profile. The Supplemental SSL guidance (USEPA, 12/2002) defines surface soil as the top 2 centimeters or one inch. Because of the difficulties in obtaining such shallow samples, we have accepted samples in the 0 to 6 inch interval. Correspondingly, the subsurface interval definition should be revised to extend from the bottom of the surface soil interval to native soil/material.

Response: Surface soil is now defined as the interval from land surface to 6 inches below ground surface.

- 20) Worksheet #11, Section 11.3 – In the second full paragraph on page 25, it states that if a risk assessment is required, the site will be divided into two exposure units, each about 1.7 acres. If that is the case, the number of samples will be insufficient to conduct a proper risk assessment. As above, the State suggests collecting samples at more than the 10 locations called for within this SAP. If as stated, there may be two exposure units, the number of samples will need to be at least 10 per soil horizon per exposure unit.

Response: The referenced paragraph was deleted. This was only proposed if the site was going to be used for residential purposes, which it is not. A sentence was added to the end of the first paragraph in Section 11.3 that states the site will be evaluated as one exposure unit.

- 21) Worksheet #11, Section 11.3 – The last sentence states that field activities will be conducted in the summer of 2010. This will need to be updated as the summer is already over.

Response: The last sentence in sentence was updated to state that field activities will be conducted in late 2010 or early 2011.

- 22) Worksheet #11, Section 11.4 – The first bulleted item states, “If the Incremental Lifetime Cancer Risk (ILCR) is greater than 1×10^{-4} or the hazard quotient (HQ) is greater than 1, the Project Team will proceed to a FS in order to evaluate remedial alternatives.” It should be revised to read as follows, “...to 1×10^{-4} , ~~and~~ or if the HQ is between 0.1 and 1 for residential any receptors...”

Response: Corrected.

- 23) Worksheet #11, Section 11.4 – The first two bullet items mention the hazard quotient (HQ) when discussing the rules governing data use. The third bullet mentions the HI, rather than the HQ. Shouldn't this be HQ as well to be consistent?

Response: HQ was inserted into the third bullet to be consistent.

- 24) Worksheet #11, Section 11.4 – In the paragraph discussing lead as a COPC, line 4 should read “...levels exceeding 10 micrograms per deciliter...”

Response: Corrected

- 25) Worksheet #11, Section 11.5 – See previous comments regarding the number of samples to be collected.

Response: No additional samples are required following additional discussions with IL EPA. No change to the text was made.

- 26) Worksheet #14, Section 14.3 – As noted previously, Illinois EPA defines surface soil as 0-6 inches below ground surface. The number of samples may require modification also.

Response: Surface soil samples will be collected from 0-6 inches bgs. No additional samples are proposed.

- 27) Worksheet #15 – Both herein and in Appendix F, there is reference to “IL NON-TACO” and “NON-IL TACO” values. It is assumed that these should be the same and the former

would be the correct reference. In addition, that abbreviation should be defined following the tables.

Response: Only IL NON-TACO will be used and all abbreviations used in Worksheet #15 and Appendix F will be defined following the tables.

28) Worksheet #15 – No PAHs are listed on the provided tables. These will need to be added.

Response: PAHs have been added to Worksheet #15.

29) Worksheet #15 – There are a large number of compounds where the Limit of Quantitation exceeds the Project Action Limit (PAL). In fact, ~45% of the SVOCs, nearly all of the PCBs, and ~23% of the pesticides have such exceedances. In most cases they are off by an order of magnitude or more. This is unacceptable. Please explain how the collected data are to be meaningful when the PALs cannot be attained for so many compounds. Risk management decisions must be based upon valid data. These exceedances must be addressed.

Response: The Project Action Limits in Worksheet #15 are based on conservative risk-based cleanup objectives developed by Illinois EPA and risk-based concentrations developed by ORNL and recommended by the USEPA. The values used in the worksheet are the lower of these respective criteria. These values will be used as screening concentrations in the risk assessment. In some cases, such as the PCBs, the risk-based criteria cannot be obtained by standard laboratory testing, if at all. In lieu of running elaborate and costly testing, in cases where detection limits or LOQs are above the action levels for Site 12 for a specific compound, those compounds and their overall effect will be addressed on a case-by-case basis in the site-specific human health risk assessment and discussed in the Uncertainty Section of that assessment. This approach has been used on other investigations at Naval Station Great Lakes including Sites 5, 9, and 21.

30) Worksheet #16 – This Project Schedule/Timeline Table is outdated and will need to be updated to match the current projected schedule. When revising the table, please remember that the Agency is typically allowed 30 working days for review and comment rather than 30 calendar days. In addition, the Deliverable and Deliverable Due Date for Navy and Regulatory Review of the Draft RI Report should be filled in with the proper information.

Response: The Project Schedule/Timeline Table was updated.

31) Worksheet #17 – The sample collection methods discussed in the third paragraph are not acceptable. Surface soil samples, as noted previously, should be collected from 0-6 inches below ground surface. The subsurface samples should not be composited as described here either. The State suggests discrete sample locations. All samples should

be obtained from discrete locations identified by staining, odor, or vapor detection on a field instrument.

Response: The text will be modified to state that surface soil samples will be collected from the 0-6 inch interval. In addition, discrete subsurface soil sample will be collected based upon visual observations (staining, odor, ect.) or PID measurements.

32) Worksheet #17 – As noted above, the sampling approach (the number of sample locations, samples collected, and the analysis list) may change due to recently-discovered information.

Response: Worksheet #17 was updated to include VOCs and specifically lists PAHs.

33) Worksheet #18 – This worksheet will need to be revised once the sample collection uncertainties have been worked out. Also, see previous comments regarding surface soil depth range.

Response: See response to comment #18.

34) Worksheet #20 – This worksheet will need to be revised once the sample collection uncertainties have been worked out.

Response: See response to comment #18.

35) Worksheet #27 – In Section 27.1.1 is a reference to Worksheet #20 for how field QA/QC will be labeled. However, that worksheet does not provide any labeling information.

Response: Labeling information for field QA/QC samples was added to the notes for the table provided as Worksheet #20.

36) Worksheets #28 and 30 – Please ensure these tables are updated once the sample collection uncertainties have been worked out.

Response: Worksheets #28 and #30 have been updated.

37) Figure 10-4 – The CSM needs to account for ecological receptors.

Response: Ecological receptors were added to Figure 10-4.

38) Figure 17-1 – The note should define surface soils as 0-6 inches rather than 0-2 feet. The figure will also need to be updated if the sampling scheme is revised.

Response: Surface soil was redefined as 0-6 inches. No other updates were made because the sampling scheme was not altered.

- 39) Appendix B – There are historic maps and drawings provided dating back to 1907, but no aerial photos provided prior to 1974. It would be preferable to include such photos to ensure the enclosed drawings accurately represent the area at that time.

Response: An aerial photos from 1961 and 1988 were added to Appendix B.

- 40) Appendix C, Section 1.2.1 – This section is titled “COPC Screening Criteria” and includes a part presenting screening criteria for lead. It would be helpful to include the TACO objectives of 800 and 700 mg/kg for the industrial/commercial and construction worker receptors, respectively. These screening criteria are for areas where soil contact by children is low but where contact by pregnant adults is possible.

Response: The text has been corrected.

- 41) Appendix C, Section 1.2.2 – The subject section discusses chemicals that lack toxicity values and the options for providing screening values for them. The examples given include 2-methylnaphthalene. This is a poor example since it is now included in the IRIS system.

Response: The text has been corrected.

- 42) Appendix C, Section 2.3 – We agree with the use of the USEPA provided statistical program (ProUCL) for determining exposure point concentrations. The text at the fifth bullet in the referenced section should be updated to the current version, 4.00.05.

Response: The text has been corrected.

- 43) Appendix C, Section 2.4.3 – The subject of this section is the inhalation exposure to contaminated dust and vapors. The first two sentences in this section suggest that inhalation screening criteria must be exceeded before inhalation risks and hazards are quantified. This is inappropriate. Any contaminant that becomes a chemical of concern for any reason should be evaluated and the risks and hazards from all pathways, including inhalation, quantified and summed.

Additionally, the first sentence in Section 2.4.3 refers to default USEPA inhalation SSLs. There are none for the Construction Worker receptor. Finally, the equation provided in this section leads to the calculation of an inhalation dose. This is contrary to current guidance provided in USEPA RAGS Part F. Inhalation risks and hazards should be calculated using estimated air exposures in milligrams per cubic meter coupled with cancer IURs and non-cancer RfCs.

Response: In reference to the first part of the comment - The comparison of site soil data to USEPA Inhalation SSLs for transfers from soil to air is used as a screening means to identify whether a quantitative analysis of this exposure pathway is warranted. If the maximum soil concentration of a chemical exceeds the Inhalation SSL, a quantitative evaluation of potential risks from inhalation is performed. Otherwise, the

risks associated with the inhalation pathway were considered insignificant, and the exposure pathway is eliminated from further evaluation. This is the way previous HHRA were conducted for sites at NAVSTA Great Lakes. To keep things consistent among the sites, we propose no change to the work plan in response to this comment.

In reference to the second part of the comment – the text was amended to clarify and the missing reference was added. The text was changed as recommended: modeled air concentrations are calculated using the methodology provided in the USEPA’s Soil Screening Guidance for the migration of chemicals from soil to air published online at <http://rais.ornl.gov/epa/ssl1.shtml> since these values are more recent than those published in the 1996 and 2002 SSL guidance documents. These are compared with unit risk and RfCs to calculated inhalation risks and noncancer hazards for this pathway.

- 44) Appendix C, Section 3.1 – As discussed above in our previous comment, IURs and RfCs should be used for calculating risks and hazards due to the inhalation of site contaminants. Identification of inhalation RfDs and CSFs in the first paragraph of this section should be corrected.

Response: See response to comment #43.

- 45) Appendix C, Table 2 – Each of the four receptors presented in this table include an entry for “Inhalation of Air/Dust”. For clarity and consistency, please revise the occupational worker, recreational/trespasser, and residential receptor routes to “Subsurface Soil – Inhalation of Vapors” and “Surface Soil – Inhalation of Dusts”. The construction worker receptor should be corrected to show that they will be exposed to surface and subsurface vapors and dusts. Typically indoor residential and occupational vapor exposure is also included.

Response: The text has been corrected.

- 46) Appendix C, Tables 3 and 4 – For both Tables 3 and 4, ingestion/dermal and inhalation of dust/vapor exposure assumptions need to be added for the Occupational Worker, adolescent recreational/trespasser, and adult recreational/trespasser receptors. Also, the listed PEF in both tables for the Construction Worker inhalation pathway could not be located in the referenced literature source.

Response: The tables were corrected and amended to clarify the PEF calculation reference.

- 47) Appendix C, Figure 6-1 – Figure 6-1 presents a graphic view of the conceptual site model. The last transport pathway entry on this figure is titled “Direct Contact During Construction”. This title is incorrect since completed pathways for residential receptors are indicated. The differences in this figure and Figure 10-4, an earlier conceptual site model, should be reconciled as well.

Response: Figure 6-1 was corrected and CSM presented on Figure 10-4 was updated.

- 48) Appendix D – The following Laboratory Standard Operating Procedures (SOPs) are not signed; SOP-149, SOP-164, SOP-168, SOP-181, and SOP-198. Please provide properly signed copies of those SOPs.

Response: Signed copies of these SOPs have been added to Appendix D.

- 49) Appendix F – The title page should not use acronyms, but rather should write out the definitions for PALs, TCLP, and Refs.

Response: Acronyms were removed from the title page of Appendix F.

- 50) Appendix F – The subject appendix includes three sets of tables. The first is an unlabelled spreadsheet of the chemical-specific project action limits (PALs). The second, Appendix F-1, is a summary of these values. Explain the absence of volatile organic compounds from these tables and the selection process for the abbreviated list of semi-volatile organic compounds. Also, TACO construction worker objectives should be added to the unlabelled spreadsheet table.

Response: Volatile organic compounds, PAHs, and pesticides have been added to the tables in Appendix F. TACO construction worker objectives have been added to Table F-1 (now labeled Reference Data for Project Action Limits).

- 51) Appendix F, F-1 – The table uses many abbreviations that are not defined anywhere on the page. Please add those definitions below the table.

Response: Abbreviations used in the table were added below the table.