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LETTER AND U S EPA REGION I COMMENTS ON REVISED DRAFT STUDY AREA SCREENING INVESTIGATION SITE 4 CODDINGTON COVE RUBBLE FILL AREA MAY 2012
NS NEWPORT RI
8/28/2012
U S EPA REGION I

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

August 28, 2012

Maritza L. Montegross
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9742 Maryland Avenue, Bldg. Z-144
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Re: Revised Draft Study Area Screening Investigation
Site 04, Coddington Cove Rubble Fill Area
Naval Station Newport
May 2012

Dear Ms. Montegross:

EPA has reviewed the document entitled "Revised Draft Study Area Screening Investigation for Site 04, Coddington Cove Rubble Fill Area, Naval Station Newport, Newport, Rhode Island," dated May 2012 (hereinafter referred to as the Revised Draft SASE). The Revised Draft SASE was prepared to respond to significant regulatory comments on the Draft SASE, which lead to the completion of the "Wetlands Functions and Values Assessment for Site 04, Coddington Cove Rubble Fill Area" (TetraTech, January 2012) and completion of a more robust human health and ecological risk assessment.

EPA's comments on the Revised Draft SASE are attached. EPA and Navy have already discussed the majority of these comments during conference calls on August 14 and 22, 2012. With respect to the ecological risk comments enclosed, since significant revisions to the presentation of the ecological risk assessment are requested, Navy has agreed to provide revised tables and documentation to support a revised ecological risk assessment presentation, as an interim deliverable. EPA will work closely with the Navy and RIDEM towards resolution of the risk assessment comments, so that a consensus approach can be incorporated into the Draft Final SASE.

In addition, as discussed at the July 18, 2012 RPM meeting and during the August 22, 2012 conference call, EPA recommends that the Navy further consider the appropriate path forward for unacceptable human health risk issues related to the CCRF site. As currently presented in the Revised Draft SASE, metals in groundwater are the only constituents retained as COCs, with manganese and iron being the primary risk drivers. The Revised Draft SASE indicates that "(m)etals that were detected at elevated levels in groundwater were not detected at elevated levels in soils and could potentially be present as a result of natural conditions." Further evaluation of the aquifer upgradient of the site

and/or an evaluation of the levels of metals naturally occurring in groundwater in wetland regimes may be warranted to demonstrate whether the elevated metals in site groundwater are related to a CERCLA release or natural conditions.

The Revised Draft SASE recommends that the metals COCs in groundwater be addressed through a focused Feasibility Study (FS), in order to assess the implementation of Land Use Controls (LUCs) to address the risks. However, as EPA has noted during our discussions on this issue, LUCs alone are generally not an acceptable remedy for groundwater (See EPA's "Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration" at www.epa.gov/superfund/health/conmedia/gwdocs/pdfs/9283_1-33.pdf). Therefore, the FS would need to evaluate other groundwater remedies.

Once the human health risk assessment is revised to address other EPA and RIDEM comments and there is consensus on the COCs that warrant evaluation in the FS, the Navy should propose revisions to the 'Conclusions and Recommendations' section of the SASE to address an evaluation of naturally occurring metals in groundwater at the site and/or additional groundwater remediation alternatives to be evaluated in the FS.

If you have any questions, please contact me at (617) 918-1754 or at lombardo.ginny@epa.gov.

Sincerely,

Ginny Lombardo

Ginny Lombardo
Remedial Project Manager

cc: Pamela Crump, RI DEM
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EPA Comments on
Revised Draft Study Area Screening Evaluation,
Site 04 - Coddington Cove Rubble Fill Area
Naval Station Newport, Newport, Rhode Island
May 2012

HUMAN HEALTH RISK ASSESSMENT COMMENTS

1. Page 6-3, §6.1.1.1: The RSL website was recently updated and there are a few changes to the November 2011 version. Please revise the RSLs for those chemicals with changes (See "What's New" section of the website). The current RSL website can be found at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/.

2. Page 6-15, §6.2.2: Please note that the concept of random exposure across a plume and the use of 95%UCL are not applicable to groundwater exposure assessment since it is assumed that a future resident can place a single private well anywhere in the contaminated plume. Thus, for the groundwater RME exposure point concentration, EPA prefers use of the maximum detected concentration of each contaminant in any well or the highest average concentration of each contaminant across several rounds in the same well. Since the risks from groundwater exposure for industrial workers and future residents highly exceed the acceptable risk level (HI of 1), it would not make a difference in the risk results when using the maximum concentrations or the 95%UCL as EPCs. Thus, EPA accepts the use of 95%UCL in this case.

3. Tables 6-1 through 6-10: Using the current RSLs, there are updated toxicity values for methylene chloride, tetrachloroethene, and trichloroethene. Please revise the RSLs for these chemicals in these tables.

4. Table 6-24: Manganese in groundwater is also a COC for industrial workers. Please put an "X" in the column to indicate this.

ECOLOGICAL RISK ASSESSMENT

General Comments:

1. A Wetland Functions and Values Assessment was conducted in October 2011 to aid in the decision-making process for the ERA and a report was submitted in January 2012. A summary of the Assessment is presented in Section 2.5 of the Revised Draft SASE. However, there was no reference to this study or the results presented in Section 7 of the Revised Draft SASE. The results of this study, conducted to support the Ecological Risk Assessment, need to be brought into the discussion to support the conclusions of negligible risk to ecological communities at the site.

2. According to EPA Guidance (ERAGS, 1997), at the completion of a Screening-Level Ecological Risk Assessment (SERA), there is a Scientific/Management Decision Point (SMDP) when the risk manager needs to decide whether the information available is adequate to make a risk management decision. One possible decision at this point is that there is adequate information to conclude that ecological risks are negligible and therefore there is no need for remediation on the basis of ecological risk. However, at the end of the

Screening step for the site, the information as presented is not adequate to make such a decision, and the ecological risk assessment process needs to continue to Step 3. The Revised Draft SASE addressed this issue by providing significant additional site-specific information in Step 3A (COPC Refinement), and a functions and values assessment in Section 2.5. Based on a thorough evaluation of the potential risk identified in the SERA, there may be sufficient information available to allow EPA to support a decision that ecological risks are negligible. However, the information is not presented in a way that allows the EPA risk manager to clearly document both the basis for it this decision. In the case of the SASE, Section 7.4 re-evaluates the COPCs and eliminates COPCs based on various factors, but the methods used to conduct the refinement and organization of the information presented in Section 7.4 is insufficient to support a decision by EPA. Therefore, EPA requests that the SASE be revised to address the organization and presentation of the COPC refinement in accordance with the recommendations provided herein.

3. Data presented in the refinement (Section 7.4, TIER 2, Step 3A) should be organized into tables that clearly document why each COPC is eliminated and the basis for the elimination. The refinement for each COPC needs to be presented for each media/receptor according to the selected Measurement Endpoints.

   Attachment 1 (enclosed) presents a possible method of presenting a risk characterization in an interpretative risk matrix. For the data collected at the CCRF site, an evaluation of residual risk is not feasible since no site-specific data on background concentrations were collected during the investigation. However, a version of these tables, that present the COPCs that are identified in the SERA comparing RME (95% UCLs or maximum concentrations) and average concentrations (CTE) to both NOAEL and LOAEL benchmarks could be used and presented using the risk matrix. Any COPC that is below a Risk Scenario level of 4 could be eliminated from further evaluation. This scenario equates to risks that are above a NOAEL, but equal to, or below, a LOAEL. Those with Risk Scenario levels of 5 or 6 should be further evaluated to support a conclusion of negligible risk as described below. Such evaluation could utilize quantitative supporting information such as reasonable alternative benchmarks, or non-quantitative information such as the findings of the functions and values assessment.

   An alternative to this approach is to provide a series of tables for each media/receptor similar to those presented in the SASE, Section 7. These tables should include all COPCs that are identified in the SERA as presenting potential risk. The tables should present additional screening benchmarks, as appropriate, and a column noting what specific factors were used to eliminate the COPC as contributing negligible risk to receptors at the site. The priority and order of application of the factors must be systematic and consistent with the recommendations in General Comment 4, below.

4. In the Revised Draft SASE, Section 7.4, a group of factors were evaluated to determine if additional evaluation of risk was warranted. These factors included:

   - Magnitude of exceedance
   - Frequency of detection and spatial distribution
   - Bioavailability
   - Additional benchmarks

- Food chain modeling
- Background

However, the way the information is presented is not adequate for EPA to support a decision of negligible risk. The factors need to be applied systematically and in an order of priority that is acceptable to EPA. These need to be presented clearly in tables as indicated in General Comment 3, above.

EPA recommends the following factors be considered for each media/receptor group, as applicable, in the following order of priority:

- Background (when or if available for various media)
- Additional benchmarks or Food Chain Modeling (including LOAEL TRVs and LOAEL-based benchmarks)
- Magnitude of exceedance
- Bioavailability
- Frequency of detection and spatial distribution
- Evidence for COPC to have been uniquely enriched by site activity or evidence from distribution and fate and transport evaluations that indicate the COPC is not likely from a site-related source
- Habitat quality and potential for ecologically significant population-level effects on Receptors (supported by discussion of the functions and values assessment).

Many of these discussion points are presented in a very limited way in Section 7.4. Those COPCs that cannot be clearly eliminated based on background data, additional benchmarks (or foodchain modeling), magnitude of exceedance and bioavailability will require additional discussion. This discussion can be tied to the last three bullet items that evaluate the site-specific distribution, relationship to site waste, and habitat quality as it relates to risk to populations. As stated in previous comments from EPA, frequency of detection (FoD) should not be used in situations where there are fewer than 20 samples, because the threshold of 5% detection cannot be used with validity with smaller data sets. Consequently FoD in this instance is a supporting discussion point, but cannot be the sole reason for eliminating a COPC. FoD should be used to support the conclusion that the location and amount of habitat that potentially represents a risk to receptors is minor.

From these evaluations EPA must be able to determine whether or not contaminants from the site pose an ecological threat; if the ecological risks are negligible, the ERA is complete at this step. A lack of information on the toxicity of a contaminant or on complete exposure pathway would result in the decision to continue with a BERA. As stated above in General Comment 3, all of these screening or evaluation steps should be presented clearly in tables so that EPA has the documentation to support a decision.

SPECIFIC COMMENTS

1. Page 7-1, §7.1: Last sentence of the last paragraph of the section indicates that the flowchart showing the Tiered ERA Approach is included. This figure was included in the May 2011 Draft SASE, however, it was not included in the Revised Draft SASE. Please include this flowchart in Appendix I.

2. Page 7-4, §7.2.5: The third sentence refers to Figure 7-1. This figure was included in the May 2011 Draft SASE, however, it was not included in the Revised Draft SASE. Please edit the document to include this figure.

3. Page 7-14, §7.4: The third bullet indicates that the statistical analyses of background data are presented in Appendix H. As EPA pointed out in prior comments, sediment data cannot be compared to background soils data. Please clarify the characterization of each sample as either soil or sediment (See Specific Comment #12). In addition, either this section or Appendix H should reference the background study document and either provide a summary of the data or the dataset in an appendix. This paragraph also states that aluminum, arsenic, iron and mercury are eliminated as COPCs in sediment. If this decision was made based on a comparison to background soil it must be retracted. Otherwise, that decision should be presented and justified as to why the soil background data are applicable. Then if these COPCs can be screened out, present the results in a table (See General Comment 3), and no further analysis needs to be presented regarding these COPCs. The document must consistently evaluate samples as either soil or sediment. If these samples are considered soil, then the COPCs in the wetland soil should be compared to soil benchmarks, not sediment benchmarks.

4. Page 7-15, §7.4.1: First paragraph. This paragraph indicates that VOCs are not likely to present a significant risk to plants. Please revise the conclusion in this paragraph to state that VOCs were eliminated as COPCs for this endpoint (plant receptors), as the statement in the text implies that VOCs were eliminated from further evaluation for any receptor.

5. Page 7-15, §7.4.1: Third paragraph. Please expand on the argument that pesticide concentrations are indicative of typical pesticide applications. If there is evidence from location of the detections of pesticide and potential occurrence from off-site sources, include a more thorough discussion of why these COPCs are not likely site-related.

6. Page 7-15, §7.4.1: Fourth paragraph. Please clarify the reason why the location of maximum observed concentrations occurring in the fill area minimizes the impacts to plants. If this is because it represents a small area of impact, then please state this directly.

7. Page 7-15, §7.4.1: Fourth paragraph, last sentence. Here, and throughout the document, please avoid using the argument that the presence of vegetation indicates a lack of impacts on plants. The site is covered with invasive species; the presence of tolerant plants is not necessarily a good indicator that the contaminants are not affecting the plant communities.

8. Page 7-16 and 7-17, §7.4.1: Last paragraph starting on 7-16. Please clarify how the distribution of metals on the site represents a minimal impact to soil invertebrates. If this is because it represents a small area of impact and a minor affect on local populations, then please state this directly.

9. Page 7-17, §7.4.2: First paragraph of the Sediment section. Please provide support for the statement that the detections of acetone are likely related to laboratory contamination. A review of this issue was presented by the Navy in Response to EPA comment 7, from a Response to Comments dated April 2011. This information should be discussed or referenced to support the elimination of acetone.

10. Page 7-17, §7.4.2: First paragraph of the Sediment section. Please clarify and support the statement that VOCs are typically not very toxic to invertebrates.

11. Page 7-18, §7.4.2: Last paragraph. See specific comment 5 regarding the evidence that pesticide concentrations are indicative of typical pesticide applications.

12. Page 7-20, §7.4.2: Second paragraph. Please clarify the classification of samples as sediment or soil. If the areas of the site where the samples were taken are not normally inundated with water, these areas should have been evaluated as wetland soils. Sediments are defined as soil-like materials present beneath standing water for the majority of the year. Please confirm that the samples collected in 2004 were classified appropriately as sediments.

13. Page 7-21, §7.4.2: Additional discussion on alternative benchmark, toxicity and potential exposure to manganese should be included. Any data that would assist in evaluating the potential for the site to be a source to manganese in surface water, or potential for off-site sources should be included in the discussion.

14. Page 7-22, §7.4.3: In the first paragraph, please correct the reference to Section 7.3.6.

15. Table 7-6: Please verify the value of 7.5 for the EEQ for pyrene for Plants in Table 7-6. With a reported maximum soil concentration of 4,500 µg/kg (Table 7-6) and a selected Ecological Screening Level of 100 µg/kg (Table 7-2), the EEQ should be 45, not 7.5. Please check this value and confirm that this calculation and others provided in this table are correct.

16. Table 7-12: Please clarify why some COPCs showed risk in conservative models (Table 7-10) but were not included in the evaluation of the refined models presented in Table 7-12.

17. Appendix H. § 1: Paragraph 1. Please clarify the term "True Surface Soil". Please clarify what data were used to represent the site concentrations, and the source of the data for the background values used in the analysis.

Attachment 1

This method presents a systematic way to evaluate and rank risks based on NOAEL/LOAEL Toxicity Reference Values (TRVs) and Reasonable Maximum (RME) and Central Tendency (CTE) exposure scenarios. This is a generic approach that may be modified according to the type of data available for a given site.

Results are first tabulated as COPEC-specific Hazard Quotients (HQs) for those measurement endpoints which use exposure estimates and benchmarks (i.e., measurement endpoints based on food chain modeling or benchmarks)

COPEC-specific HQs are calculated as the exposure estimate (RME and CTE) divided by the benchmark (NOAEL and LOAEL benchmarks, or acute and chronic benchmarks for surface water [see further below]). This approach results in four separate HQs for each COPEC, ranging from "most conservative" HQ (RME/NOAEL) to "least conservative" HQ (CTE/LOAEL).

An HQ above 1.0 indicates that the exposure to a COPEC exceeds that COPEC's toxicity benchmarks. It does not mean that an effect will occur, but simply that the benchmark has been exceeded. An HQ below 1.0 indicates that the exposure falls below the benchmark.

Besides the HQ approach described above, it is also necessary to distinguish between risks posed by site-related COPEC concentrations and risks associated with background-related COPEC concentrations not attributable to the site. For this purpose, the results of a Residual Risk (RR) analysis are presented in the risk tables next to the results of the HQ analysis. RRs are calculated for each EU, receptor group, and COPEC by subtracting the background HQs from the site HQs. A RR above 1.0 quantifies the extent to which a background-adjusted site exposure for a COPEC exceeds that COPEC's benchmark. Note that RRs are typically smaller than HQs, but only when a COPEC concentration is available for the background samples. Otherwise, the RRs equal the HQs.

Two ranking schemes of possible risk outcomes and associated uncertainties were developed to help interpret the COPEC-specific HQ and RR values. The first ranking scheme (**Exhibit 1**) applies to the sediment benchmarks and the wildlife TRVs, all of which are based on NOAEL ("no effect) and LOAEL ("effect") values.

Exhibit 1 shows six risk scenarios, each associated with a confidence level. This matrix is applied to every COPEC for each receptor group at each exposure unit (EU). Hence, all CTEs and RMEs which can be divided by benchmarks are assigned a risk scenario depending on the outcome of the risk characterization. Risk scenarios 1 to 3 in **Exhibit 1** result in the overall conclusion that a COPEC is unlikely to have adverse population-level effects because its site HQs and RRs do not exceed a LOAEL benchmark. Conversely, risk scenarios 4 to 6 in **Exhibit 1** result in the overall conclusion that population-level effects are possible because a LOAEL benchmark is exceeded by one or both of the exposure scenarios (RME or CTE) for a COPEC. It is worth noting that the finding of possible risk in risk scenario 4 has a low degree of confidence so remedial decision-making is usually focused on scenarios 5 and 6. Also, the confidence level increases the more times a COPEC concentration exceeds its benchmarks. For example, a COPEC receives a risk scenario of 6 if both its RME and its CTE concentrations exceed both its NOAEL and LOAEL benchmarks.

In a BERA, the risk characterization discussion can focus on risk scenario 6 because it is the one most likely to result in actionable risk. It is also assumed that the risk associated with a CTE/LOAEL exceedance above 1 increases the more the CTE concentration exceeds the LOAEL benchmark. Hence, a CTE/LOAEL of 2 is considered less of a risk issue than a CTE/LOAEL of 30, even though both are classified as risk scenario 6 with a high level of confidence.

Exhibit 1: Interpretive Risk Matrix for sediment benchmarks, fish CBRs, and wildlife TRVs

Risk Scenario	No effect (NOAEL)		Effect (LOAEL)		Potential for Adverse Population-level Effects	Confidence Level
	RME	CTE	RME	CTE		
1	HQ ≤ 1	HQ ≤ 1	HQ ≤ 1	HQ ≤ 1	Adverse effects are unlikely	High
	RR ≤ 1	RR ≤ 1	RR ≤ 1	RR ≤ 1		
2	HQ > 1	HQ ≤ 1	HQ ≤ 1	HQ ≤ 1	Adverse effects are unlikely	Moderate
	RR > 1	RR ≤ 1	RR ≤ 1	RR ≤ 1		
3	HQ > 1	HQ > 1	HQ ≤ 1	HQ ≤ 1	Adverse effects are unlikely	Low
	RR > 1	RR > 1	RR ≤ 1	RR ≤ 1		
4	HQ > 1	HQ ≤ 1	HQ > 1	HQ ≤ 1	Adverse effects are possible	Low
	RR > 1	RR ≤ 1	RR > 1	RR ≤ 1		
5	HQ > 1	HQ > 1	HQ > 1	HQ ≤ 1	Adverse effects are possible	Moderate
	RR > 1	RR > 1	RR > 1	RR ≤ 1		
6	HQ > 1	HQ > 1	HQ > 1	HQ > 1	Adverse effects are possible	High (increase with higher HQs)
	RR > 1	RR > 1	RR > 1	RR > 1		

HQ = hazard quotient derived from dividing a site exposure (RME or CTE) by a benchmark (no effect or effect)
RR = residual risk derived by subtracting the background HQ from the site HQ

The second ranking scheme (**Exhibit 2**) follows the same general principles as outlined above but pertains specifically to the surface water benchmarks. It is deemed inappropriate to refer to chronic (or screening) benchmarks as no effect values and acute benchmarks as effect values. The reason is that both sets of values, if exceeded, are assumed to result in potential for toxicity. The difference between acute and chronic is in the exposure duration, not the presence or absence of a response. Hence, the focus of the surface water interpretative risk matrix is on the (more conservative) chronic benchmarks, even though HQs and RRs for the acute benchmarks are also included in the risk tables for additional context.

Exhibit 2: Interpretive Risk Matrix for surface water

Risk Scenario	Chronic Toxicity		Potential for Adverse Population-level Effects	Confidence Level
	RME	CTE		
1, 2 & 3	HQ ≤ 1	HQ ≤ 1	Adverse effects are unlikely	High
	RR ≤ 1	RR ≤ 1		
4 & 5	HQ > 1	HQ ≤ 1	Adverse effects are possible	Moderate
	RR > 1	RR ≤ 1		
6	HQ > 1	HQ > 1	Adverse effects are possible	High (increase with higher HQs)
	RR > 1	RR > 1		

HQ = hazard quotient derived from dividing an exposure (RME or CTE) by a chronic surface water benchmark
RR = residual risk derived from subtracting the background HQ from the site HQ

These two ranking schemes provide a coherent framework to distinguish among the multiple COPECs, benchmarks, EUs, receptors, and exposure scenarios (RME and CTE) at the site. They also help to identify and focus the discussion on those issues that have the highest potential for population-level adverse effects and the highest confidence in results (i.e., risk scenario 6).