



DEPARTMENT OF THE NAVY

NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
BUILDING 77L, U.S. NAVAL BASE
PHILADELPHIA, PENNSYLVANIA 19112-5094

IN REPLY REFER TO

5090
Ser 1634/1821/FK

4 MAY 1992

Mr. David Brayack
Project Manager
Halliburton NUS Environmental Corporation
661 Andersen Drive
Pittsburgh, PA 15220

Re: COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION REPORT FOR
THE NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NY

Dear Mr. Brayack:

This letter forwards NORTHNAVFACENCOM's review comments of the Draft Remedial Investigation Report for NWIRP Bethpage, New York. We are requesting that each comment be addressed in writing. To expedite this process, comments may be responded via phone conversation for Navy concurrence. Upon agreement by the Navy to your responses, the Draft Remedial Investigation Report should be revised accordingly and submitted by May 22, 1992.

If there are any other questions or concerns, please contact me at (215) 897-6432.

Sincerely,

A handwritten signature in cursive script that reads "Frank Klanchar".

FRANK KLANCHAR
Remedial Project Manager
By direction of the Commanding Officer

**NORTHNAVFACENGCOM Review Comments
on the
Draft Remedial Investigation Report
for
NWIRP Bethpage , NY**

Comments:

1. The results from the deep well sampling need to be included. Also, there are no tables that present the results of the analyses of the permanent monitoring wells. (JD)
2. There is almost no discussion of the quality of data . After the laboratory data is validated, such a discussion should be presented in the RI Report. (JD)
3. List the Laboratory Method Detection Limits (MDLs) and Contract Required Quantitation Limits (CRQL) in summary tables for the organic analyses and list the IDLs and CRDLs for the inorganic analyses in the RI Report. (JD)
4. Section 2-2 states that the soil-gas samples were analyzed in the field. This was changed during the course of the soil-gas survey. Explain why some samples has to be taken off-site. (JD)
5. The information presented in Section 1 and Table 2-1 lacks consistency:
 - a. PCB-filled transformers are discussed in Table 2-1 but are not mentioned in Section 1 of the report. Please clarify. If PCB-filled transformers were stored at any of the three sites, this should be addressed in Section 1.3. (JD)
 - b. Organic wastes are discussed in the "Rationale" for Site 2. In particular, the report states that "halogenated and nonhalogenated solvents...may have been present in the treatment plant waters and sludges" that were treated and discharged at Site 2. However, Section 1.3.3.2 does not discuss this. (JD)
6. Present a table summarizing the analytical methods used in this investigation (e.g. 3/90 CLP SOW for the soil analyses). Copy this from the RI Work Plan; include methodology for the field analyses. (JD)
7. Lines of equal concentrations are shown on Figure 2-2 and on other figures throughout the report. How were these lines generated? If software was used, describe the program. If any assumptions were made, state so. This comment also applies for the contour lines in the water level maps in Section 4. (JD)

8. Discuss the QA/QC for the soil-gas analyses in more detail. In particular, provide a QA/QC based rationale for analyzing "field control samples"--"To document the decontamination procedure" is a rather vague description of their purpose. Explain the implications of VOC detections in the "field control samples". Describe the "laboratory blanks" (e.g., their preparation and use). Discuss duplicate precision, the calibration of the field GC, etc. (JD)
9. Rewrite Section 2.6 based on the latest sampling of the deep wells. (JD)
10. Page 3-1 states that the Upper Glacial Formation is about 30-45 feet thick. However, page 3-5 states that the Upper Glacial Formation is 40-130 feet thick. Please clarify. (JD)
11. Section 3 is very well written. Figures 3-5 and 3-6 are difficult to read. Please enlarge them. (JD)
12. Discuss the TICs. For example, tentatively identified PCBs were found at all three of the sites. Explain how this relates to the detection of the PCBs Aroclor 1248 and Arochlor 1254, which were "identified in the surface from all three sites". (JD)
13. Section 6.1.1, 2nd paragraph, last sentence. It is not clear what is being said here, please illustrate. (JD)
14. Incorporate all appropriate comments generated from the response comments that will be sent to the TRC. (FK)
15. Revise the soil-gas figures for each of the sites to show the sample numbers at each location point. This was brought up during the TRC meeting by NYSDEC. (FK)
16. Expand on the recommendations for each site contained in the Executive Summary and in Chapter 7 to state that some data gaps were identified from this investigation and that there will be a Phase II Remedial Investigation to further characterize the extent of contamination. Keep consistent with the responses to NYSDEC, Grumman, and the Bethpage Water District. (FK)
17. Include a brief interpretation of the results provided by Grumman (Jan 1992) and describe how this information fills in our data gaps to the south. Include the isoconcentration maps showing organic contamination at the shallow and intermediate depths. (FK)

**COMMENTS ON DRAFT BASELINE RISK ASSESSMENT
FOR NAVAL WEAPONS INDUSTRIAL RESERVE PLANT, BETHPAGE, NY**

Prepared by: Halliburton NUS Environmental Corporation
Reviewed by: Kristen Wall, Biologist, Northern Division

<u>Page #:</u>	<u>Comment:</u>
ES-2	1. Please provide more information regarding the Grumman RI/FS and indicate whether or not the Navy will have access to that information for inclusion in our investigation.
ES-4	2. In the sixth paragraph please be more specific regarding which "engineering-type parameters" were measured.
General	3. Introductory information should be presented first, then more detailed information should be presented for each site individually.
ES-5	4. In the third paragraph please indicate what constitutes acceptable risk values (according to NCP).
ES-7	5. In the second paragraph please provide a reference to support the report that rinse water did not contain Chromates.
6-1	6. Under the second bullet item please include information on distinguishing non-carcinogens vs. carcinogens.
6-2	7. In the first sentence of section 6.1.1 please correct the verb tense.
6-2	8. In the second paragraph of section 6.1.1 please be more specific regarding which detection limit was used in cases of non-detect.
6-2	9. Please present an overview of data collection and usage. Also refer the reader to the appropriate section of the report where more detailed information can be found.
6-3	10. Regarding section 6.1.2 see comment #7 above.
6-4	11. Please provide information regarding how it was determined as to whether or not a compound was considered to be "naturally occurring".

<u>Page #:</u>	<u>Comment:</u>
6-4	12. Even if toxicity information is not available for some compounds they should be included as COCs if they meet all other criteria for selection. These chemicals should be addressed qualitatively in terms of potential health effects and included as part of the uncertainty analysis.
6-4	13. Please list those chemicals that were thought to be common laboratory contaminants and describe what criteria were used to eliminate them from the list of COCs.
6-4	14. Using DDT to represent all breakdown products is not valid if those breakdown products themselves have been detected in on-site media.
General	15. Please refer the reader to the appropriate section of the report in which information on site history can be found, since this information was used as a criterion for selection of COCs.
6-4	16. Low frequency of detection is not a valid rationale for eliminating Aluminum, Antimony and Cobalt from the list of COCs. Please provide more adequate justification or if none exists, include these contaminants as COCs.
General	17. The "hit tables" in section 4 (e.g. Table 4-11) should include a column with site specific and/or U.S. regional background concentrations.
6-6	18. The inorganic COC list appears to be incomplete. Please reconsider inclusion of such contaminants as Barium, Beryllium, Cadmium, Manganese and Lead. If they are not added please provide more adequate justification for their omission.
6-7	19. Section 6.1.2.3 is not the appropriate section to make determinations about the probability of pathway completion. This information should be contained only in the Exposure Assessment section.
6-10	20. Regarding the first paragraph see comment #13 above.
6-10	21. The information presented in the second paragraph should be included only as part of the uncertainty analysis.

<u>Page #:</u>	<u>Comment:</u>
6-10	22. Comparison to drinking water standards should not be the sole criterion for selection of COCs, especially since the mixture of compounds could generate a cumulative risk that exceeds acceptable levels.
6-10	23. In section 6.1.5 was any consideration given to possibility that inorganics in recharge basin sediment might impact future groundwater concentrations?
6-13	24. Please provide information to support the assumptions used for this model.
6-14	25. Section 6.2 "Toxicity Assessment" is incomplete. All toxicity information should be summarized in tables and located in Appendix I. An example has been enclosed which indicates what type of information should be provided in these tables. Also Toxicity Profiles should be included for all contaminants of concern selected for these sites.
6-18	26. Please indicate where RfD and SF information can be located in this report.
6-19	27. Weight of evidence for carcinogens was described but specific information for the chemicals of concern at these sites has not been presented.
General	28. Please provide demographic information on the base population as well the populations in nearby residential areas (e.g. numbers and average ages of individuals; presence of any sensitive subpopulations on or off site at facilities such as hospitals, day care centers or nursing homes).
6-28	29. Section 6.3.1 should include a table with present and future land use scenarios, as well as the potential exposure pathways for each site (see enclosed example).
6-28	30. Why wasn't a child/adult trespasser scenario considered at any of the sites?
6-28	31. Under section 6.3.1.2 the worker scenario should have included exposure via inhalation of particulates.

<u>Page #:</u>	<u>Comment:</u>
6-29	32. Section 6.3.2 - please remove the last sentence of paragraph 3. Children should be considered a sensitive subpopulation and all necessary calculations should be carried out in order to assure that the risk to their health is adequately assessed.
6-36	33. Please provide more specific information regarding how absorption factors were estimated.
6-39	34. In Table 6-15 "Professional judgement" is not adequate rationale for using 30 days as the Exposure Frequency. According to the new EPA guidance (March, 1991): "... exposure factors presented in this document are generally considered most appropriate and should be used in baseline risk assessments <u>unless alternate or site-specific values can be clearly justified by supporting data.</u> "
General	35. Please indicate to the reader which section of Appendix I contains the results of calculations for intake.
6-40	36. An "FI" of 0.1 is not a conservative assumption. Unless there is sufficient data to support the use of this value it should be assumed to be 1.0.
6-43	37. Please reference the appropriate section of the NCP from which this information was derived.
6-43	38. Please remove the sentence in paragraph 3 - see comment #32 above. Unless more adequate justification is provided for not calculating risk to children it should be done for all completed pathways under the residential scenario.
6-43	39. The information provided in the fourth paragraph should be included under a separate subsection entitled "Uncertainty Analysis". This section should contain a detailed assessment of uncertainties associated with all aspects of risk assessment (as outlined in section 8.4 of RAGS HHEM).
6-44	40. In section 6.4.1 the results discussed in the first paragraph are confusing and potentially misleading (i.e. "...indicating that adverse non-carcinogenic health effects would not be expected for <u>this pathway under these conditions</u> "). Please be sure to specify which scenarios and exposure pathways are being discussed.

<u>Page #:</u>	<u>Comment:</u>
6-46	41. The second paragraph correctly states that "When the Hazard Indices exceed 1.0, consideration of the chemicals' effects on different target organs may be warranted". Why was this kind of comparison not carried out? At the very least information should have been presented regarding which target organs these chemicals are known to effect (see comment #26 above). The information presented in the remaining portion of the paragraph is not adequate to assess cumulative effects to specific organs. Also the statement about risk due to inorganics belongs in the Uncertainty Analysis subsection.
General	42. Please present the risk due to dermal exposure separately from that due to ingestion. Risk can then be summed for appropriate media (e.g soil or groundwater) and presented in a separate table.
General	43. Please clearly label the site number at the top of each table (e.g. Table 6-19).
6-51	44. The information presented in the last two sentences of the second paragraph should have been included in the Uncertainty Analysis subsection (see comment #40 above).
6-57	45. In the second paragraph of section 6.4.5 please be more specific regarding which VOCs and metals pose a non-carcinogenic health threat.
6-63	46. Section 6.5 does not constitute a qualitative risk assessment and should not be included in this document. This information would be better suited for inclusion in a subsequent Feasibility Study document for use in developing preliminary remediation goals (see EPA Risk Assessment Guidance for Superfund, Human Health Evaluation Manual, Part B "Development of Risk-Based Preliminary Remediation Goals", 12/91).
6-69	47. Section 6.6 is inadequate. EPA guidance should have been followed such that more detailed information was presented in an appropriate format.
Appendix I	48. It is unusual to see rough calculations done by hand included in a final report. It is preferable to present this kind of information in clear, concise spreadsheets which enable the reader to determine how calculations were carried out.

<u>Page #:</u>	<u>Comment:</u>
Appendix I	49. Section 11 - for calculating the upper 95% confidence limit of the mean 1/2 the <u>sample quantitation limit</u> not the CRDL should have been used for non-detects. In some cases it is even appropriate to use the SQL itself. (For more specific guidance see Section 5.3 of RAGS HHEM and p.90 of the EPA Guidance for Data Useability in Risk Assessment).
Appendix I	50. Section 12 - the note at the bottom of the first table regarding ED and LT is misleading. Please revise the table to indicate that for carcinogens $AT = 365 * 70$ while for non-carcinogens $AT = 365 * ED$.
Appendix I	51. Please explain how and why the time weighted dose values were calculated for section 12.
Appendix I	52. Section 12 - it is not acceptable to use oral slope factors for carcinogens which are known to cause skin cancer via direct dermal contact (e.g. Benzo(a)pyrene).
Appendix I	53. Section 12 - were toxicity values for dermal exposure adjusted to reflect absorbed vs. administered dose (see RAGS HHEM, Appendix A)?

TABLE F.1-3
SUMMARY OF TOXICITY VALUES ASSOCIATED WITH NONCARCINOGENIC-CHRONIC EFFECTS: ORAL

COMPOUND NAME	CHRONIC RFD (ORAL) (mg/kg/day)	CONFIDENCE LEVEL	CRITICAL EFFECT	ORAL RFD BASIS/SOURCE	UNCERTAINTY AND MODIFYING FACTORS
INORGANICS					
Aluminum	NA			NA/IRIS,HEAST	
Antimony	4E-04	Low	Longevity,blood glucose and cholesterol	Water/IRIS,HEAST	UF = 1000; MF = 1
Arsenic	1E-03		Keratinosis and hyperpigmentation	Diet/HEAST	UF = 1
Barium	7E-02	Medium	None observed	Water/IRIS	UF = 3; MF = 1
Beryllium	6E-03	Low	None observed	Water/IRIS,HEAST	UF = 100; MF = 1
Cadmium	1E-03	High	Proteinuria	Diet/IRIS,HEAST	UF = 10; MF = 1
Calcium	NA			NA/IRIS,HEAST	
Chromium VI	6E-03	Low	No effects observed	Water/IRIS,HEAST	UF = 500; MF = 1
Cobalt	NA			NA/IRIS,HEAST	
Copper	4E-02		Local GI irritation	NA/HEAST	UF = NA
Cyanide	2E-02	Medium	Weight loss,thyroid effects,myelin degeneration	Diet/IRIS	UF = 100; MF = 5
Iron	NA			NA/IRIS,HEAST	
Lead	NA		Neurobehavioral effects	NA/IRIS,HEAST	
Magnesium	NA			NA/IRIS,HEAST	
Manganese	1E-01	Medium	CNS effects	Diet/IRIS,HEAST	UF = 1; MF = 1
Mercury	3E-04		Kidney effects	Oral/HEAST	UF = 1000
Nickel	NA			NA/IRIS,HEAST	
Potassium	NA			NA/IRIS,HEAST	
Selenium	6E-03	Medium	Clinical selenosis	Diet/IRIS	UF = 3; MF = 1
Silver	3E-03	Medium	Argyria	Oral/IRIS,HEAST	UF = 2; MF = 1
Sodium	NA			IRIS,HEAST	
Thallium	7E-05		Increased SGOT and serum LDH levels,alopecia	Diet/HEAST	UF = 3000
Vanadium	7E-03		None observed	Water/HEAST	UF = 100
Zinc	2E-01		Anemia	Therap/HEAST	UF = 10
VOLATILES					
1,1-Dichloroethane	1E-01		None observed	Inhal/HEAST	UF = 1000
1,1-Dichloroethene	9E-03	Medium	Hepatic lesions	Water/IRIS	UF = 1000; MF = 1
1,1,1-Trichloroethane	9E-02	Medium	No adverse effect	Inhal/IRIS	UF = 1000; MF = 1
1,1,2-Trichloroethane	4E-03	Medium	Clinical serum chemistry	Water/IRIS	UF = 1000; MF = 1
1,1,2,2-Tetrachloroethane	NA			NA/IRIS,HEAST	
1,2-Dichloroethane	NA			NA/IRIS,HEAST	
1,2-Dichloroethene (cis)	1E-02		Decreased hematocrit and hemoglobin	Gavage/HEAST	UF = 3000
1,2-Dichloropropane	NA			NA/IRIS,HEAST	
1,3-Dichloropropane (Trans)	3E-04	Low	Increased organ weight (kidney)	Diet/IRIS	UF = 10,000; MF = 1
1,3-Dichloropropane (Cis)	3E-04	Low	Increased organ weight (kidney)	Diet/IRIS	UF = 10,000; MF = 1
2-Hexanone	NA			NA/IRIS,HEAST	
2-Butanone	5E-02	Medium	Fetotoxicity	Inhal/IRIS	UF = 1000
4-Methyl-2-Pentanone	5E-02		Liver and kidney effects	Gavage/HEAST	UF = 1000
Acetone	1E-01	Low	Increased liver and kidney weight	Gavage/IRIS	UF = 1000; MF = 1
Benzene	NA			NA/IRIS,HEAST	
Bromodichloromethane	2E-02	Medium	Renal cytomegaly	Gavage/IRIS	UF = 1000; MF = 1
Bromoform	2E-02	Medium	Hepatic lesions	Gavage/IRIS	UF = 1000; MF = 1
Bromomethane	1.4E-03		Hyperplasia of forestomach epithelium	HEAST	UF = 100
Carbon disulfide	1E-01	Medium	Fetal toxicity	Inhal/IRIS	UF = 100; MF = 1
Carbon tetrachloride	7E-04	Medium	Liver lesions	Gavage/IRIS	UF = 1000; MF = 1
Chlorobenzene	2E-02	Medium	Liver and kidney effects	Oral/IRIS,HEAST	UF = 1000
Chloroethane	NA			NA/IRIS,HEAST	
Chloromethane	NA			NA/IRIS,HEAST	
Chloroform	1E-02	Medium	Fatty cysts formation in liver	Oral/IRIS	UF = 1000; MF = 1
Dibromochloromethane	2E-02	Medium	Hepatic lesions	Gavage/IRIS	UF = 1000; MF = 1
Ethylbenzene	1E-01	Low	Liver and kidney toxicity	Oral/IRIS,HEAST	UF = 1000; MF = 1
Methylene chloride	6E-02	Medium	Liver toxicity	Water/IRIS	UF = 100; MF = 1
Styrene	2E-01	Medium	RBC and liver effects	Oral/IRIS	UF = 1000; MF = 1
Tetrachloroethene	1E-02	Medium	Hepatotoxicity,weight gain	Gavage/IRIS	UF = 100; MF = 1
Toluene	2E-01	Medium	Changes in liver and kidney weights	Gavage/IRIS	UF = 1000; MF = 1
Trichloroethene	NA			NA/IRIS,HEAST	
Vinyl acetate	1		No effect on body and kidney weight	Water/HEAST	UF = 100
Vinyl chloride	NA			NA/IRIS,HEAST	
Xylenes	2E+0	Medium	Hyperactivity,decreased body weight,increased mortality	Gavage/IRIS	UF = 100; MF = 1

(a) - Value derived from data for Gamma-Chlordane.

(b) - Value derived from data for Endosulfan (a mixture of Endosulfan I and II).

(c) - Region 1 guidance suggests the use of Naphthalene Rfd for all PAHs without an Rfd

TABLE F.1-5
SUMMARY OF TOXICITY VALUES ASSOCIATED WITH CARCINOGENIC EFFECTS: ORAL

COMPOUND NAME	SLOPE FACTOR (SF) ORAL (mg/kg/day) ⁻¹	WEIGHT-OF EVIDENCE CLASS	TYPE OF CANCER	SF BASIS/SOURCE
INORGANICS				
Aluminum	NA	D		NA/IRIS,HEAST
Antimony	NA			NA/IRIS,HEAST
Arsenic	1.75	A	Skin	IRIS
Barium	NA			NA/IRIS,HEAST
Beryllium	4.5E+0	B2	gross tumors, all sites combined	Water/IRIS
Cadmium	NA			NA/IRIS,HEAST
Calcium	NA			NA/IRIS,HEAST
Chromium VI	NA			NA/IRIS,HEAST
Cobalt	NA	D		NA/IRIS,HEAST
Copper	NA	D		NA/IRIS,HEAST
Cyanide	NA	D		NA/IRIS,HEAST
Iron	NA			NA/IRIS,HEAST
Lead	NA	B2	Renal tumors	Oral/IRIS
Magnesium	NA			NA/IRIS,HEAST
Manganese	NA	D		NA/IRIS,HEAST
Mercury	NA	D		NA/IRIS,HEAST
Nickel	NA			NA/IRIS,HEAST
Potassium	NA			NA/IRIS,HEAST
Selenium	NA	D		NA/IRIS,HEAST
Silver	NA	D		NA/IRIS,HEAST
Sodium	NA			NA/IRIS,HEAST
Tinellium	NA			NA/IRIS,HEAST
Vanadium	NA			NA/IRIS,HEAST
Zinc	NA			NA/IRIS,HEAST
VOLATILES				
1,1-Dichloroethane	NA	C	Mammary gland,hemangiosarcoma,liver	NA/IRIS,HEAST
1,1-Dichloroethene	6E-01	C	Adrenal pheochromocytomas	Oral/IRIS
1,1,1-Trichloroethane	NA	D		NA/IRIS,HEAST
1,1,2-Trichloroethane	5.7E-02	C	Hepatocellular carcinoma	Gavage/IRIS
1,1,2,2-Tetrachloroethane	2.0E-1	C	Hepatocellular carcinoma	Gavage/IRIS
1,2-Dichloroethane	0.1E-02	B2	Hemangiosarcoma	Gavage/IRIS
1,2-Dichloroethene	NA			NA/IRIS,HEAST
1,2-Dichloropropene	0.8E-02	B2	liver	Gavage/HEAST
1,3-Dichloropropene (Trans)	1.8E-01	B2	Fore stomach,liver,adrenal,thyroid	Gavage/HEAST
1,3-Dichloropropene (Cis)	1.8E-01	B2	Fore stomach,liver,adrenal,thyroid	Gavage/HEAST
1,2-Hexanone	NA			NA/IRIS,HEAST
1,2-Butanone	NA	D		NA/IRIS,HEAST
1,4-Methyl-2-Pentanone	NA			NA/IRIS,HEAST
Acetone	NA	D		NA/IRIS,HEAST
Benzene	2.9E-02	A	Leukemia	Occupational/IRIS
Bromodichloromethane	1.3E-01	B2	Hepatocellular carcinoma	Gavage/IRIS
Bromoform	7.9E-03	B2	Neoplastic lesions in large intestine	Gavage/IRIS
Bromomethane	NA	B2		NA/IRIS,HEAST
Carbon disulfide	NA			NA/IRIS,HEAST
Carbon tetrachloride	1.3E-01	B2	Hepatocellular carcinomas	Oral/IRIS
Chlorobenzene	NA	D		NA/IRIS,HEAST
Chloroethane	1.0	A	Lung	Diet/HEAST
Chloromethane	1.3E-2	C	Kidney	Inhalation/HEAST
Chloroform	0.1E-03	B2	Kidney tumors	Oral/IRIS
Dibromochloromethane	8.4E-02	C	Hepatocellular adenoma or carcinoma	Gavage/IRIS
Ethylbenzene	NA	D		NA/IRIS,HEAST
Methylene chloride	7.5E-03	B2	Hepatocellular carcinomas, neoplastic nodules	Water/IRIS
Styrene	3E-02	B2	Lung and bronchi	Gavage/HEAST
Tetrachloroethene	5.1E-02	B2	Liver	Gavage/HEAST
Toluene	NA	D		NA/IRIS,HEAST
Trichloroethane	1.1E-02	B2	Liver	Gavage/HEAST
Vinyl acetate	NA			NA/IRIS,HEAST
Vinyl chloride	1.9	A	Lung	Diet/HEAST
Xylenes	NA	D		NA/IRIS,HEAST

(a) - Value derived from data for benzo(a)pyrene
(b) - Value derived from data for Gamma-Chlordane.
(c) - Value derived from data for Aroclor-1260.

TABLE 1
MATRIX OF POTENTIAL EXPOSURE PATHWAYS

<u>Potentially Exposed Population</u>	<u>Potential Exposure Route and Exposure Point</u>	<u>Potential Pathway Selected for Evaluation</u>	<u>Reason for Selection or Exclusion</u>	<u>Data Needs (Groundwater, Surface water, Sediment, Soil, Air)</u>
Current Land Use On-Site				
Occupational				
Groundwater				
	Groundwater ingestion	No	There is no use of groundwater on-site by site personnel.	
	Dermal contact with groundwater	No	There is no use of groundwater on-site by site personnel.	
Surface Water				
	Surface water ingestion	Yes	There is the potential for ingestion of surface water on-site by site personnel.	Surface Water Quality Near Outfalls
	Dermal contact with surface water	Yes	There is the potential for contact with surface water on-site by site personnel.	
Sediment				
	Incidental ingestion of sediment	No	There is no ingestion of sediment by site personnel.	
	Dermal contact with sediment	No	There is no dermal contact with sediment by site personnel.	
Air				
	Inhalation of vapor phase chemicals	No	The outfalls are located below the river level.	
	Inhalation of particulates	No	Soil is not a media of concern. Waste outfalls do not impact soils.	