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NAS PENSACOLA  
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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION RESPONSE TO TECHNICAL  
COMMENTS FOR SITE 2 OPERABLE UNIT 3 (OU3) WATERFRONT SEDIMENTS NAS  
PENSACOLA FL  
4/29/2004  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

**Responses to Technical Comments**  
**National Oceanic and Atmospheric Administration**  
**Site 2 (Operable Unit 3), Waterfront Sediments, NAS Pensacola**  
**Dated April 29, 2004**

**Comment 1: Sediment bioassays should be added to Alternative 4: Long Term Monitoring.**

**In assessing the Long-Term Effectiveness and Permanence of Alternative 4 (§3.2.4), the report states that "toxicity could decrease with time". To assess this directly, add toxicity tests to the Long Term Monitoring Alternative. Assessing toxicity directly and not relying solely on sediment chemistry is especially important because, as the RI Addendum notes, often there is poor correlation between sediment chemistry and sediment toxicity. This is most likely due to differences in contaminant bioavailability in Site 2 sediments (e.g., presence of paint chips, varying levels of organic carbon and acid-volatile sulfides).**

Response:

In Section 2.4.1, the following text was added to the list of activities for each monitoring event: "10-day *Leptocheirus plumulosus* and 7-day *Mysidopsis bahia* sediment bioassays to evaluate changes in sediment toxicity." In Appendix B, a cost item (Reference No. 510) was added as a surrogate cost estimate for these analyses ("Saltwater Chronic Toxicity Bioassay Analysis," ECHOS 2001, 33 02 1905, \$2,668/ea). Appropriate cost changes were made to Tables 2-4, Section 3.2.4 cost section, and Table 4-1.

**Comment 2: Unless there is a compelling reason to do so, backfilling should be eliminated from Alternative 3: Dredging.**

**Cost breakouts in Table B-3 indicate considerable resources are proposed for backfilling (~\$316,000) after dredging 2 Decision Units. Eliminating the backfilling step would save the U.S. Government a considerable sum of money and lower the Total Net Present Worth of Alternative 3 from \$1,283,000 to approximately \$761,000 (Table 4-1).**

Response:

Sediment is dredged to 1 foot to remove the excess ecological risks. In the 2000 RI, sediment samples were collected from the surface (0 to 6 inches) and the subsurface (6 to 30 inches). There was incomplete recovery in the seven subsurface samples. In preparing the samples, the top 6 inches of sample were removed, and the remaining consolidated sample was analyzed as a single interval. A subsurface sample was not collected from DU08 because of sampler refusal. In the subsurface sample collected from DU11, the effects-based HQ exceeded 1 for the following COPCs: arsenic, copper, lead, mercury, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, phenanthrene, pyrene, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, endrin, gamma-BHC (lindane), and gamma-chlordane. This indicates that contamination may be worse below the surficial sediments. Sedimentation studies have not been performed. In the long-term sediment monitoring alternative, it is proposed that sediment cores be collected, Cs-137 age-dated, and analyzed for COPCs. This would give an indication of the depth of legacy contamination and the sedimentation rates. Without knowledge of the depth of contamination, the most appropriate response may be to hydraulically dredge the top 1 foot of sediment to reduce the excess ecological effects and then to backfill the dredged area with clean fill.

In Section 2.3.1, the following text was added:

"The dredging and offsite disposal alternative also includes the placement of offsite sand as a replacement cover. Replacement cover is needed because deeper sediments (>1-foot) may also exceed ecological risks because of the burial of legacy contamination. For example, in the deep sediment sample collected from DU11, the effects-based hazard quotient exceeded 1 for several PAHs, pesticides, and metals. In DU08, a deep sediment sample was not collected because of core sampler refusal."

The remainder of the Draft Site 2 FFSA report was modified to emphasize that underlying sediments may pose long-term risk. For example, in the Section 3.2.3 long-term risk section, the following sentence was added: "Although dredging may expose additional ecological risks from potentially contaminated underlying sediments, these sediments would be covered with a 12-inch sand replacement cover."

#### **Other Comments**

**§1.2.1 Text suggests Site 2 is "recovering". Rather than "recovering", multiple lines of evidence suggest the sediments at Site 2 have probably reached an equilibrium (see detailed explanation in NOAA's April 7, 2003 comments on RI Addendum).**

Section 1.2.1 did not address the contaminant trends of Site 2 sediment. In Section 4.1.1 ("Overall Protection of Human Health and the Environment"), the following statement was made: "...from multiple lines of evidence gathered it was concluded that the Site 2 area is recovering from past NAS Pensacola activities." This statement was removed because this statement is not necessary and insufficient data exist to make this determination. The 1996 and 2000 data are not comparable. The 1996 data consisted of discrete grab samples collected to delineate sediment contamination; whereas the 2000 data consisted of 3-point composite samples used for response action decision-making for several 150-foot by 150-foot grid cells. The 2000 data was also not collected from the same locations as the 1996 data.

**§2.1 The text does not explain why the No-Action Alternative will cost \$45,000.**

Section 2.1.2 states that "the NCP requires any alternative which leaves contamination onsite to be reevaluated every 5 years to ensure adequacy of the alternative." The CFR citation, 40 CFR §300.430(f)(4)(ii), was added to the text. Although the details of the reevaluations are not specific, the NCP requires the lead agency to consider any new information or points of view expressed by the state (or support agency) and community during the public comment period (40 CFR §300.430[f][4][i]). Because of the lack of specificity, a detailed cost estimate cannot be established and is not appropriate for this document. However, the cost of the 5-year lead agency review is estimated in Section 2.1.4, where it is stated that "the cost for this review is estimated at \$10,000 per event..." The \$45,000 cost for the no-action alternative is the present value of the fully-loaded \$10,000 cost in years 0, 5, 10, 15, 20, 25, and 30.

**§2.3 For Alternative 3, it was assumed that all excavated material will be transported to a Subtitle D Landfill rather than be used as fill material on base. Is this a reasonable assumption given what we know about the expected level of contamination?**

In the attached table, the analytical results of samples SD00801 (DU08 surface sediment), SD01101 (SD11 surface sediment), and SD01102 (SD11 subsurface sediment) are compared to FDEP residential and commercial/industrial (C/I) soil cleanup target levels (SCTL) and RCRA universal treatment standards (UTS). This table was not added to the text. The comparison of the analytical results with these standards can be used to assess the disposal criteria for the dredged sediments.

The dredged sediments are not characteristic of hazardous waste and are presumed to not include listed hazardous waste. If the sediments are determined to contain listed hazardous waste above health-based limits, the dredged sediment would be hazardous waste because of the contained-in policy. As shown in the attached table, SD00801 had residential SCTL exceedances for arsenic, vanadium, and benzo(a)pyrene and C/I SCTL exceedances for arsenic. SD01101 and SD01102 had residential SCTL exceedances for arsenic, vanadium, benzo(a)pyrene, and dibenzo(a,h)anthracene and C/I SCTL exceedances for arsenic. FDEP's August 21, 2002 Memorandum on "Management of Contaminated Media under RCRA" explicitly states that the health-based limits are residential SCTLs.

Hazardous waste would be subject to LDRs. Because none of the nonmetal COPCs in the DU08 and DU11 samples exceeded 10 x UTS (40 CFR §268.48), they would not exceed LDRs. Because TCLP tests were not performed for metal COPCs, the leached metal concentration is assumed to be 20 x the soil concentration (max leaching assumption). Using the maximum leaching assumption, lead equals 10 x UTS in DU11 and may require treatment prior to land disposal. If LDRs are exceeded for hazardous waste, the dredged sediments could be disposed in an onsite treatment CAMU. If the sediments are determined to not contain listed hazardous waste, the dredged sediments would not be subject to RCRA Subtitle D regulations and may be disposed offsite at a Class I landfill or possibly disposed on-site and capped. The excavated sediments would not be suitable as fill material on base because the sediments exceed health-based limits. Onsite capping of excavated sediments was not evaluated in this FFS.

The following text was added in Section 2.3:

"Although nonhazardous dredge spoils that do not exceed FDEP residential soil cleanup target levels may be used as onsite fill material, this potential cost savings option is not considered in this alternative. The composite surface sediment samples from DU08 and DU11 exceed several FDEP residential soil target cleanup levels; specifically arsenic, vanadium, and benzo(a)pyrene in DU08 and arsenic, vanadium, benzo(a)pyrene, and dibenzo(a,h)anthracene in DU11. Although the only FDEP commercial/industrial soil cleanup target level exceedance in DU08 and DU11 was arsenic, FDEP guidance explicitly states that residential soil cleanup target levels should be used to determine whether remediation waste is hazardous via the contained-in rule ("Management of Contaminated Media under RCRA" memorandum, August 21, 2002).

Additionally, land disposal restrictions were not exceeded for non-metal COPCs in the DU08 and DU11 surface sediment composite samples. Because leachability tests were not performed, land disposal restrictions for metal COPCs are inconclusive. Assuming a maximum leachability (i.e., leached concentration is 20 times soil concentration), lead equals 10 x UTS in DU11 and no metals exceed LDRs in DU08. The viability using dredged material as onsite fill material would need to be further evaluated and may be contingent of post-dredging sample results."

**§3.1 The 9 criteria for evaluating remedial alternatives should be presented in the same order as they appear in the NCP and in §4.0; i.e., Threshold Criteria, then Balancing Criteria, then Modifying Criteria.**

The CFR citation (40 CFR §300.430[e][9][iii]) was referenced in Section 3.1 and the nine criteria were ordered in the same order as discussed in the CFR. The description of "overall protection of human health and the environment" (now Section 3.1.1) was rewritten so that it more closely resembles the CFR citation, as opposed to being a "final check" of adequacy. In the Executive Summary and Sections 3.2.1, 3.2.2, 3.2.3, and 3.3.4, the nine criteria were reordered to comply with the NCP. In Section 4.3, the modifying criteria were clarified by specifying "state and community acceptance."

**NAS Pensacola Site 2 FFSA Sediment Samples in DU08 and DU11**

**Comparison of Analytical Results with FDEP Human Health and Universal Treatment Standards for Disposal Considerations**

Sample ID	COPC	Conc (mg/kg)	FDEP Soil Cleanup Target Levels		Universal Treatment Standards (mg/l) TCLP for metals; otherwise mg/kg)	FDEP Soil Cleanup Target Levels Exceedance		10 x Universal Treatment Standards Exceedance
			Residential (mg/kg)	Commercial/Industrial (mg/kg)		Residential	Commercial/Industrial	
<b>SD00801</b>	<b>Metals</b>							<b>Max leaching assumed for metals</b>
	Aluminum	6600	72000	NP	NP			
	Antimony	0.26	26	240	1.15			
	Arsenic	6.9	0.8	3.7	5	Yes	Yes	
	Barium	13	110	87000	21			
	Beryllium	0.38	120	800	1.22			
	Cadmium	0.17	75	1300	0.11			
	Calcium	22000	NP	NP	NP			
	Chromium	19	210	420	0.6			
	Cobalt	2.3	4700	110000	NP			
	Copper	8.8	110	76000	NP			
	Cyanide	ND	30	39000	590			
	Iron	11000	23000	480000	NP			
	Lead	17	400	920	0.75			
	Magnesium	4100	NP	NP	NP			
	Manganese	220	1600	22000	NP			
	Nickel	6.1	110	28000	11			
	Potassium	1200	NP	NP	NP			
	Selenium	1.3	390	10000	5.7			
	Silver	ND	390	9100	0.14			
	Sodium	12000	NP	NP	NP			
	Thallium	0.093	NP	NP	0.2			
	Tin	0.769	44000	660000	NP			
	Total Mercury	0.044	3.4	26	0.025			
	Vanadium	23	15	7400	1.6	Yes		
	Zinc	34	23000	560000	4.3			
<b>SD00801</b>	<b>PAHs</b>							
	2-Methylnaphthalene	0.076	80	560	NP			
	Acenaphthene	0.23	1900	18000	3.4			
	Acenaphthylene	0.37	1100	11000	3.4			
	Anthracene	0.042	18000	260000	3.4			
	Benzo(a)anthracene	0.21	1.4	5	3.4			
	Benzo(b)fluoranthene	0.57	1.4	4.8	6.8			
	Benzo(g,h,i)perylene	0.2	2300	41000	1.8			
	Benzo(k)fluoranthene	0.14	15	52	6.8			
	Benzo(a)pyrene	0.24	0.1	0.5	3.4	Yes		
	Chrysene	0.38	140	450	3.4			
	Dibenzo(a,h)anthracene	0.056	0.1	0.5	8.2			
	Fluoranthene	0.57	2900	48000	3.4			
	Fluorene	0.029	2200	28000	3.4			
	Indeno(1,2,3-cd)pyrene	0.23	1.5	5.3	3.4			
	Napthalene	0.16	40	270	5.6			
	Phenanthrene	0.14	2000	30000	5.6			
	Pyrene	0.56	2200	37000	8.2			
	1-methylnaphthalene	0.065	68	470	NP			
	Dibutyl tin	0.00036	NP	NP	NP			
	Monobutyl tin	0.00022	NP	NP	NP			
	Tetrabutyl tin	ND	NP	NP	NP			
	Tributyl tin	0.00057	NP	NP	NP			

**NAS Pensacola Site 2 FFSA Sediment Samples in DU08 and DU11**

**Comparison of Analytical Results with FDEP Human Health and Universal Treatment Standards for Disposal Considerations**

Sample ID	COPC	Conc (mg/kg)	FDEP Soil Cleanup Target Levels		Universal Treatment Standards (mg/l) TCLP for metals; otherwise mg/kg)	FDEP Soil Cleanup Target Levels Exceedance		10 x Universal Treatment Standards Exceedance
			Residential (mg/kg)	Commercial/Industrial (mg/kg)		Residential	Commercial/Industrial	
<b>SD00801</b>	<b>Pesticides</b>							
	4,4'-DDD (P, P'-DDD)		4.6	18	0.87			
	4,4'-DDE (P,P'-DDE)		3.3	13	0.87			
	4,4'-DDT (P, P'-DDT)	0.0018	3.3	13	0.87			
	Aldrin		0.07	0.3	0.066			
	Alpha BHC		0.2	0.5	0.066			
	<b>Alpha Chlordane /2</b>		3.1	12	0.26			
	Beta-BHC		0.6	2.1	0.066			
	Delta-BHC		22	420	0.066			
	Dieldrin		0.07	0.3	0.13			
	Endosulfan I (alpha)		<b>410</b>	<b>6700</b>	0.066			
	Endosulfan II (beta)		<b>410</b>	<b>6700</b>	0.13			
	Endosulfan sulfate		<b>410</b>	<b>6700</b>	0.13			
	Endrin		<b>21</b>	<b>340</b>	0.13			
	Endrin aldehyde		<b>21</b>	<b>340</b>	0.13			
	Endrin ketone		<b>21</b>	<b>340</b>	NP			
	Gamma-BHC (lindane)		0.7	2.2	0.066			
	<b>Gamma - chlordane</b>		3.1	12	0.26			
	Heptachlor		0.2	0.9	0.066			
	Heptachlor epoxide		0.1	0.4	0.066			
	Methoxychlor		370	7500	0.18			
	PCB-1016 (arochlor 1016)		0.5	2.1	NP			
	PCB-1221 (arochlor 1221)		0.5	2.1	NP			
	PCB-1232 (arochlor 1232)		0.5	2.1	NP			
	PCB-1242 (arochlor 1242)		0.5	2.1	NP			
	PCB-1248 (arochlor 1248)		0.5	2.1	NP			
	PCB-1254 (arochlor 1254)		0.5	2.1	NP			
	PCB-1260 (arochlor 1260)		0.5	2.1	NP			
	Toxaphene		1	3.7	2.6			
<b>SD00801</b>	<b>SVOCs</b>							
	4-Nitroaniline	1.9	NP	NP	14			
	Benzaldehyde	0.77	2200	18000	10			
	Benzo(b)fluoranthene	0.12	1.4	4.8	6.8			
	Benzo(k)fluoranthene	0.13	15	52	6.8			
	Benzo(a)pyrene	0.11	0.1	0.5	3.4	Yes		
	Bis(2-ethylhexyl)phthalate	0.97	76	280	NP			
	Chrysene	0.078	140	450	3.4			
	Fluoranthene	0.1	2900	48000	3.4			
	Pyrene	0.15	2200	37000	8.2			
	4-nitrophenol	ND	390	4400	13			
	Acenaphthene	ND	1900	18000	3.4			
	Anthracene	ND	18000	260000	3.4			
	Benzo(a)anthracene	ND	1.4	5	3.4			
	Bis(2-chloroisopropyl)ether	ND	4.4	7.3	7.2			
	Indeno(1,2,3-cd)pyrene	ND	1.5	5.3	3.4			
	Phenanthrene	ND	2000	30000	5.6			

**NAS Pensacola Site 2 FFSA Sediment Samples in DU08 and DU11**

**Comparison of Analytical Results with FDEP Human Health and Universal Treatment Standards for Disposal Considerations**

Sample ID	COPC	Conc (mg/kg)	FDEP Soil Cleanup Target Levels		Universal Treatment Standards (mg/l) TCLP for metals; otherwise mg/kg)	FDEP Soil Cleanup Target Levels Exceedance		10 x Universal Treatment Standards Exceedance
			Residential (mg/kg)	Commercial/Industrial (mg/kg)		Residential	Commercial/Industrial	
<b>SD01101</b>	<b>Metals</b>							<b>Max leaching assumed for metals</b>
	Aluminum	5000	72000	NP	NP			Yes
	Antimony	1.8	26	240	1.15			
	Arsenic	9.1	0.8	3.7	5	Yes	Yes	
	Barium	22	110	87000	21			
	Beryllium	0.3	120	800	1.22			
	Cadmium	1.3	75	1300	0.11			
	Calcium	23000	NP	NP	NP			
	Chromium	41	210	420	0.6			
	Cobalt	2.4	4700	110000	NP			
	Copper	48	110	76000	NP			
	Cyanide	ND	30	39000	590			
	Iron	12000	23000	480000	NP			
	Lead	150	400	920	0.75			
	Magnesium	4000	NP	NP	NP			
	Manganese	250	1600	22000	NP			
	Nickel	5.2	110	28000	11			
	Potassium	780	NP	NP	NP			
	Selenium	0.99	390	10000	5.7			
	Silver	0.2	390	9100	0.14			
	Sodium	7100	NP	NP	NP			
	Thallium	0.084	NP	NP	0.2			
	Tin	2.4	44000	660000	NP			
	Total Mercury	0.16	3.4	26	0.025			
	Vanadium	16	15	7400	1.6	Yes		
	Zinc	79	23000	560000	4.3			
<b>SD01101</b>	<b>PAHs</b>							
	2-Methylnaphthalene	0.062	80	560	NP			
	Acenaphthene	0.19	1900	18000	3.4			
	Acenaphthylene	0.3	1100	11000	3.4			
	Anthracene	0.043	18000	260000	3.4			
	Benzo(a)anthracene	0.24	1.4	5	3.4			
	Benzo(b)fluoranthene	0.98	1.4	4.8	6.8			
	Benzo(g,h,i)perylene	0.33	2300	41000	1.8			
	Benzo(k)fluoranthene	0.27	15	52	6.8			
	Benzo(a)pyrene	0.41	0.1	0.5	3.4	Yes		
	Chrysene	0.63	140	450	3.4			
	Dibenzo(a,h)anthracene	0.1	0.1	0.5	8.2	Yes		
	Fluoranthene	0.47	2900	48000	3.4			
	Fluorene	0.023	2200	28000	3.4			
	Indeno(1,2,3-cd)pyrene	0.37	1.5	5.3	3.4			
	Napthalene	0.13	40	270	5.6			
	Phenanthrene	0.16	2000	30000	5.6			
	Pyrene	0.44	2200	37000	8.2			
	1-methylnaphthalene	0.052	68	470	NP			
	Dibutyl tin	0.00042	NP	NP	NP			
	Monobutyl tin	0.00012	NP	NP	NP			
	Tetrabutyl tin	ND	NP	NP	NP			
	Tributyl tin	0.00033	NP	NP	NP			

NAS Pensacola Site 2 FFSA Sediment Samples in DU08 and DU11

Comparison of Analytical Results with FDEP Human Health and Universal Treatment Standards for Disposal Considerations

Sample ID	COPC	Conc (mg/kg)	FDEP Soil Cleanup Target Levels		Universal Treatment Standards (mg/l) TCLP for metals; otherwise mg/kg)	FDEP Soil Cleanup Target Levels Exceedance		10 x Universal Treatment Standards Exceedance
			Residential (mg/kg)	Commercial/Industrial (mg/kg)		Residential	Commercial/Industrial	
<b>SD01101</b>	<b>Pesticides</b>							
	4,4'-DDD (P, P'-DDD)	0.0025	4.6	18	0.87			
	4,4'-DDE (P,P'-DDE)	0.0065	3.3	13	0.87			
	4,4'-DDT (P, P'-DDT)	0.0065	3.3	13	0.87			
	Aldrin	0.0033	0.07	0.3	0.066			
	Alpha BHC	0.0033	0.2	0.5	0.066			
	<b>Alpha Chlordane /2</b>	0.0033	3.1	12	0.26			
	Beta-BHC	0.0033	0.6	2.1	0.066			
	Delta-BHC	0.0033	22	420	0.066			
	Dieldrin	0.0065	0.07	0.3	0.13			
	Endosulfan I (alpha)	0.0033	410	6700	0.066			
	Endosulfan II (beta)	0.0065	410	6700	0.13			
	Endosulfan sulfate	0.0011	410	6700	0.13			
	Endrin	0.0011	21	340	0.13			
	Endrin aldehyde	0.0065	21	340	0.13			
	Endrin ketone	0.0065	21	340	NP			
	Gamma-BHC (lindane)	0.0033	0.7	2.2	0.066			
	<b>Gamma - chlordane</b>	0.0033	3.1	12	0.26			
	Heptachlor	0.0033	0.2	0.9	0.066			
	Heptachlor epoxide	0.00095	0.1	0.4	0.066			
	Methoxychlor	0.033	370	7500	0.18			
	PCB-1016 (arochlor 1016)	0.065	0.5	2.1	NP			
	PCB-1221 (arochlor 1221)	0.13	0.5	2.1	NP			
	PCB-1232 (arochlor 1232)	0.065	0.5	2.1	NP			
	PCB-1242 (arochlor 1242)	0.065	0.5	2.1	NP			
	PCB-1248 (arochlor 1248)	0.065	0.5	2.1	NP			
	PCB-1254 (arochlor 1254)	0.065	0.5	2.1	NP			
	PCB-1260 (arochlor 1260)	0.065	0.5	2.1	NP			
	Toxaphene	0.33	1	3.7	2.6			
<b>SD01101</b>	<b>SVOCs</b>							
	4-Nitroaniline	ND	NP	NP	14			
	Benzaldehyde	ND	2200	18000	10			
	Benzo(b)fluoranthene	0.47	1.4	4.8	6.8			
	Benzo(k)fluoranthene	0.38	15	52	6.8			
	Benzo(a)pyrene	0.38	0.1	0.5	3.4	Yes		
	Bis(2-ethylhexyl)phthalate	4.7	76	280	NP			
	Chrysene	0.39	140	450	3.4			
	Fluoranthene	0.76	2900	48000	3.4			
	Pyrene	0.59	2200	37000	8.2			
	4-nitrophenol	1.6	390	4400	13			
	Acenaphthene	0.076	1900	18000	3.4			
	Anthracene	0.11	18000	260000	3.4			
	Benzo(a)anthracene	0.38	1.4	5	3.4			
	Bis(2-chloroisopropyl)ether	0.65	4.4	7.3	7.2			
	Indeno(1,2,3-cd)pyrene	0.19	1.5	5.3	3.4			
	Phenanthrene	0.37	2000	30000	5.6			

**NAS Pensacola Site 2 FFSA Sediment Samples in DU08 and DU11**

**Comparison of Analytical Results with FDEP Human Health and Universal Treatment Standards for Disposal Considerations**

Sample ID	COPC	Conc (mg/kg)	FDEP Soil Cleanup Target Levels		Universal Treatment Standards (mg/l) TCLP for metals; otherwise mg/kg)	FDEP Soil Cleanup Target Levels Exceedance		10 x Universal Treatment Standards Exceedance
			Residential (mg/kg)	Commercial/Industrial (mg/kg)		Residential	Commercial/Industrial	
<b>SD01102</b>	<b>Metals</b>							<b>Max leaching assumed for metals</b>
	Aluminum	15000	72000	NP	NP			Yes
	Antimony	0.75	26	240	1.15			
	Arsenic	18	0.8	3.7	5	Yes	Yes	
	Barium	36	110	87000	21			
	Beryllium	0.84	120	800	1.22			
	Cadmium	0.77	75	1300	0.11			
	Calcium	31000	NP	NP	NP			
	Chromium	49	210	420	0.6			
	Cobalt	5	4700	110000	NP			
	Copper	75	110	76000	NP			
	Cyanide	0.39	30	39000	590			
	Iron	20000	23000	480000	NP			
	Lead	200	400	920	0.75			
	Magnesium	7300	NP	NP	NP			
	Manganese	330	1600	22000	NP			
	Nickel	15	110	28000	11			
	Potassium	2200	NP	NP	NP			
	Selenium	2.3	390	10000	5.7			
	Silver	ND	390	9100	0.14			
	Sodium	19000	NP	NP	NP			
	Thallium	0.27	NP	NP	0.2			
	Tin	5.5	44000	660000	NP			
	Total Mercury	0.81	3.4	26	0.025			
	Vanadium	41	15	7400	1.6	Yes		
	Zinc	95	23000	560000	4.3			
<b>SD01102</b>	<b>PAHs</b>							
	2-Methylnaphthalene	0.1	80	560	NP			
	Acenaphthene	0.32	1900	18000	3.4			
	Acenaphthylene	0.51	1100	11000	3.4			
	Anthracene	0.091	18000	260000	3.4			
	Benzo(a)anthracene	0.39	1.4	5	3.4			
	Benzo(b)fluoranthene	1.1	1.4	4.8	6.8			
	Benzo(g,h,i)perylene	0.44	2300	41000	1.8			
	Benzo(k)fluoranthene	0.25	15	52	6.8			
	Benzo(a)pyrene	0.46	0.1	0.5	3.4	Yes		
	Chrysene	0.79	140	450	3.4			
	Dibenzo(a,h)anthracene	0.12	0.1	0.5	8.2	Yes		
	Fluoranthene	0.8	2900	48000	3.4			
	Fluorene	0.048	2200	28000	3.4			
	Indeno(1,2,3-cd)pyrene	0.39	1.5	5.3	3.4			
	Napthalene	0.21	40	270	5.6			
	Phenanthrene	0.39	2000	30000	5.6			
	Pyrene	1	2200	37000	8.2			
	1-methylnaphthalene	0.088	68	470	NP			
	Dibutyl tin	ND	NP	NP	NP			
	Monobutyl tin	ND	NP	NP	NP			
	Tetrabutyl tin	ND	NP	NP	NP			
	Tributyl tin	ND	NP	NP	NP			

NAS Pensacola Site 2 FFSA Sediment Samples in DU08 and DU11

Comparison of Analytical Results with FDEP Human Health and Universal Treatment Standards for Disposal Considerations

Sample ID	COPC	Conc (mg/kg)	FDEP Soil Cleanup Target Levels		Universal Treatment Standards (mg/l) TCLP for metals; otherwise mg/kg	FDEP Soil Cleanup Target Levels Exceedance		10 x Universal Treatment Standards Exceedance
			Residential (mg/kg)	Commercial/Industrial (mg/kg)		Residential	Commercial/Industrial	
SD01102	<b>Pesticides</b>							
	4,4'-DDD (P, P'-DDD)	0.0097	4.6	18	0.87			
	4,4'-DDE (P,P'-DDE)	0.0097	3.3	13	0.87			
	4,4'-DDT (P, P'-DDT)	0.0018	3.3	13	0.87			
	Aldrin	0.005	0.07	0.3	0.066			
	Alpha-BHC	0.005	0.2	0.5	0.066			
	<b>Alpha Chlordane /2</b>	0.005	3.1	12	0.26			
	Beta-BHC	0.005	0.6	2.1	0.066			
	Delta-BHC	0.005	22	420	0.066			
	Dieldrin	0.0097	0.07	0.3	0.13			
	Endosulfan I (alpha)	0.005	<b>410</b>	<b>6700</b>	0.066			
	Endosulfan II (beta)	0.0097	<b>410</b>	<b>6700</b>	0.13			
	Endosulfan sulfate	0.0097	<b>410</b>	<b>6700</b>	0.13			
	Endrin	0.0097	<b>21</b>	<b>340</b>	0.13			
	Endrin aldehyde	0.0097	<b>21</b>	<b>340</b>	0.13			
	Endrin ketone	0.0013	<b>21</b>	<b>340</b>	NP			
	Gamma-BHC (lindane)	0.005	0.7	2.2	0.066			
	<b>Gamma - chlordane</b>	0.005	3.1	12	0.26			
	Heptachlor	0.005	0.2	0.9	0.066			
	Heptachlor epoxide	0.005	0.1	0.4	0.066			
	Methoxychlor	0.05	370	7500	0.18			
	PCB-1016 (arochlor 1016)	0.097	0.5	2.1	NP			
	PCB-1221 (arochlor 1221)	0.2	0.5	2.1	NP			
	PCB-1232 (arochlor 1232)	0.097	0.5	2.1	NP			
	PCB-1242 (arochlor 1242)	0.097	0.5	2.1	NP			
	PCB-1248 (arochlor 1248)	0.097	0.5	2.1	NP			
	PCB-1254 (arochlor 1254)	0.097	0.5	2.1	NP			
	PCB-1260 (arochlor 1260)	0.097	0.5	2.1	NP			
	Toxaphene	0.5	1	3.7	2.6			
SD01102	<b>SVOCs</b>							
	4-Nitroaniline	ND	NP	NP	14			
	Benzaldehyde	ND	2200	18000	10			
	Benzo(b)fluoranthene	0.56	1.4	4.8	6.8			
	Benzo(k)fluoranthene	0.55	15	52	6.8			
	Benzo(a)pyrene	0.51	0.1	0.5	3.4	Yes	Yes	
	Bis(2-ethylhexyl)phthalate	ND	76	280	NP			
	Chrysene	0.56	140	450	3.4			
	Fluoranthene	0.95	2900	48000	3.4			
	Pyrene	1	2200	37000	8.2			
	4-nitrophenol	2.4	390	4400	13			
	Acenaphthene	ND	1900	18000	3.4			
	Anthracene	ND	18000	260000	3.4			
	Benzo(a)anthracene	0.56	1.4	5	3.4			
	Bis(2-chloroisopropyl)ether	0.97	4.4	7.3	7.2			
	Indeno(1,2,3-cd)pyrene	ND	1.5	5.3	3.4			
	Phenanthrene	0.28	2000	30000	5.6			

ND - Analyte below detection limits

NP - No number is published

Y - Yes

N - No

*Italicized results indicate a UJ flagged resu*

**Bold** values indicate this number was only prescribed

for parent chemical (e.g., Endosulfan number was

listed but Endosulfan I, II and Endosulfan sulfate were

Total chromium is compared with FDEP STCLs for hexavalent chromium