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MEMORANDUM

TO: Mark Lewis **LOCATION:** Connecticut Department of Environmental Protection
Kymberlee Keckler U.S. Environmental Protection Agency

FROM: Chip McLeod **LOCATION:** EA–Newburgh
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SUBJECT: Methodology Used for Deriving Human Health Risk-Based Preliminary Remediation Goals and Cleanup Goals for Soil and Ground Water at Lower Subase, Naval Submarine Base, New London, Connecticut
Contract No. N62472-92-D-1296
EA Project No. 29600.90

1. INTRODUCTION

The purpose of this memorandum is to present the Navy's planned approach to determining appropriate cleanup values for soil and ground water for the revised Feasibility Study at Lower Subase, New London, Connecticut. This memorandum discusses the methodology that will be used to derive risk-based cleanup values for soil Preliminary Remediation Goal (PRGs) as well as the approach that will be used to determine appropriate soil cleanup values for soil, considering both risk-based PRGs and Connecticut Direct Exposure Criteria (CTDEC).

The Navy's intended approach to ground-water remediation will also be presented. The Human Health Risk Assessment that was completed and approved as part of the *Lower Subase Remedial Investigation for Naval Submarine Base New London, Connecticut* (Tetra Tech NUS 1999) concluded that, the ground water is not a potential source of drinking water under current or potential future use of the site. In addition, the assessment concluded that there are no unacceptable risks under the construction worker scenario for potential exposures to ground water. Therefore, any cleanup of ground water at the Lower Subase will be based on potential impacts of onsite ground water to offsite surface water at the site property boundary. Additionally, the derivation of Alternate Pollutant Mobility Criteria for determination of soil remediation requirements for protection of ground water will be discussed.

2. SOIL

For purposes of the Feasibility Study, constituents of concern (COCs) in soil at Lower Subase, Naval Submarine Base, New London, Connecticut were identified based on risks calculated in the *Lower Subase Remedial Investigation for Naval Submarine Base New London, Connecticut* (Tetra Tech NUS 1999). COCs were identified in site soil as those constituents with cumulative risks exceeding the U.S. Environmental Protection Agency (EPA) risk target levels of 10^{-6} for carcinogens or Hazard Index (HI) of 1.0 for non-carcinogens. Risk-based PRGs were derived for all COCs identified for all receptors in each zone. The PRGs correspond to target risk levels of 10^{-5} for carcinogens, and HI = 1.0 for non-carcinogens.

This methodology is described in more detail in the following sections.

Soil cleanup values will be determined by comparing the risk-based PRG for either 10^{-5} cancer risk or PRG for HI = 1.0 to the CTDEC. In cases where there are both a cancer and a non-cancer PRG for a COC, the more conservative of the two PRGs will be applied. The cleanup value for site soil will be the greater of the PRGs or CTDEC. The basis for this is that CTDEC can be used as default cleanup values, and although CTDEC can be waived when risk-based PRGs are less than CTDEC, a value less than the CTDEC cannot be imposed as a cleanup value on a property owner.

2.1 RISK CALCULATIONS

Human health risk results are presented in Appendix I of the *Lower Subase Remedial Investigation for Naval Submarine Base New London, Connecticut* (Tetra Tech NUS 1999). In the Human Health Risk Assessment, human health risks were calculated for exposures to constituents of potential concern identified in soil for the following receptors: construction worker, full-time employee, resident adult, and resident child. Exposure pathways evaluated were incidental ingestion of soil and dermal absorption of soil. Risks were calculated using Reasonable Maximum Exposure assumptions. Exposure point concentrations used in the Human Health Risk Assessment represent the 95 percent upper confidence limit of the mean. Risks for full-time employees were based on exposure to soil 0-4 ft below grade surface, and construction worker and residential risks were based on exposure to total soil from 0 to 10 ft below grade surface.

3. SELECTION OF CONSTITUENTS OF CONCERN

COCs to be addressed in the Feasibility Study for each of the seven zones at Lower Subase are presented in Table 1. COCs were identified in soils based on the results of the Human Health Risk Assessment conducted as part of the remedial investigation at Lower Subase (Tetra Tech NUS 1999). For each receptor in each zone, risks were summed across exposure pathways. COCs were identified as those chemicals with cumulative risks across pathways that exceeded EPA's risk targets of 10^{-6} for carcinogens or HI of 1.0 for non-carcinogens. Cumulative risks and hazard indices for all COCs identified for all receptors in each zone are summarized in Tables 2 through 8.

Lead was evaluated using the IEUBK Model as presented in Appendix I of the remedial investigation for each zone. Average lead concentrations were used to predict blood lead levels in residential children. If the results of the IEUBK Model predicted blood lead levels in children would be greater than 10 mg/dL for more than 5 percent of the population, lead was selected as a COC for soil in that zone.

3.1 DERIVATION OF RISK-BASED PRELIMINARY REMEDIATION GOALS

Risk-based PRGs are proposed cleanup levels that are based on human health risks, and are intended to be protective of human health. At Lower Subase, risk-based PRGs were derived for COCs in soil using the following equation:

PRG = Reasonable Maximum Exposure Point Concentrations • Target Risk Level/Calculated Risk Value

Risk-based PRGs were derived for all COCs that had human health risk estimates exceeding 10^{-6} or HIs exceeding 1.0 for soil at Lower Subase. For carcinogens, PRGs were derived to correspond to risk levels of 10^{-5}. For non-carcinogenic COCs, PRGs were derived to correspond to HI = 1.0.

PRGs were derived for all COCs for all receptors for each zone. PRGs corresponding to risk levels of 10^{-5}, and HI = 1.0 are presented for each zone in Tables 2 through 8. PRGs presented for lead are based on the OSWER Directives on lead and, therefore, are not strictly risk-based.

3.2 SOIL CLEANUP GOALS

Tables 2 through 8 present the risk-based PRGs and CTDEC for each receptor, and for each soil medium at each of the seven zones at Lower Subase. The cleanup criteria that will be utilized to determine which soil requires remediation at Lower Subase will be determined by comparing the PRG to the CTDEC for each receptor, and medium in each zone. The cleanup value will be the lesser value of the PRG or CTDEC. These values are highlighted for each of the seven zones in Tables 2 through 7. The risk-based PRGs for two polycyclic aromatic hydrocarbons (benzo[a]pyrene and dibenz[a,h]anthracene) and arsenic exceed the CTDEC for residential receptors (Residential Direct Exposure Criteria). This reflects the fact that the Residential Direct Exposure Criteria for these constituents have regional background values factored into them and are not strictly risk-based. Therefore, the Navy will default to the Residential Direct Exposure Criteria as the cleanup values for benzo(a)pyrene, dibenz(a,h)anthracene, and arsenic in soil for residential receptors.

4. GROUND WATER

The Human Health Risk Assessment, conducted as part of the *Lower Subase Remedial Investigation for Naval Submarine Base New London, Connecticut* (Tetra Tech NUS 1999), concluded that there are no potential risks to human health from ground water under current or potential future use of the Lower Subase. As a result, there were no risks calculated for residential exposures to ground water at the site in the remedial investigation. Therefore, there is no need to remediate ground water at the Lower Subase in order to be protective of human health onsite.

The only potential receptors for ground water at Lower Subase are potential offsite human or ecological receptors in the estuary. Cleanup values for ground water will be based on compliance with State Surface Water Protection Criteria at the site boundary (point of compliance). Alternate Surface Water Protection Criteria have been derived for each of the seven zones, utilizing a simple, conservative dilution model that is consistent with EPA guidance. Based on the results of this model, it has been determined that all constituents in ground water at all seven zones at the Lower Subase are in compliance with Alternate Surface Water Protection Criteria at the point of compliance.

Therefore, no remediation of ground water is expected to be required at the site. The details of the ground-water modeling and derivation of Alternate Surface Water Protection Criteria are presented in a letter from Charles McLeod (EA) to Mark Lewis (CTDEP), *Technical Rationale for Calculation of Alternative Surface Water Protection Criteria for Naval Submarine Base, Lower Subase, New London, Connecticut,* February 2001. In addition, the Navy has presented its methodology for deriving Alternative Pollutant Mobility Criteria in a letter from Charles McLeod (EA) to Mark Lewis (CTDEP), *Technical Rationale for Calculation of Alternative Pollutant Mobility Criteria for Naval Submarine Base, Lower Subase, New London, Connecticut,* February 2001. This letter describes the method used to develop remediation standards for pollutant mobility to ground water based on site-specific dilution factors for each of the seven zones at Lower Subase. These Alternative Pollutant Mobility Criteria will be used to identify COCs for soil remediation in the Final Feasibility Study for Lower Subase.

CEM/cl
cc: E. Mahoney (EA)

TABLE 1 IDENTIFICATION OF CONSTITUENTS OF CONCERN IN SOIL BASED ON HUMAN HEALTH RISK ASSESSMENT RESULTS AT LOWER SUBASE NAVAL SUBMARINE BASE, NEW LONDON, CONNECTICUT

Zone	Constituents of Concern
1	Benz(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Dibenz(a,h)anthracene Indeno(1,2,3-cd)pyrene Arsenic Mercury
2	Benzo(a)pyrene Dibenz(a,h)anthracene Arsenic
3	Benz(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenz(a,h)anthracene Indeno(1,2,3-cd)pyrene Arsenic
4	Benz(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenz(a,h)anthracene Indeno(1,2,3-cd)pyrene Arsenic Lead[(a)]
5	Benzo(a)pyrene Benzo(b)fluoranthene Dibenz(a,h)anthracene Arsenic
6	Benzo(a)pyrene Arsenic
7	Benz(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Dibenz(a,h)anthracene Indeno(1,2,3-cd)pyrene Arsenic Lead[(a)]

(a) Lead is identified as a constituent of concern based on the results of the IEUBK Model completed in the remedial investigation human health risk assessment.

TABLE 2 SUMMARY OF HUMAN HEALTH RISKS AND RISK-BASED PRELIMINARY REMEDIATION GOALS FOR CONSTITUENTS OF CONCERN IN SOIL AT ZONE 1, LOWER SUBASE, NAVAL SUBMARINE BASE, NEW LONDON, CONNECTICUT

	Full-Time Worker (shallow soil)				
			Preliminary Remediation Goal[a]		
	RME			Carcinogens	Non-Carcinogens
Chemical	EPC	Calculated Risk	IDEC	1.00E-05	1.00E+00
Carcinogens					
Benz(a)anthracene	21	2.1E-05	7.8E+00	**1.0E+01**	NA
Benzo(a)pyrene	17	1.7E-04	**1.0E+00**	**1.0E+00**	NA
Benzo(b)fluoranthene	17	1.7E-05	7.8E+00	**1.0E+01**	NA
Dibenz(a,h)anthracene	5.2	5.2E-05	**1.0E+00**	**1.0E+00**	NA
Indeno(1,2,3-cd)pyrene	12	1.2E-05	7.8E+00	**1.0E+01**	NA
Arsenic	12.3	8.6E-06	1.0E+01	**1.4E+01**	NA
Non-Carcinogens					
Mercury	83.4	1.4E+00	**6.1E+02**	NA	5.9E+01

	Construction Worker (total soil)				
			Preliminary Remediation Goal[a]		
	RME			Carcinogens	Non-Carcinogens
Chemical	EPC	Calculated Risk	IDEC	1.00E-05	1.00E+00
Carcinogens					
Benz(a)anthracene	21	1.1E-06	7.8E+00	**2.0E+02**	NA
Benzo(a)pyrene	17	8.6E-06	1.0E+00	**2.0E+01**	NA
Dibenz(a,h)anthracene	5.2	2.6E-06	1.0E+00	**2.0E+01**	NA
Non-Carcinogens					
Mercury	83.4	1.6E+00	**6.1E+02**	NA	5.2E+01

	Residential (total soil)				
			Preliminary Remediation Goal[a]		
	RME			Carcinogens	Non-Carcinogens
Chemical	EPC	Calculated Risk	RDEC	1.00E-05	1.00E+00
Carcinogens					
Benz(a)anthracene	21	3.8E-05	1.0E+00	**5.5E+00**	NA
Benzo(a)pyrene	17	3.1E-04	**1.0E+00**	5.5E-01	NA
Benzo(b)fluoranthene	17	3.1E-05	1.0E+00	**5.5E+00**	NA
Benzo(k)fluoranthene	11	2.0E-06	8.4E+00	**5.5E+01**	NA
Dibenz(a,h)anthracene	5.2	9.5E-05	**1.0E+00**	5.5E-01	NA
Indeno(1,2,3-cd)pyrene	12	2.2E-05	1.0E+00	**5.5E+00**	NA
Arsenic	12.3	2.0E-05	**1.0E+01**	6.2E+00	NA
Non-Carcinogens					
Mercury	83.4	2.1E+00	2.0E+01	NA	**4.0E+01**

(a) The greater of the Preliminary Remediation Goals is bolded. This bolded value represents the cleanup value that will be used at the site.

NOTE: RME EPC = Reasonable Maximum Exposure Point Concentration.
IDEC = Connecticut Industrial Direct Exposure Criteria.
RDEC = Connecticut Residential Direct Exposure Criteria.
Concentrations presented in mg/kg.

TABLE 3 SUMMARY OF HUMAN HEALTH RISKS AND RISK-BASED PRELIMINARY REMEDIATION GOALS FOR CONSTITUENTS OF CONCERN IN SOIL AT ZONE 2, LOWER SUBASE, NAVAL SUBMARINE BASE, NEW LONDON, CONNECTICUT

	Full-Time Worker (shallow soil)			
			Preliminary Remediation Goal[a]	
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05
Carcinogens				
Benzo(a)pyrene	0.39	4.3E-06	**1.0E+00**	**1.0E+00**
Dibenz(a,h)anthracene	0.17	1.7E-06	**1.0E+00**	**1.0E+00**
	Construction Worker (total soil)			
			Preliminary Remediation Goal[a]	
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05
Carcinogens				
NA	NA	NA	NA	NA
	Residential (total soil)			
			Preliminary Remediation Goal[a]	
Chemical	RME EPC	Calculated Risk	RDEC	1.00E-05
Carcinogens				
Benzo(a)pyrene	0.36	6.6E-06	**1.0E+00**	5.5E-01
Dibenz(a,h)anthracene	0.18	3.3E-06	**1.0E+00**	5.5E-01
Arsenic	1.9	3.1E-06	**1.0E+01**	6.2E+00

(a) The greater of the Preliminary Remediation Goals is bolded. This bolded value represents the cleanup value that will be used at the site.

NOTE: RME EPC = Reasonable Maximum Exposure Point Concentration.
IDEC = Connecticut Industrial Direct Exposure Criteria.
RDEC = Connecticut Residential Direct Exposure Criteria.
NA = Not applicable.
Concentrations presented in mg/kg.

TABLE 4 SUMMARY OF HUMAN HEALTH RISKS AND RISK-BASED PRELIMINARY REMEDIATION GOALS FOR CONSTITUENTS OF CONCERN IN SOIL AT ZONE 3 LOWER SUBASE, NAVAL SUBMARINE BASE, NEW LONDON, CONNECTICUT

	Full-time worker (shallow soil)			
			Preliminary Remediation Goal[a]	
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05
Carcinogens				
Benzo(a)pyrene	0.48	4.8E-06	1.0E+00	**1.0E+00**
Dibenz(a,h)anthracene	0.15	1.5E-06	1.0E+00	**1.0E+00**
Arsenic	2.6	1.8E-06	1.0E+01	**1.4E+01**
	Construction Worker (total soil)			
			Preliminary Remediation Goal[a]	
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05
Carcinogens				
NA	NA	NA	NA	NA
	Residential (total soil)			
			Preliminary Remediation Goal[a]	
Chemical	RME EPC	Calculated Risk	RDEC	1.00E-05
Carcinogens				
Benz(a)anthracene	2	3.7E-06	1.0E+00	**5.5E+00**
Benzo(a)pyrene	1	1.8E-05	**1.0E+00**	5.5E-01
Benzo(b)fluoranthene	1.3	2.4E-06	1.0E+00	**5.5E+00**
Dibenz(a,h)anthracene	0.29	5.3E-06	**1.0E+00**	5.5E-01
Indeno(1,2,3-cd)pyrene	0.6	1.1E-06	1.0E+00	**5.5E+00**
Arsenic	4.9	7.9E-06	**1.0E+01**	6.2E+00

(a) The greater of the Preliminary Remediation Goals is bolded. This bolded value represents the cleanup value that will be used at the site.

NOTE: RME EPC = Reasonable Maximum Exposure Point Concentration.
IDEC = Connecticut Industrial Direct Exposure Criteria.
RDEC = Connecticut Residential Direct Exposure Criteria.
NA = Not applicable.
Concentrations presented in mg/kg.

TABLE 5 SUMMARY OF HUMAN HEALTH RISKS AND RISK-BASED PRELIMINARY REMEDIATION GOALS FOR CONSTITUENTS OF CONCERN IN SOIL AT ZONE 4 LOWER SUBASE, NAVAL SUBMARINE BASE, NEW LONDON, CONNECTICUT

	Full-Time Worker (shallow soil)				
			Preliminary Remediation Goal[a]		
				Carcinogen	Non-Carcinogen
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05	1.00E-04
Carcinogens					
Benz(a)anthracene	5.3	5.3E-06	7.8E+00	**1.0E+01**	NA
Benzo(a)pyrene	4.3	4.3E-05	**1.0E+00**	**1.0E+00**	NA
Benzo(b)fluoranthene	4.3	4.3E-06	7.8E+00	**1.0E+01**	NA
Dibenz(a,h)anthracene	1.5	1.5E-05	**1.0E+00**	**1.0E+00**	NA
Indeno(1,2,3-cd)pyrene	3.4	3.4E-06	7.8E+00	**1.0E+01**	NA
Arsenic	4.5	3.1E-06	1.0E+01	**1.4E+01**	NA
Non-Carcinogens					
Lead	10,600	NA	**1.0E+03**	NA	**1.0E+03**

	Construction Worker (total soil)				
			Preliminary Remediation Goal[a]		
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05	1.00E-04
Carcinogens					
Benzo(a)pyrene	4.3	2.2E-06	1.0E+00	**2.0E+01**	NA
Non-Carcinogens					
Lead	10,600	NA	**1.0E+03**	NA	**1.0E+03**

	Residential (total soil)				
			Preliminary Remediation Goal[a]		
Chemical	RME EPC	Calculated Risk	RDEC	1.00E-05	1.00E-04
Carcinogens					
Benz(a)anthracene	2.7	4.9E-06	1.0E+00	**5.5E+00**	NA
Benzo(a)pyrene	4.3	7.9E-05	**1.0E+00**	5.5E-01	NA
Benzo(b)fluoranthene	2.5	4.6E-06	1.0E+00	**5.5E+00**	NA
Dibenz(a,h)anthracene	0.61	1.1E-05	**1.0E+00**	5.5E-01	NA
Indeno(1,2,3-cd)pyrene	3.4	6.2E-06	1.0E+00	**5.5E+00**	NA
Arsenic	4.5	7.2E-06	**1.0E+01**	6.2E+00	NA
Non-Carcinogens					
Lead	10,600	NA	**5.0E+02**	NA	**5.0E+02**

(a) The greater of the Preliminary Remediation Goals is bolded. This bolded value represents the cleanup value that will be used at the site.

NOTE: RME EPC = Reasonable Maximum Exposure Point Concentration.
IDEC = Connecticut Industrial Direct Exposure Criteria.
RDEC = Connecticut Residential Direct Exposure Criteria.
NA = Not applicable.
Lead Preliminary Remediation Goals are based on OSWER Directive and are not derived from site risks.
Concentrations presented in mg/kg.

TABLE 6 SUMMARY OF HUMAN HEALTH RISKS AND RISK-BASED PRELIMINARY REMEDIATION GOALS FOR CONSTITUENTS OF CONCERN IN SOIL AT ZONE 5 LOWER SUBASE, NAVAL SUBMARINE BASE, NEW LONDON, CONNECTICUT

	Full-Time Worker (shallow soil)			
			Preliminary Remediation Goal[a]	
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05
Carcinogens				
Benzo(a)pyrene	0.23	2.3E-06	**1.0E+00**	**1.0E+00**
Dibenz(a,h)anthracene	0.12	1.2E-06	**1.0E+00**	**1.0E+00**
Arsenic	1.6	1.1E-06	1.0E+01	**1.4E+01**
	Construction Worker (total soil)			
			Preliminary Remediation Goal[a]	
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05
Carcinogens				
NA	NA	NA	NA	NA
	Residential (total soil)			
			Preliminary Remediation Goal[a]	
	RME EPC	Calculated Risk	RDEC	1.00E-05
Carcinogens				
Benzo(a)pyrene	1.1	2.0E-05	**1.0E+00**	5.5E-01
Benzo(b)fluoranthene	1.2	2.2E-06	1.0E+00	**5.5E+00**
Dibenz(a,h)anthracene	0.12	2.2E-06	**1.0E+00**	5.5E-01
Arsenic	2.2	3.5E-06	**1.0E+01**	6.2E+00

(a) The greater of the Preliminary Remediation Goals is bolded. This bolded value represents the cleanup value that will be used at the site.

NOTE: RME EPC = Reasonable Maximum Exposure Point Concentration.
IDEC = Connecticut Industrial Direct Exposure Criteria.
RDEC = Connecticut Residential Direct Exposure Criteria.
NA = Not applicable.
Concentrations presented in mg/kg.

TABLE 7 SUMMARY OF HUMAN HEALTH RISKS AND RISK-BASED PRELIMINARY REMEDIATION GOALS FOR CONSTITUENTS OF CONCERN IN SOIL AT ZONE 6 LOWER SUBASE, NAVAL SUBMARINE BASE, NEW LONDON, CONNECTICUT

	Full-Time Worker (shallow soil)			
			Preliminary Remediation Goal[a]	
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05
Carcinogens				
Benzo(a)pyrene	0.46	4.6E-06	**1.0E+00**	**1.0E+00**
Arsenic	2.2	1.5E-06	1.0E+01	**1.4E+01**
	Construction Worker (total soil)			
			Preliminary Remediation Goal[a]	
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05
Carcinogens				
NA	NA	NA	NA	NA
	Residential (total soil)			
			Preliminary Remediation Goal[a]	
Chemical	RME EPC	Calculated Risk	RDEC	1.00E-05
Carcinogens				
Benzo(a)pyrene	0.46	8.4E-06	**1.0E+00**	5.5E-01
Arsenic	2.2	3.5E-06	**1.0E+01**	6.2E+00

(a) The greater of the Preliminary Remediation Goals is bolded. This bolded value represents the cleanup value that will be used at the site.

NOTE: RME EPC = Reasonable Maximum Exposure Point Concentration.
IDEC = Connecticut Industrial Direct Exposure Criteria.
RDEC = Connecticut Residential Direct Exposure Criteria.
NA = Not applicable.
Concentrations presented in mg/kg.

TABLE 8 SUMMARY OF HUMAN HEALTH RISKS AND RISK-BASED PRELIMINARY REMEDIATION GOALS FOR CONSTITUENTS OF CONCERN IN SOIL AT ZONE 7 LOWER SUBASE, NAVAL SUBMARINE BASE, NEW LONDON, CONNECTICUT

	Full-Time Worker (shallow soil)				
			Preliminary Remediation Goal[a]		
				Carcinogens	Non-carcinogens
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05	1.00E+00
Carcinogens					
Benz(a)anthracene	9.5	9.5E-06	7.8E+00	**1.0E+01**	NA
Benz(a)pyrene	14	1.4E-04	1.0E+00	**1.0E+00**	NA
Benzo(b)fluoranthene	16	1.6E-05	7.8E+00	**1.0E+01**	NA
Dibenz(a,h)anthracene	3.1	3.1E-05	1.0E+00	**1.0E+00**	NA
Indeno(1,2,3-cd)pyrene	7	7.0E-06	7.8E+00	**1.0E+01**	NA
Arsenic	2.5	1.7E-06	1.0E+01	**1.4E+01**	NA
Non-Carcinogens					
Lead	189,000	NA	**1.0E+03**	NA	**1.0E+03**
	Construction Worker (total soil)				
			Preliminary Remediation Goal[a]		
Chemical	RME EPC	Calculated Risk	IDEC	1.00E-05	1.00E+00
Carcinogens					
Benz(a)pyrene	3.4	1.7E-06	1.0E+00	**2.0E+01**	NA
Dibenz(a,h)anthracene	3.1	1.6E-06	1.0E+00	**2.0E+01**	NA
Non-Carcinogens					
Lead	189,000	NA	**1.0E+03**	NA	**1.0E+03**
	Residential (total soil)				
			Preliminary Remediation Goal[a]		
Chemical	RME EPC	Calculated Risk	RDEC	1.00E-05	1.00E+00
Carcinogens					
Benz(a)anthracene	3.5	6.4E-06	1.0E+00	**5.5E+00**	NA
Benz(a)pyrene	3.4	6.2E-05	**1.0E+00**	5.5E-01	NA
Benzo(b)fluoranthene	4.6	8.4E-06	1.0E+00	**5.5E+00**	NA
Benzo(k)fluoranthene	9.7	1.8E-06	8.4E+00	**5.5E+01**	NA
Dibenz(a,h)anthracene	3.1	5.7E-05	**1.0E+00**	5.5E-01	NA
Indeno(1,2,3-cd)pyrene	7	1.3E-05	1.0E+00	**5.5E+00**	NA
Arsenic	3.9	6.3E-06	**1.0E+01**	6.2E+00	NA
Non-Carcinogens					
Lead	189,000	NA	**5.0E+02**	NA	**5.0E+02**

(a) The greater of the Preliminary Remediation Goals is bolded. This bolded value represents the cleanup value that will be used at the site.

NOTE: RME EPC = Reasonable Maximum Exposure Point Concentration.
IDEC = Connecticut Industrial Direct Exposure Criteria.
RDEC = Connecticut Residential Direct Exposure Criteria.
NA = Not applicable.
Lead preliminary remediation goals are based on OSWER Directive and are not derived from site risks.
Concentrations presented in mg/kg.
HI Level = 1.0.