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Mr. Kamal Gupta, Senior Engineer
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
New York State Department of Environmental Conservation
50 Wolf Road, Room 208
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SUBJECT: ***Management Plan for Investigation Derived Waste (IDW)***
SEAD 25 and SEAD 26 Remedial Investigation

Dear Ms. Struble and Mr. Gupta:

As part of the close-out of the Remedial Investigation (RI) field activities conducted at SEAD-25 and SEAD-26, Parsons Engineering Science, Inc. (Parsons ES) is submitting the following plan for the management of Investigation Derived Wastes (IDW). This plan follows the revised strategies used in the management of IDWs generated during the 15 SWMU Expanded Site Investigation.

This IDW plan uses all available data collected during field investigations as the basis for determining the most appropriate disposal alternative. The management plan is in accordance with the following guidance documents:

1. NYSDEC TAGM - Disposal of Drill Cuttings (HWR-89-4032 dated November 21, 1989)
2. NYSDEC TAGM - Disposal of Contaminated Groundwater Generated During Remedial Investigations (Draft), No Date.
3. EPA Guidance Document EPA/540/6-91/009, May 1991; Management of Investigation - Derived Wastes During Site Investigation.
4. EPA Guidance Document EPA/540/6-89/006, August 1988: CERCLA Compliance with Other Laws Manual: Interim Final.

All IDW generated during this program were placed in drums for storage at or near the source. Drum contents consist of the following items: monitoring well installation water and groundwater, drill cuttings, surface soils from well pad installation, Personnel Protective Equipment (PPE), steam condensate, and decontamination fluids. Each drum was labeled as hazardous waste including appropriate identification numbers, start dates, and a description of contents. This information was logged in field books, activity worksheets, and recorded on a regular basis in a drum inventory logbook. Upon completion of field operations this inventory was checked to insure information on the drums was consistent with the inventory logbook. The data recorded in the logbook was used as the basis for **Table 3** presented in this IDW management plan.

Classification of the contents of each drum were based upon the IDW strategy depicted in **Figure 1**. The initial step involves determining whether or not the contents are RCRA hazardous or non-hazardous. Since no TCLP data was generated as part of the field data, this process involves applying the "twenty times rule". According to STARS (Spill Technology and Remediation Series) Memo #1, the "twenty times rule" compares the soil concentrations obtained during the ESIs to twenty times the TCLP limits. The twenty times value assumes 100% extraction efficiency and represents the minimum soil concentration that could theoretically exceed the TCLP limits. Parsons ES made the conservative assumption that if one soil sample from a drum exceeded this limit then the entire drum would be disposed of off-site by a permitted hazardous waste disposal subcontractor.

For groundwater or purge water generated as part of well development or sampling activities, the groundwater concentrations of TCLP analytes were compared directly with the TCLP regulatory limits. If a drum contained water from any individual well that had concentrations in excess of the TCLP regulatory limit, then the contents of the entire drum are considered to be a characteristic hazardous waste and disposed of accordingly.

Table 1 summarizes the criteria for determining if a soil or a water drum is a RCRA hazardous waste.

Table 1
RCRA Hazardous Waste Determination Criteria

Constituent	TCLP Regulatory Level (mg/L)	Equivalent Soil Level (mg/kg)
Arsenic	5.0	100
Barium	100	2000
Benzene	0.5	10
Cadmium	1.0	20
Chloroform	6.0	120
Chromium	5.0	100
1,2-Dichloroethane	0.5	10
1,1-Dichloroethene	0.7	14
2,4-Dinitrotoluene	0.13	2.6
Lead	5.0	100
Mercury	0.2	4
Methyl Ethyl Ketone	200	4000
Selenium	1.0	20
Silver	5.0	100
Tetrachloroethane	0.7	14
Trichloroethane	0.5	10
Vinyl chloride	0.2	4

For IDW waste other than soil or water such as decontamination fluids and Personal Protection Equipment (PPE), the disposal evaluation involved the following steps. Under RCRA, wastes are classified as hazardous if they are listed wastes or characteristic wastes. Waste specific information, such as manifests, bills of lading, storage records or records of waste sources must be used to document that a waste is a RCRA-listed waste; otherwise, in the absence of any other information, the waste in question cannot be considered a listed waste. Since none of the drummed cuttings, PPE, or purge water at the RI sites meet any of the regulatory definitions described in 40 CFR 261, (i.e. F-, K-, P- or U-listed wastes), these materials are not considered listed hazardous wastes. The only listed waste generated during the investigation program is waste that contained methanol. Methanol was used in the decontamination process (per EPA direction), which makes the decontamination fluids an F003 listed hazardous waste. An F-listed waste classification refers to non-specific hazardous waste sources that contain methanol as a component of a spent solvent mixture. In order to limit the generation of hazardous waste due to the *derived from and the mixture rules* for listed wastes, Parsons ES instituted procedures to assure that methanol was not mixed with soils or other liquids. Additionally, during the decontamination process, washable rubber bibs were worn to prevent contamination of disposable PPE. Therefore, the disposable PPE is not a hazardous waste based upon the *derived from or mixture rule* and will be disposed of as uncontaminated refuse.

Although the IDW waste produced at these sites are not listed hazardous wastes, IDW may be a characteristic hazardous waste. According to RCRA, a waste is a characteristic hazardous waste if it exceeds the RCRA criteria for ignitability, corrosivity, reactivity, or toxicity. Based upon the data collected during the site investigations, Parsons ES does not believe that any of the drummed materials exceed the RCRA required limits for ignitability, corrosivity or reactivity. The soils, water, and PPE contained concentrations of Constituents of Concern (COC)s that are below the concentrations at which ignitability or reactivity would be present. Corrosivity has also been eliminated from consideration because no unusual pH values were detected during the investigation program. Numerous measurements of the groundwater pH were taken, both as part of the well development process and as part of the sampling. Abnormal pH values, indicative of the presence of a strong acid or alkali, would have been detected by these measurements. Groundwater pH measurements, taken during field the sampling are included in the Remedial Investigation Report. Well development pH measurements are included in Parsons ES files, and will be made available to EPA and NYSDEC upon request. The pH values were generally between 6 and 7 and never exceeded the hazardous waste characteristic limits of 2 to 12.5.

If the drum contents were not considered a hazardous waste according to the RCRA definition, the drums were further evaluated to determine if the drum contents were contaminated. This evaluation was required since the list of TCLP analytes comprise only a portion of the compounds that are included as part of the ESI analytical data. As a result, several compounds detected in the soil and groundwater samples were not considered during the initial IDW evaluation. Consequently, Parsons ES established criteria that was used to evaluate the impacts from these previously unconsidered components. For soil, the criteria involved comparing the results of the chemical analyses to the NYSDEC TAGM criteria. If a soil result exceeded a TAGM value then the drum was classified as contaminated. If the soil data did not exceed a TAGM value then the drum was classified as uncontaminated. For groundwater or purge water, this was accomplished by comparing the well data to NYSDEC groundwater standards. It is proposed that uncontaminated material be returned to the location were it was generated.

The next step in the IDW evaluation process was to consider the threat or risk that the contaminated IDW may contribute to human health and the environment. IDW that poses an unacceptable risk or threat will then be disposed of off-site as hazardous waste. This determination involved comparison of each soil data point of the contaminated drums to ten times the TAGM value. If any soil concentration datapoint exceeded ten times the TAGM value then the drum contents, if disposed of on-site, is considered an unacceptable risk to human health and the environment and the drum will be disposed of off-site. Exceptions to this criteria were made if the exceedances to the ten times the TAGM value were due to non-toxic metals such as calcium, iron, manganese, potassium and sodium.

Parsons ES used ten times the TAGM value as the criterion for determining whether or not the contents of a drum poses any threat. The factor of 10 was applied due to the conservative nature of the TAGM values and the fact that this criterion has been acceptable to NYSDEC for similar SEDA projects in the past. The TAGM value was determined as the lower of five different criteria, only one of which involved evaluating the risk produced from evaluating the soil ingestion pathway. The other factors included default values for VOCs, semi-VOCs and pesticides, background, partitioning calculations with groundwater standards and method detection limits. The RI baseline risk assessment process considers risk from the standpoint of the overall site conditions, not just one individual point. Datapoints are combined and evaluated as part of the overall sitewide concentration, i.e. the 95th Upper Confidence Limit (UCL) of the mean, not as an individual points. Performing a quantitative risk analysis for an individual drum or for the highest soil sample collected from one soil boring would be contrary to the risk assessment process that will be performed later in the RI. Further, it was felt that using the TAGM value as the only criteria would be too conservative, leading to unnecessary off-site landfilling of soil. This is particularly true for the PAH compounds that have low TAGM criteria. Although landfilling of soil at these sites may be appropriate once the RI and the quantitative site baseline risk determination is complete, another technology may be selected as the preferred alternative, in which case the IDW soil could be processed as part of final remedial alternative.

In situations where no soil data is available, such as is the case where only a monitoring well was installed and no soil sampling was performed, the disposal of the soils generated during the installation of the well will be the same as the disposal option for the groundwater. In other words, if the groundwater is disposed of off-site, then the soils generated as part of the installation of that well will also be disposed of off-site. **Table 2** summarizes the classification process.

Table 2
Disposal Classification Process

RCRA/Hazardous Non-Hazardous	Contaminated/ Non-contaminated	Threat/ No Threat	Disposal Option	Criteria for Disposal
Hazardous	Contaminated	Threat	Off-site	>TCLP
Non-hazardous	Non-contaminated	No threat	On-site	<TCLP, <TAGM
Non-hazardous	Contaminated	Threat	Off-site	<TCLP,>10X TAGM
Non-hazardous	Contaminated	No threat	On-site	<TCLP, >TAGM, <10X TAGM

The following describes and summarizes the proposed IDW disposal alternative for each type of IDW.

Groundwater - All the groundwater generated during these site investigations has been collected in drums that have been marked to identify the source of the groundwater. The NYSDEC CLP TCL and TAL analytical results from the groundwater samples associated with each drum have been compared directly to the TCLP limits, previously presented. If the groundwater sample results exceed the TCLP limit then the contents are considered hazardous and the groundwater will be disposed of off-site as a hazardous waste. If the groundwater results are below the TCLP limit then the results are compared to NYSDEC Class GA groundwater standards. If the groundwater results are less than the criteria, the contents are classified as non-contaminated and pose no threat to human health and the environment. In this instance, the contents of these drums will be discharged to the ground in an area next to the well.

If the groundwater results are less than the TCLP limits and greater than the NYSDEC Class GA groundwater standards the contents were classified as contaminated and pose a threat to human health and the environment. In this case, the contents will be disposed of off-site as a hazardous waste.

Soil Cuttings - All soil cuttings have been collected in drums which are marked to identify the source of the soil cuttings. Using the *twenty times rule*, the analytical results from the soil samples associated with each drum have been compared to the TCLP limits to determine if the soil cuttings are non-hazardous. If the results of the comparison exceeds the alternative TCLP limits for soil, then the drum will be disposed of off-site as a hazardous waste. If the soil cuttings are non-hazardous then the results will be compared to NYSDEC TAGM values for soil to determine if the soil is uncontaminated. Uncontaminated soil will be disposed of at the location of generation. If the soil results are below the TCLP limit but above the NYSDEC TAGM values, the soil will then be compared to ten times the NYSDEC TAGM value to determine if the soil poses a threat. Soils that exceed ten times the TAGM value will be disposed of off-site. Solids that do not exceed the ten times the TAGM value will be disposed of at a location near the point of generation providing that location will not contribute to stream runoff or where the potential for direct contact is high. If analytical results do not exist for soil cuttings (i.e. locations where a well was installed without soil sample collection), the contents will be disposed of by applying the criteria for disposition of the groundwater. If the groundwater sampled from that well exceeds the criteria then the soils generated as part of the monitoring well installation process will be disposed of off-site. If the groundwater results meet the requirements of the groundwater criteria then the soils will be disposed of on-site.

Decontamination Fluids - Two types of decontamination fluids have been stored in drums at the site. The first type is water from the steam cleaning of equipment. Drums identified in the attached tables as steam condensate were classified as non-hazardous waste. These drums only contain the water collected from steam cleaning operations. Steam was used to clean drilling equipment prior to reuse at another location. Soil was removed from the drilling equipment using brushes and placed in soil drums at the boring location prior to steam cleaning, therefore, no soil would have been present on the drilling equipment prior to the steam cleaning process. These drums have been classified as non-hazardous and will be discharged to the ground in the immediate vicinity of the drum. The second type of decontamination fluid is the equipment decontamination fluids including principally rinse water with small amounts of other decontamination fluids including methanol and nitric acid. These drums are classified as hazardous waste and will be disposed of off-site as hazardous waste.

Personnel Protection Equipment - All the disposable personnel protection equipment is classified as non-hazardous and will be bagged and disposed of at the local municipal landfill.

All hazardous wastes will be transported and disposed of in a licensed, commercial, hazardous waste TSD facility, operating in full compliance with RCRA. The most likely TSD facilities are EWR in Waterbury Connecticut, or BFI's Model City facility in western New York. Facility selection will be dependent on cost and capacity considerations.

In summary, Parsons ES believes that the management plan is conservative, reasonable and in full compliance with all regulations. If you have any questions regarding the classification of any drum, please do not hesitate to call me at (617) 859-2492. If necessary, I can arrange a phone conference call to discuss the issue at your convenience.

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.

Michael Duchesneau
Michael Duchesneau, P.E.
Project Manager

cc: Mr. Kevin Healy, USACOE
Mr. Stephen Absolom, SEDA
Mr. Randall Battaglia, CENAN
Ms. Dorothy Richards, USACE
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TABLE 3

SENECA ARMY DEPOT
SEAD 25
DRUM INVENTORY

Drum Number	Location	MEDIUM Soil	Water	PPE	Source i.e.(MW, Boring, Decon. water, Condensate', PPE)	RCRA Hazardous/ Non-Hazardous	Contaminated/ Noncontaminated	Threat/ No Threat	Chemical Of Concern (Exceeding TAGM Levels)	Rationale	Disposal Option (Offsite Hazardous) (Offsite Non-Hazardous) (Onsite)
25-1S	SEAD-25 STAGING AREA	X			Drill Cuttings MW25-18 10-16-95	Non-Hazardous	Contaminated	No Threat	Metals Fe, Na	No soil data available - water from MW25-18 >GA Standard Non-toxic metals	Onsite
25-2S	SEAD-25 STAGING AREA	X			Drill Cuttings SB25-12 10-16-95	Non-Hazardous	Contaminated	Threat	SVOCs Metals Al, Mn, Pb	>10 Times TAGM - SVOCs >TAGM, <10Times TAGM - Non Toxic Metals >TAGM, <10Times TAGM - Toxic Metals	Offsite Hazardous
25-3S	SEAD-25 STAGING AREA	X			Drill Cuttings MW25-5D < 8.5ft. 10-22-95	Non-Hazardous	Contaminated	No Threat	Metals Mn	No soil data available-water from MW25-5D >GA Standard Non-toxic metals	Onsite
25-4S	SEAD-25 STAGING AREA	X			Drill Cuttings SB25-7,8,9,10 9-26,27-95	Non-Hazardous	Contaminated	Threat	Acetone & Xylene	Data from SB25-4 had near > 10times TAGM	Offsite Hazardous
25-5S	SEAD-25 STAGING AREA	X			Surface Soils From: MW25-6,8,9 10-4-95	Non-Hazardous	Contaminated	No Threat	SVOCs Metals As, Be, Tl, Zn	> TAGM,< 10 Times TAGM - SVOCs >TAGM, <10Times TAGM - Toxic Metals	Onsite
25-6S	SEAD-25 STAGING AREA	X			Drill Cuttings MW25-11,12D & Bentonite 10-10-95 -- 11-1-95	Non-Hazardous	Contaminated	No Threat	Metals Fe, Mn, Na	>TAGM, <10Times TAGM - Non Toxic Metals	Onsite
25-7S	SEAD-25 STAGING AREA	X			Drill Cuttings MW25-7D 10-8-95	Non-Hazardous	Contaminated	No Threat	Metals Fe, Mg, Na, Tl	Data from SB25-7 and MW25-7D(water) >TAGM, <10Times TAGM - Non Toxic Metals >TAGM, <10Times TAGM - Toxic Metals	Onsite
25-8S	SEAD-25 STAGING AREA	X			Drill Cuttings MW25-16D,SB25-14 10-9-95	Non-Hazardous	Contaminated	Threat	SVOCs Metals Al, Fe, Hg, Pb, Tl	>10 Times TAGM - SVOCs >TAGM, <10Times TAGM - Non Toxic Metals >TAGM, <10Times TAGM - Toxic Metals	Offsite Hazardous
25-10S	SEAD-25 STAGING AREA	X			Drill Cuttings MW25-4D 10-31-95	Hazardous	Contaminated	Threat	VOCs SVOCs	No soil data available, MW25-2(water) >TCLP Benzene	Offsite Hazardous
25-11S	SEAD-25 STAGING AREA	X			Drill Cuttings SB25-16 10-27-95	Non-Hazardous	Contaminated	No Threat	Metals Be, Cr, Cu, Tl, Zn	>TAGM, <10Times TAGM - Toxic Metals	Onsite
25-12S	SEAD-25 STAGING AREA	X			Drill Cuttings MW25-14D,13 & Bentonite 10-11-95	Non-Hazardous	Contaminated	No Threat	Metals Fe, Mn, Na	No soil data available, MW25-13 (water) >TAGM, <10Times TAGM - Non Toxic Metals	Onsite
25-13S	SEAD-25 STAGING AREA	X			Miscellaneous Pad Construction Soils 11-95	Non-Hazardous	Contaminated	Threat	Unknown	No data, assume >10times TAGM No surface soils > TCLP limits	Offsite Hazardous
25-14S	SEAD-25 STAGING AREA	X			SB25-13 Boring & Soils from the Well 10-7-95	Non-Hazardous	Contaminated	No Threat	Metals Hg, Pb, Tl	>TAGM, <10Times TAGM - Toxic Metals	Onsite
25-15S	SEAD-25 STAGING AREA	X			Unknown Source Topsoil, Concrete, Grout, Weeds 11-95	Non-Hazardous	Contaminated	Threat	Unknown	No data, assume >10times TAGM No surface soils > TCLP limits	Offsite Hazardous
25-16S	SEAD-25 STAGING AREA	X			Decon Pad, Soils, Plastic Sheeting 11-95	Non-Hazardous	Contaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination	Onsite
25-17S	SEAD-25 STAGING AREA	X			Unknown Soil-Possible Decon Sludge from Pad 11-95	Non-Hazardous	Contaminated	Threat	Unknown	No data, assume >10times TAGM	Offsite Hazardous
ESI25-2S	SEAD-25 STAGING AREA	X			Drill Cuttings MW25-2	Hazardous	Contaminated	Threat	VOCs SVOCs	MW25-2 (water) >TCLP Benzene	Offsite Hazardous

TABLE 3

SENECA ARMY DEPOT
SEAD 25
DRUM INVENTORY

Drum Number	Location	MEDIUM			Source i.e.(MW, Boring, Decon. water, Condensate[1], PPE)	RCRA Hazardous/ Non-Hazardous	Contaminated/ Noncontaminated	Threat/ No Threat	Chemical Of Concern (Exceeding TAGM Levels)	Rationale	Disposal Option (Offsite Hazardous) (Offsite Non-Hazardous) (Onsite)
		Soil	Water	PPE							
ESI25-5S	SEAD-25 STAGING AREA	X			Well Installation Soil (ESI)	Hazardous	Contaminated	Threat	VOCs SVOCs	> TCLP limits for benzene Included soil from installation of MW25-2	Offsite Hazardous
25-1W	SEAD-25 STAGING AREA		X		Steam Condensate 9-20-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination - No Threat	Onsite
25-2W	SEAD-25 STAGING AREA		X		Steam Condensate 9-20-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination - No Threat	Onsite
25-3W	SEAD-25 STAGING AREA		X		Steam Condensate 9-20-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination - No Threat	Onsite
25-4W	SEAD-25 STAGING AREA		X		Steam Condensate 9-25-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination - No Threat	Onsite
25-5W	MW25-4D		X		Purge Water From: MW25-2,3,6,9 9-26-95 -- 4-13-96	Hazardous	Contaminated	Threat	VOCs & SVOCs	> TCLP for Benzene	Offsite Hazardous
25-6W	SEAD-25 STAGING AREA		X		Steam Condensate 10-8-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination - No Threat	Onsite
25-7W	SEAD-25 STAGING AREA		X		Dev Water MW25-8,9,10 Purge Water MW25-19 10-10-95--10-22-95	Non-Hazardous	Contaminated	Threat	BTEX & DCE	> GA Standard for VOCs	Offsite Hazardous
25-9W	SEAD-25 STAGING AREA		X		Steam Condensate 10-16-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination - No Threat	Onsite
25-10W	MW25-19		X		Purge Water MW25-15,16D, 19. Dev. Water MW25-19 10-22-95 -- 4-13-96	Non-Hazardous	Contaminated	No Threat	Metals Fe, Mg, Na	> GA Standard Non-toxic metals	Onsite
25-11W	SEAD-25 STAGING AREA		X		Dev. Water MW25-10 10-22-95	Non-Hazardous	Noncontaminated	No Threat	None	< GA Standard	Onsite
25-12W	MW25-11		X		Purge Water MW25-10,11, 12D,13,14D Dev Water MW25-11,13 11-95 -- 4-96	Non-Hazardous	Contaminated	No Threat	Metals Fe, Mg, Na	> GA Standard Non-toxic metals	Onsite
25-13W	SEAD-25 STAGING AREA		X		Dev. Water MW25-16D 10-30-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-14W	MW25-6		X		Dev. Water MW25-6 Purge Water MW25-6,7D 10-30-95 --11-22-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-15W	MW25-18		X		Dev. Water MW25-18 Purge Water MW25-1,18 10-30-95--4-10-96	Non-Hazardous	Contaminated	No Threat	Metals Fe, Na	> GA Standard Non-toxic metals	Onsite
25-16W	SEAD-25 STAGING AREA		X		Coring Water MW25-7D Dev Water MW25-7D 10-24-95 -- 10-31-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-17W	SEAD-25 STAGING AREA		X		Coring Water MW25-7D 10-24-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite

TABLE 3

SENECA ARMY DEPOT
SEAD 25
DRUM INVENTORY

Drum Number	Location	MEDIUM			Source i.e.(MW, Boring, Decon. water, Condensate[1], PPE)	RCRA Hazardous/ Non-Hazardous	Contaminated/ Noncontaminated	Threat/ No Threat	Chemical Of Concern (Exceeding TAGM Levels)	Rationale	Disposal Option (Offsite Hazardous) (Offsite Non-Hazardous) (Onsite)
		Soil	Water	PPE							
25-18W	SEAD-25 STAGING AREA		X		Coring Water MW25-7D 10-24-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-19W	SEAD-25 STAGING AREA		X		Coring Water MW25-7D 10-25-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-20W	SEAD-25 STAGING AREA		X		Coring Water MW25-7D 10-25-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-21W	SEAD-25 STAGING AREA		X		Coring Water MW25-7D 10-25-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-22W	SEAD-25 STAGING AREA		X		Coring Water MW25-5D Dev Water MW25-5D 10-30-95	Non-Hazardous	Contaminated	No Threat	Metals Mn	> GA Standard Non-toxic metals	Onsite
25-23W	SEAD-25 STAGING AREA		X		Coring Water MW25-5D 10-30-95	Non-Hazardous	Contaminated	No Threat	Metals Mn	> GA Standard Non-toxic metals	Onsite
25-24W	SEAD-25 STAGING AREA		X		Coring Water MW25-5D 10-30-95	Non-Hazardous	Contaminated	No Threat	Metals Mn	> GA Standard Non-toxic metals	Onsite
25-25W	SEAD-25 STAGING AREA		X		Coring Water MW25-5D Dev. Water MW25-5D 10-30-95	Non-Hazardous	Contaminated	No Threat	Metals Mn	> GA Standard Non-toxic metals	Onsite
25-26W	SEAD-25 STAGING AREA		X		Coring Water MW25-4D 10-31-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-27W	SEAD-25 STAGING AREA		X		Coring Water MW25-4D 10-31-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-28W	SEAD-25 STAGING AREA		X		Coring Water MW25-4D Dev. Water MW25-4D 10-31-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-29W	SEAD-25 STAGING AREA		X		Coring Water MW25-12D 11-1-95	Non-Hazardous	Contaminated	No Threat	Metals Na	> GA Standard Non-toxic metals	Onsite
25-30W	SEAD-25 STAGING AREA		X		Coring Water MW25-12D 11-1-95	Non-Hazardous	Contaminated	No Threat	Metals Na	> GA Standard Non-toxic metals	Onsite
25-31W	SEAD-25 STAGING AREA		X		Coring Water MW25-12D Bentonite Water 11-1-95	Non-Hazardous	Contaminated	No Threat	Metals Na	> GA Standard Non-toxic metals	Onsite
25-32W	MW25-5D		X		Dev. Water MW25-5D Purge Water MW25-5D,9 11-2-95 -- 11-19-95	Non-Hazardous	Contaminated	Threat	BTEX & DCE	>GA Standard VOCs	Offsite Hazardous
25-33W	MW25-4D		X		Dev. & Purge Water MW25-4D 11-2-95 -- 11-15-95	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-34W	MW25-14D		X		Dev & Purge Water MW25-14D 11-2-95 -- 11-3-95	Non-Hazardous	Contaminated	No Threat	Metals Fe, Na	> GA Standard Non-toxic metals	Onsite
25-35W	SEAD-25 STAGING AREA		X		Coring Water MW25-14D Bentonite Water 10-31-95	Non-Hazardous	Contaminated	No Threat	Metals Fe, Na	> GA Standard Non-toxic metals	Onsite

TABLE 3

SENECA ARMY DEPOT
SEAD 25
DRUM INVENTORY

Drum Number	Location	MEDIUM			Source i.e.(MW, Boring, Decon. water, Condensate[1], PPE)	RCRA Hazardous/ Non-Hazardous	Contaminated/ Noncontaminated	Threat/ No Threat	Chemical Of Concern (Exceeding TAGM Levels)	Rationale	Disposal Option (Offsite Hazardous) (Offsite Non-Hazardous) (Onsite)
		Soil	Water	PPE							
25-36W	SEAD-25 STAGING AREA		X		Coring Water MW25-14D 10-31-95	Non-Hazardous	Contaminated	No Threat	Metals Fe, Na	> GA Standard Non-toxic metals	Onsite
25-37W	SEAD-25 STAGING AREA		X		Coring Water MW25-14D 10-31-95	Non-Hazardous	Contaminated	No Threat	Metals Fe, Na	> GA Standard Non-toxic metals	Onsite
25-38W	SEAD-25 STAGING AREA		X		Dev. Water MW25-12D 10-3-95	Non-Hazardous	Contaminated	No Threat	Metals Na	> GA Standard Non-toxic metals	Onsite
25-39W	SEAD-25 STAGING AREA		X		Dev Water MW25-12D 10-3-95	Non-Hazardous	Contaminated	No Threat	Metals Na	> GA Standard Non-toxic metals	Onsite
25-40W	MW25-13,14D		X		Purge Water MW25-13,14D 11-17-95 -- 12-2-95	Non-Hazardous	Contaminated	No Threat	Metals Fe, Na	> GA Standard Non-toxic metals	Onsite
25-41W	MW25-5D		X		Purge Water MW25-3,8,10, 15,17. 11-17-95 -- 4-11-96	Non-Hazardous	Contaminated	Threat	VOCs & SVOCs	> GA Standard VOCs & SVOCs	Offsite Hazardous
25-42W	MW25-16D		X		Purge Water MW25-16D 11-20-95 -- 3-30-96	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-43W	SEAD-25 STAGING AREA		X		Steam Condensate 11-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination - No Threat	Onsite
25-44W	SEAD-25 STAGING AREA		X		Steam Condensate 11-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination - No Threat	Onsite
25-45W	MW25-12D		X		Purge Water MW25-12D 12-1-95	Non-Hazardous	Contaminated	No Threat	Metals Na	> GA Standard Non-toxic metals	Onsite
25-46W	MW25-12D		X		Purge Water MW25-11,12D 12-1-95 -- 4-12-96	Non-Hazardous	Contaminated	No Threat	Metals Mn, Na	> GA Standard Non-toxic metals	Onsite
25-47W	MW25-14D		X		Purge Water MW25-14D,16D 12-2,3-95	Non-Hazardous	Contaminated	No Threat	Metals Fe, Na	> GA Standard Non-toxic metals	Onsite
25-48W	MW25-4D		X		Purge Water MW25-4D 12-3-95 -- 4-1-96	Non-Hazardous	Contaminated	No Threat	Metals Fe	> GA Standard Non-toxic metals	Onsite
25-49W	MW25-5D		X		Purge Water MW25-5D 12-4-95 -- 4-1-96	Non-Hazardous	Contaminated	No Threat	Metals Mn	> GA Standard Non-toxic metals	Onsite
25-50W	SEAD-25 STAGING AREA		X		Steam Condensate 10-11-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination - No Threat	Onsite
25-51W	SEAD-25 STAGING AREA		X		Steam Condensate 10-25-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination - No Threat	Onsite
25-52W	SEAD-25 STAGING AREA		X		Steam Condensate 10-28-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination - No Threat	Onsite
25-53W	SEAD-25 STAGING AREA		X		Unknown Water in(Soil Drum) Possible Coring Water 11-95	Hazardous	Contaminated	Threat	Unknown	No data, assume > TCLP Limits	Offsite Hazardous

TABLE 3

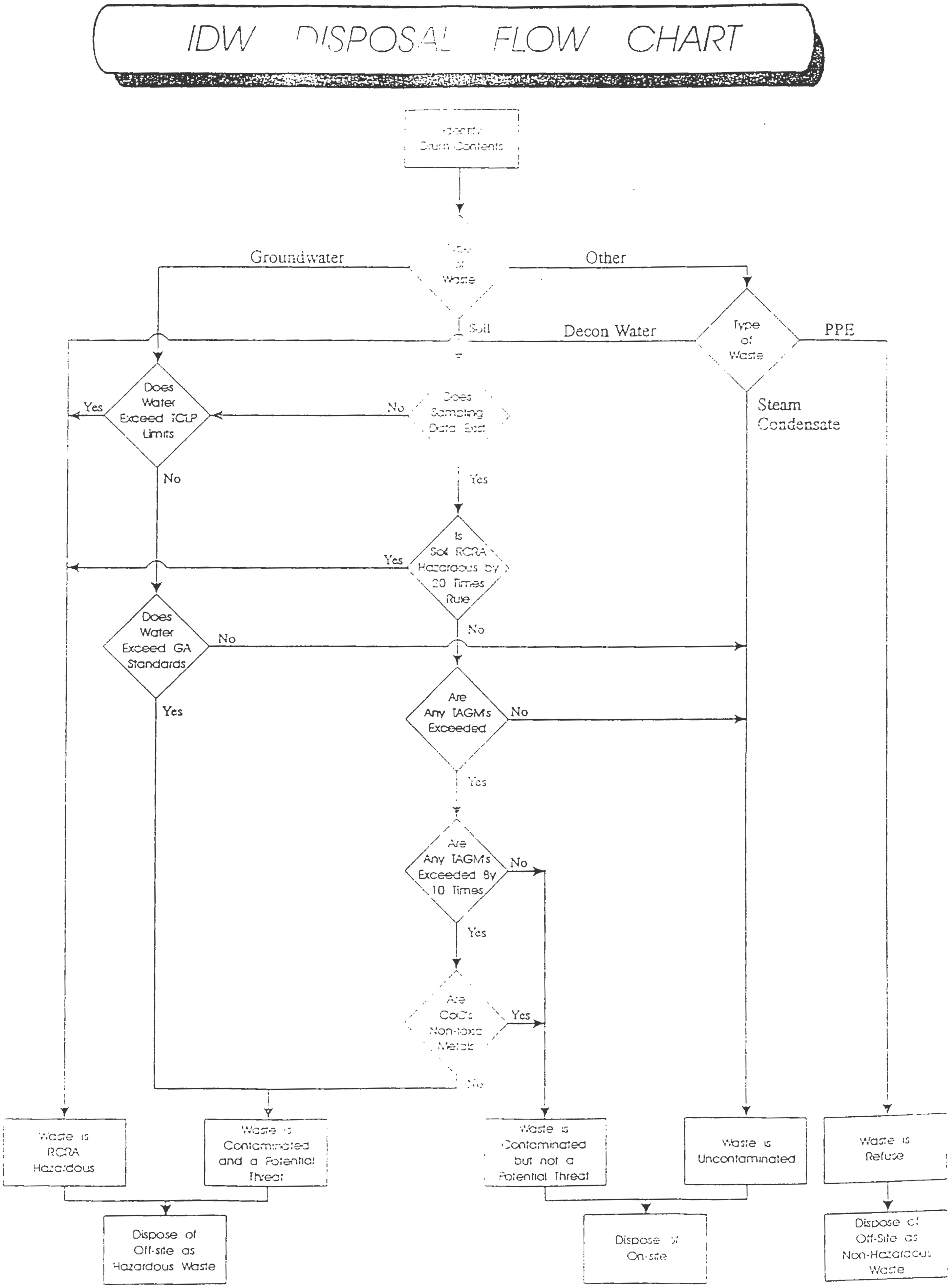
SENECA ARMY DEPOT
SEAD 26
DRUM INVENTORY

Drum Number	Location	MEDIUM			Source i.e.(MW, Boring, Decon. water, Condensate', PPE)	RCRA Hazardous/ Non-Hazardous	Contaminated/ Noncontaminated	Threat/ No Threat	Chemical Of Concern (Exceeding TAGM Levels)	Rationale	Disposal Option (Offsite Hazardous) (Offsite Non-Hazardous) (Onsite)
		Soil	Water	PPE							
26-1S	SEAD-26 STAGING AREA	X			Drill Cuttings SB26-8,9,10 9-20,21,25-95	Non-Hazardous	Contaminated	Threat	SVOCs Lead	> 10 Times TAGM SVOCs >10 Times TAGM Lead	Offsite Hazardous
26-2S	SEAD-26 STAGING AREA	X			Drill Cuttings SB26-6,7 9-24-95	Hazardous	Contaminated	Threat	VOCs & SVOCs Metals Al, K As, Tl, Zn,Pb	PID Screening During Soil Sampling >150ppm >TAGM, <10Times TAGM - Non Toxic Metals >TAGM, <10Times TAGM - Toxic Metals	Offsite Hazardous
26-3S	SEAD-26 STAGING AREA	X			Drill Cuttings SB26-5 9-24-95 / 12-4-95	Hazardous	Contaminated	Threat	SVOCs	> 10 Times TAGM SVOCs Strong Petroleum Odor	Offsite Hazardous
26-4ESI	SEAD-26 STAGING AREA	X			Drill Cuttings MW26-2 11-18-93	Non-Hazardous	Contaminated	Threat	Herbicides	Higher levels of Herbicides detected - No TAGM Limit	Offsite Hazardous
26-4S	SEAD-26 STAGING AREA	X			Surface Soils From: MW25-10/MW26-8,9,10 10-4-95 / 9-20,21-95	Non-Hazardous	Contaminated	Threat	SVOCs Lead	> 10 Times TAGM SVOCs >10 Times TAGM Lead	Offsite Hazardous
26-5S	SEAD-26 STAGING AREA	X			Drill Cuttings SB26-11 10-19-95	Non-Hazardous	Contaminated	No Threat	SVOCs Metals Al, Fe, Mg Be, Cr,, Ni, Tl, Zn	>TAGM<10timesTAGM-SVOCs >TAGM, <10Times TAGM - Non Toxic Metals >TAGM, <10Times TAGM - Toxic Metals	Onsite
26-6S	SEAD-26 STAGING AREA	X			Drill Cuttings SB26-12 10/18/95	Non-Hazardous	Contaminated	No Threat	SVOCs Metals Al, Mg, Na As, Cu, Tl, Ni, Zn	> TAGM SVOCs < 10 times TAGM >TAGM, <10Times TAGM - Non Toxic Metals >TAGM, <10Times TAGM - Toxic Metals	Onsite
26-7S	SEAD-26 STAGING AREA	X			Decon Pad Pad Soils 11-95	Non-Hazardous	Noncontaminated	No Threat	None	Soil and Plastic from the Steam Cleaning Operation Minimal Contamination	Onsite
26-8S	SEAD-26 STAGING AREA	X			Drill Cuttings SB26-11 11-95	Non-Hazardous	Contaminated	No Threat	SVOCs Metals AL, Fe, Mg Be, Cr, Ni, Tl, Zn	>TAGM, <10Times TAGM - SVOCs >TAGM, <10Times TAGM - Non Toxic Metals >TAGM, <10Times TAGM - Toxic Metals	Onsite
26-4W	SEAD-26 STAGING AREA		X		Steam Condensate from SEAD-26 Borings 9-18-95 – 9-27-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination	Onsite
26-5W	SEAD-26 STAGING AREA		X		Steam Condensate from SEAD-26 Borings 9-25-95 – 11-1-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination	Onsite
26-1W	SEAD 26 STAGING AREA		X		Well Development Water MW26-8,9,10 10-16-95	Non-Hazardous	Contaminated	No Threat	Metals Fe,Mn	> GA Standard Non-Toxic Metals	Onsite
26-2W	MW26-6		X		Dev Water & Purge Water MW26-5,6 / Purge Water MW26-1,4,9--10-18-95--4-96	Non-Hazardous	Contaminated	No Threat	Metals Fe,Mn, Na	> GA Standard Non-Toxic Metals	Onsite
26-3W	SEAD-26 STAGING AREA		X		Dev.Water MW26-7 Silt Removal Water MW26-1,2, 3,4. 10-20-95 / 11-2-95	Non-Hazardous	Contaminated	Threat	VOCs Metals Fe,Mn	> GA Standard VOCs > GA Standard Non-Toxic Metals	Offsite Hazardous
26-6W	SB26-12		X		SB26-12 Water Purge Water MW26-3,4,7,8,10 11-4-95 – 4-9-96	Non-Hazardous	Contaminated	Threat	VOCs Metals Fe,Mn	> GA Standard VOCs > GA Standard Non-Toxic Metals	Offsite Hazardous
26-7W	MW26-11		X		Dev. Water MW26-11 Purge Water MW26-10,11 10-24-95 – 4-12-96	Non-Hazardous	Contaminated	No Threat	Metals Fe, Na	> GA Standard Non-Toxic Metals	Onsite
26-8W	SEAD-26 STAGING AREA		X		Steam Condensate from SEAD-26 Borings 11-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam Cleaning Operation Minimal Contamination	Onsite

TABLE 3
SENECA ARMY DEPOT
DECON DRUMS
DRUM INVENTORY

			MEDIUM								
Drum Number	Location	Soil	Water	PPE	Source i.e.(MW, Boring, Decon. water, Condensate¹, PPE)	RCRA Hazardous/ Non-Hazardous	Contaminated/ Noncontaminated	Threat/ No Threat	Chemical Of Concern (CoC)	Rationale	Disposal Option: Onsite (Offsite Hazardous) (Offsite Non-Hazardous)
Decon 1W	Decon Trailer		X		General Decon liquids including HNO3, Hexane, Methanol	Hazardous	Contaminated	Threat	Methanol	Methanol is an F003-listed solvent	Offsite Hazardous
Decon 2W	Decon Trailer		X		Alconox and first rinse water Source: Fire Hydrant	Non-Hazardous	Noncontaminated	No Threat	None	Alconox, and rinse water. Contains no solvents or acid	Onsite
PPE 1S	Decon Trailer			X	PPE- gloves, tyvek 10-5-95	Non-Hazardous	Noncontaminated	No Threat	None	Disposable PPE used for decontamination	Offsite Non-hazardous
Decon 3W	Decon Trailer		X		Alconox and rinse water Source: Fire Hydrant	Non-Hazardous	Noncontaminated	No Threat	None	Alconox, and rinse water Contains no solvents or acid	Onsite
Decon 4W	Decon Trailer		X		Steam Condensate 11-5-95	Non-Hazardous	Noncontaminated	No Threat	None	Steam cleaning operation Minimal presence of contamination	Onsite
Decon 5W	Decon Trailer		X		Alconox & Rinse water Preserved Rinsate Samples	Non-Hazardous	Contaminated	No Threat	None	Alconox, and rinse water Contains no solvents & dilute acid	Onsite
					TOTALS	RCRA Haz / Non-Haz 8 / 85	Cont / Non-Cont 73 / 20	Threat / No Threat 22 / 71		2	Offsite Haz / Offsite Non-Haz / Onsite 22 / 1 / 70

Figure 1


IDW DISPOSAL FLOW CHART
Identify Drum Contents
Type of Waste
Groundwater
Other
Soil
Decon Water
Type of Waste
PPE
Steam Condensate
Does Water Exceed TCLP Limits
Yes
No
Does Sampling Data Exist
No
Yes
Is Soil RCRA Hazardous by 20 Times Rule
Yes
No
Does Water Exceed GA Standards
No
Yes
Are Any TAGM's Exceeded
No
Yes
Are Any TAGM's Exceeded By 10 Times
No
Yes
Are CoC's Non-toxic Metals
Yes
No
Waste is RCRA Hazardous
Waste is Contaminated and a Potential Threat
Waste is Contaminated but not a Potential Threat
Waste is Uncontaminated
Waste is Refuse
Dispose of Off-site as Hazardous Waste
Dispose of On-site
Dispose of Off-Site as Non-Hazardous Waste

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EXPRESS MAIL

Stephen M. Absolom
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Directorate of Engineering and Housing
Seneca Army Depot Activity (SEDA)
Romulus, New York 14541-5001

Re: Draft Remedial Investigation (RI) Report at the Fire Training and Demonstration Pad (SEAD 25) and the Fire Training Pit and Area (SEAD26)

Dear Mr. Absolom:

This is regarding the above referenced document prepared by Parsons Engineering Science Inc. (Parsons ES) for SEDA through the U.S. Army Corps of Engineers New York Division and Huntsville District. EPA comments are provided below.

GENERAL COMMENTS

The report should present a discussion of data validation issues and data usability as it relates to the DQO which have been set for the site. The text should present rationale for the data rejections which are presented in the data tables and how these data rejections may affect the overall usability of the data.

The results of the grain-size distribution analyses for the sediment samples were not presented in the document as originally discussed in the work plan for these sites. The results of the hardness analyses or TOC analyses were also not presented or discussed in the RI Report. The TOC analyses should be used to correct the site-specific TAGMs based on the TOC results, as is discussed in TAGM-4046.

SECTION 1.0

Page 1-20, P2: The third sentence of this paragraph appears to be incomplete. The sentence should be reviewed and corrected as needed.

Page 1-35, P1: A figure should be provided showing the potentiometric head changes described in the text. The figure should be combined with the precipitation data for the same period.

SECTION 3.0

Page 3-2, Sec. 3.1.3, P2: It is reasonable to state that rainfall decreases during January and February, since at this time of the year precipitation would be frozen. It would be more appropriate if the text compared precipitation amounts throughout the year and not rainfall.

Page 3-4, Sec. 3.1.4.2, P1: The thickness of the till should be presented in the text.

Page 3-4, Sec. 3.1.4.2, P3: Grain size distribution curves should be provided in the appendices of this document.

Page 3-5, Sec. 3.1.4.3: The locations for the stated ranges of weathered shale should be presented in the text.

Page 3-36, P2: The locations stated where the competent shale was encountered should be presented in the document.

Figures 3-4 and 3-5: The shading used for the lithological units are reversed. The screened and open sections of each well should be shown on the geologic cross sections along with a water level mark for both shallow and deep wells at each cluster.

Page 3-12, Sec. 3.1.5.1, P2: The tense of the text here should be changed i.e., ". . .groundwater is expected. . ." should read, ". . .groundwater was expected. . ."

Table 3-1: The header should define whether the depths and elevations provided are for competent or weathered bedrock.

Page 3-14, Sec. 3.1.6.2.1, P1: What is "groundwater topography"? Should this be groundwater potentiometric surface or groundwater water table?

Figure 3-6: There is no basis for the construction of the 736 equipotential contour line downgradient of wells MW25-15 and MW25-19.

Figure 3-7: See comment above for the 736 contour line and apply to the 737 line in this figure.

Figure 3-8: The 738 equipotential contour crosses the 738 topographic contour line in the area of well MW25-13. Field notes should be reviewed for indications that this "stream" was flowing at the time of water level measurements. If no water was present at this time the contouring in this figure should be corrected accordingly.

Figures 3-6 through 3-8: Flow direction arrows should be drawn at 90 degrees to the equipotential contour lines. It is appropriate to construct hydrogeologic flow sections for the site to aid in an understanding of site flow conditions.

Figures 3-9 and 3-10: The contouring presented should be truncated between control points and should be checked for accuracy (i.e., triangulation between data points).

Page 3-19, Sec. 3.1.6.2.2, P1: It is not appropriate to calculate a horizontal flow gradient between MW25-5D and MW25-7D since these wells are **parallel** to the potentiometric contours shown on the figures. This may account for the large difference between the calculated gradients presented in the text.

Table 3-3: Hydraulic conductivities have a logarithmic distribution and thus the average value presented in the table and associated text should be a geometric mean and not an arithmetic mean.

Page 3-25, P1: The results of the groundwater velocity calculations are incorrect since the values used for the average hydraulic conductivity are miscalculated, as previously commented.

Page 3-25, Sec. 3.1.6.4.3, P1: See comment above on calculation of flow velocities.

Figures 3-11 and 3-12: A review of the detailed vegetative cover-type map (Figure 3-12) indicates that the areas mapped are different from those presented on Figure 3-11. This discrepancy should be corrected.

Page 3-50, Sec. 3.2.4.2, P2: A description of the Darian silt-loam is presented in the text. However, a review of text and the figure indicates that the site is covered with fill. The discussion of the native soils should be removed or clarified to state that the description is for the area surrounding the site.

Page 3-50, Sec. 3.2.4.2, P3: See previous comment on the presentation of grain-size distribution curves.

Page 3-52, P2: MW26-1 is located to the east of the site and not west, as stated in the text.

Figure 3-15: The 738 contour line should pass through MW26-7, which has a reported elevation of 738.00.

Table 3-8: See previous comment presented for Table 3-1.

Page 3-57, P1: Profile identifications should be presented on Figure 3-16 for ease of reference.

Page 3-61, Sec. 3.2.6.2, P1: The April 4, 1994 data set contains four data points and not three, as stated in the text.

Figure 3-20: The 744 potentiometric contour line should pass through MW26-10, which has a reported elevation of 744.00.

Figures 3-20 through 3-22: The contour lines shown on these figures should be truncated between data control points.

Page 3-66, Sec. 3.2.6.3: See previous comment on the presentation of the hydraulic conductivity results.

Table 3-10: See previous comment on the calculation of hydraulic conductivity averages value.

Page 3-66, Sec. 3.2.6.4: See previous comment on the calculations of flow velocities.

Figure 3-23 and 3-24: These figures do not match, the discrepancy should be corrected. The arrow indicating the site in Figure 3-24 is not pointing to the site boundaries.

SECTION 4.0

Page 4-1, Sec. 4.0: The text should clearly state that both DQO documents will be referenced in the RI Report.

Figure 4-1: There are locations on this figure which should be contoured with a 1 ppmv contour line, which have not been identified in the text as being related to non-contaminant sources.

Table 4-5: TAGM 4046 lists a concentration or the MDL for several compounds. In these instances, the lower of the two numbers should be used for determining which samples exceed the TAGM guidance values.

Table 4-7: There is a TAGM value for 1,2-dichloroethene (trans) of 300 ug/kg. It is appropriate to use this value for 1,2-dichloroethene (total) since these compounds typically co-elute and are not differentiated by the laboratory. The use of this value should be reflected in the associated text. There is also a value for chlordane in TAGM-4046 which should be used for comparison with alpha-chlordane results. The heading for the last two pages of this table has been cut-off and should be corrected.

Page 4-38, P2: A figure showing the distribution of semi-volatile (PAHs) in soils should be presented in the RI Report.

Page 4-41, P2: It is not appropriate to discuss health-related issues in the nature and extent section. The text in this section should discuss the exceedances related to guidance values and leave the discussion of health risk to the health risk section.

Page 4-41, P4: The text should state the concentrations of the samples discussed.

Page 4-42, Sec. 4.1.5, P1: The text should present a comparison between all three rounds of sampling, and how the groundwater chemistry has changed through time.

Table 4-9: Please explain why the "total counts" presented in the groundwater summary table varies from method to method and within each method.

Table 4-10: The order in which the wells are presented is confusing. The wells should be presented in numerical order.

In addition to NYSDEC GA groundwater standards, Federal MCLs should also be included for each contaminant. The table incorrectly states that there are no standards for Bromoform, Antimony, Beryllium and Thallium, which all have Federal MCLs.

Page 4-65, Sec. 4.1.5.2: A figure showing the distribution of total, semi-volatiles (including TICs) should be presented in this report.

Page 4-66, P1: A discussion of the TICs found in the Round 2 sample analysis results should be presented.

Page 4-67, P1: The text speculates about the origin of the inorganics found in the groundwater. More justification should be given for the conclusions presented here.

Page 4-74, P1: The text states that SW25-6 was not used as background since it was ". . .impacted by other constituents, not associated with past site activities. . ." but the text does not elaborate what these impacts were or what caused them. A discussion of these impacts should be presented in the text.

General Comment: The results of the average and standard deviations should be rounded to reasonable numbers since the analytical methods cannot typically detect these compounds down to the numbers presented here.

Page 4-78, Sec.4.1.7.1, P1: Toluene is not considered a common laboratory contaminant and the discussion in the text referring a toluene as such should be removed.

Table 4-14: The source listed for Di-n-buthylphthalate is given as "???????". What is this source?

Page 4-78: Is the drainage ditch discussed here ". . .north. . ." the northwest ditch previously discussed?

Table 4-14: The abbreviations for the sources listed should be presented as footnotes to this table. What is the "west Effect Le" which is listed as a source? If a compound has been qualified as rejected, the concentrations should be removed from the tables and only the qualifier "R" shown.

Page 4-86, Sec. 4.1.7.6: The text states that MW25-2 had the maximum TPH concentration. This appears to be incorrect since this section discusses sediment sample results. The previous paragraph identifies surface water samples. Again, this appears to be incorrect in a sediment discussion.

Page 4-86, Sec. 4.1.8: The text here should state that the site has been impacted by TPH. This section should also summarize the results of the soil gas survey and relate these results to the groundwater and soil sample results.

Table 4-16 and 4-17: Why do the "total counts" vary between some of the compounds? The asterisks represented on Table 4-17 should be added to the list of notes.

Table 4-22: See previous comments on the variation between total counts.

There are no units presented on this table.

Table 4-23: The wells are not presented in numeric order, is there a significance in the way the wells are presented?

Page 4-155: The results of all the inorganics should be discussed, especially when analytes exceed their guidance values by as much as 29,900 times, as in the case for calcium.

Page 4-156, Sec. 4.2.4.1: The text here references SEAD-25. This should be corrected to state SEAD-26.

Table 4-24: See previous comment on total count variations.

Table 4-25: See previous comment on the "standard source" as it applies to heptachlor.

Page 4-163, Sec. 4.2.4.2: The standard referenced here for surface waters is incorrectly given as ". . .New York State Class GA. . ."

Page 4-164, P1: The text here references groundwater. This text should be corrected to state surface water.

Figure 4-14: The flow direction of the surface water bodies should be presented to aid in interpretation of results.

Page 4-173, Sec. 4.2.5.3: The text should state the concentrations of contaminants detected and not only state the number of times the contaminants exceeded their respective guidance values.

Page 4-176, Sec. 4.2.5.6: The text discusses surface soil results in a section which presents sediment results.

Page 4-177, Sec. 4.2.6: Paragraph 3 states that no criteria exceedances were detected for VOCs in groundwater at SEAD 26. The text should be corrected, as benzene and ethylbenzene were detected above NYSDEC Class GA standards.

SECTION 5.0

The Fate and Transport chapter of this RI includes information about the physical and chemical characteristics of the site and the site contaminants. It also includes three modeling efforts (a water balance, fugacity modeling, and one dimensional transport modeling). It does not, however, provide clear conclusions on the potential fate and transport of contaminants at the two sites. Any conclusions concerning the sites are fragmentary and scattered throughout the section. No overall conclusions concerning the site are presented.

A number of general observations concerning the section as a whole are as follows. Most of these affect the usability of the section for its intended purpose, which is to provide an understanding of the dynamics of the contaminant persistence and movement on the site.

- Conclusions: The main points of the fate and transport analysis should be summarized in a conclusions section at the end of the chapter. This section should bring together the physical and chemical characteristics of the site and contaminants and the results from the three models. From this, a unified description of the qualitative and, if the data permit it, quantitative description of the primary fate and transport mechanisms acting on each site should be presented.

Page 5-1, p 4: As shown on Figure 1-3, the elevated pad is <u>not</u> defined by the 742 foot contour.

Page 5-2, p 3: Figure 1-13 is not rainfall information. Consider restating the information, or a portion of it, in this section since it is fundamental to the analysis.

Page 5-3, p 3: Water Balance: Why are 1975 and 1957 models and information being used? Why not use more recent models such as the HELP model. Also, what is the point of this exercise? The text states that "understanding the water balance of the site is helpful in evaluating the contaminant fate and transport at SEAD-25," yet this analysis or its results are not referred to at all in the rest of the chapter.

When presenting an analysis of this type, the general methodology, assumptions and results should be presented and explained as necessary in the text, with the details of the analysis presented in an appendix. This also applies to the modeling given in sections 5.3 and 5.4.

Page 5-5, p 4: These assumptions concerning snowfall and snowmelt given here are gross generalizations which appear to be the direct cause of the results presented in para 2, Page 5-7.

Page 5-7, p 2: See comment Page 5-5, p 4 above.

Page 5-7, p 3: An explanation of how these results factor into the fate and transport of contaminants at the site should be given in the text.

Page 5-7, p 4-5: Summary tables or figures of the analytical results should be reproduced or referenced.

Page 5-12, p 1: Reference the section with the discussion of the water balance.

Page 5-13, Table 5-2: This table should only include compounds which are relevant to SEAD-25 and SEAD-26. Delete any compounds which are not of concern at the site. Also, the table should not include bioconcentration factors, which are not relevant to this section, or half-life, which is highly dependent on the circumstances under which it is measured.

Page 5-20, p 2: The statement that VOCs degrade or decay over time conflicts with various other statements in this chapter concerning degradation of various compounds. Please clarify.

Page 5-21, p 1: It is irrelevant how many of the compounds listed in Table 5-2 will volatilize. Discussions in the text should be confined to the contaminants of interest at the site. See also the discussion of Table 5-2 at Page 13ff.

Page 5-21, p 2: General statements such as those which begin this paragraph should be left out unless they are related to specific concerns at the site.

Page 5-21, p 4: How much of the "following information" was obtained from the referenced document? This material should be properly referenced. Also, reproduction of information from a reference should be limited to that which is directly applicable to the specific site situation.

Page 5-21, p 5: Equilibrium partitioning assesses distribution of contaminants at steady-state, it does not assess transport pathways.

Page 5-22, p 3: The mass of contaminants which are transported in the vapor phase is generally small compared to other modes of transport. Also, it is only minimally affected by barometric pressure. Please explain how it would be affected by convection currents.

Page 5-22, p 5: Is the affect of salinity on the Henry's Law constant relevant to this site? If so, the reason should be stated, if not, reference to it should be deleted here and in the several other places that it occurs in this chapter.

Page 5-22, p 6: Please explain why releases to the atmosphere and tropospheric lifetime are important factors at these sites.

Page 5-23, p 2: Please clarify the third and fourth sentences "Volatilization represents ...".

Page 5-23, p 4: Solubility does not "cause impacts to the groundwater". Please restate or delete. Also, what is the relevance of the state of TCE and DCE since no pure product was found?

Page 5-23, p 5: Vapor pressure is not relevant to fate and transport since no pure product was found. Relative humidity and barometric pressure effects on vapor pressure would be negligible in the event that pure products were present.

Page 5-24, p 3: Please explain how "soil, sediment, and suspended particulate matter represent an important media for the transport of the chemicals."

Page 5-24, p 5: Provide backup for this paragraph or delete it. Both biodegradation and volatilization are generally insignificant for PAHs.

Page 5-25: Partitioning Model of Fugacity: See Page 5-3, p 3ff comment.

Page 5-25, p 1: Why is the fugacity model for VOCs being applied to SEAD-26 when 5.2.2, Chemical Characterization, states that various appropriate limits for VOCs in different media were not exceeded?

Page 5-39, p 2: There is no figure 5-1 showing TCE breakdown products.

Page 5-34, 5-39 Fugacity model results: The results were not related to the existing conditions on the sites. How well do the model results represent what is happening at the sites? How can this information be used to predict what will happen on the site?

Page 5-41, p 2: How does this relate to conditions at these sites?

Page 5-42, p 2,3: How do the various items mentioned here pertain to the site? Is photochemical oxidation of TCE in air, or the half-life of TCE in water relevant?

Page 5-42, p 4: The information in this paragraph is incorrect; there is considerable evidence in the literature of microbial biodegradation of PCE and TCE in both laboratory and field environments. What is the purpose of the statement "Biodegradation should be assumed to be of minimal importance except in landfills with active microbial populations."? This type of statement needs to be related to the conditions at the site and backed up with further technical information.

Page 5-42 to 46, Semivolatile Organic Compounds: A considerable amount of space is devoted to discussing the properties and possible fate and transport pathways of 2,4-dimethylphenol and naphthalene, which are the two most prevalent SVOCs on the two sites. However, there is no attempt made to identify how these properties and pathways are applicable to the sites being examined.

Page 5-45, p 2: Naphthalene does not have a "relatively high aqueous solubility." Also, the conclusion in the closing statement is not supported by the beginning of the paragraph.

Page 5-46, p 5: It is incorrect to say that the vadose zone does not need to be modeled with the transport model because is was already estimated within the fugacity modeling. These are entirely different models, the fugacity model being a simple steady state model of contaminant distribution, and the transport model being a time-dependent dynamic model of contaminant movement.

Page 5-48, Input Parameters: The nomenclature listed does not match the formula nomenclature (English and Greek mixed, upper and lower case differences). Also, there is no justification for the values listed in Table 5-6, contrary to what the text states.

Page 5-48, p "The graphical ...": Figure 5-1 should be given as four separate figures.

Model Output: The actual concentration used at distance "0", 3.98 mg/l, does not correspond to Figure 4-3 which gives the concentration at the source as 3.04 mg/l.

Page 5-49, p 4: Why is the model being run for BTEX at SEAD-26? Section 5.2.2 seems to indicate that VOCs (i.e. BTEX) are not a concern at this site.

Page 5-50, p 1: As with SEAD-25, it is unlikely that the conditions at SEAD-26 represent one-dimensional flow in a homogeneous, isotropic medium. Note the description of the site on Page 10, p 2: "The burning pit and surrounding area is composed mostly of fill that is from 6.0 to 14.0 feet thick. On the basis of excavations performed at SEAD-26, the fill contains non-metallic construction debris and boulders as well as metallic debris (e.g., pipes, bucket, steel fragments)."

Transport Modeling, General Comments (see also p 5-3, p 3ff comment): This modeling effort will require much more support before it can be considered credible for predicting fate and transport on these sites. More background on the model should be provided, including its general methodology, input parameter requirements, assumptions made, resulting output, model limitations, and model sensitivity. Appropriate backup should be provided for all of the input values given in Table 5-6. Consider including a generic diagram indicating what the model accomplishes and maps depicting the model output for each site.

Appendix I (ODAST Model), should be referred to in the text if it is being used to support the analysis. The equations given in the text do not correspond to the equations given in the appendix. The output graphs given in the appendix also seem to bear no relation to the information given in the text. The concentration input for BTEX at SEAD-25 given in the Appendix (3.04 mg/l) corresponds to Figure 4-3 but does not correspond to Table 5-6. (See also Model Output comment). As it stands, the information given in the appendix and the text is insufficient to determine if the model results are credible.

It is unclear what simplifications were made to the model for its application to SEAD-26. These should be more clearly stated.

The validity of the modeling effort for predicting the change in concentration with time is questionable since only one true data point is available for each site. For SEAD-25, the concentration versus time graph is generated from this single data point and an initial condition based on the results of a previous model run, and cannot be considered reliable. For SEAD-26 the prediction is based solely on an initial concentration in one well and cannot be considered reliable.

SECTION 6.0 AND 7.0

Because of the volume of comments on Section 6.0 and the similarity of Sections 6.0 and 7.0, the review of Section 7.0 was cursory; only the site-specific data usage was reviewed in detail. Since the format and methodologies appear consistent between Sections 6.0 and 7.0, the specific comments on Section 6.0 generally apply to Section 7.0 and should be corrected as noted in the following comments.

General Comment: The overall approach and content of the Baseline Risk Assessment was compared to that outlined in the Draft Final Generic Remedial Investigation/Feasibility (RI/FS) Work Plan. To conform to the Work Plan, the following items should be included in the Baseline Risk Assessment:

- Evaluation of the potential for inhalation of contaminated respirable particulates by construction workers during intrusive soil activities.
- Separate assessments of the potential for adverse, noncarcinogenic health effects in resident children.
- "Summary toxicity profiles which summarize pertinent information regarding the chemicals."
- "Comparison of exposure concentrations to ARARs" in the Risk Characterization.

Page 6-3, P1: While not incorrect, on-site surface soil is defined here, and throughout Section 6.0 and Section 7.0 as soil collected from the "0 to 0.5 foot range" or from "0 to 6 inches below grade". However, the Soil Investigation described in Section 2.2.5 indicates that samples "0 to 2 inches below grade for the RI program" or "from 0 to 2 inches below the organic matter" were collected from soil borings at SEAD 25 and SEAD 26 and that "grab samples of surface soils . . . from 0 to 2 inches below ground surface" were collected at SEAD-26. The text should be revised to better, and more accurately, describe the surface soil and surface/subsurface soil data sets.

Page 6-3, P1: The text should be revised to include more complete descriptions of the samples included in each data set. Specifically:

- Based on the number of surface soil and soil analyses reported in Table 6.3, it appears that data from samples collected to characterize background (i.e., SEAD25-6 and SEAD25-7) were included in the soil data sets.
- Information should be provided to account for the 44 groundwater analyses reported in Table 6.3. Based on Section 2.3.7.4 Groundwater Sampling, three monitoring wells were sampled during the ESI and 19 monitoring wells were sampled during the Phase I RI. The rationale for combining data from monitoring wells screened in the till/weathered shale and the competent shale should be provided. It also appears that data from samples collected to characterize

background (i.e., MW25-1, MW25-6, and MW25-7D) were included in the groundwater data set.

- Based on the number of surface water samples reported in Table 6.3, it appears that a duplicate analysis was included as a separate analysis and that samples collected to characterize background were included in the data set.

- Based on the number of sediment samples reported in Table 6.3, it appears that two duplicate analyses were included as separate analyses and that samples collected to characterize background were included in the data set.

- Since the baseline risk assessment is intended to characterize risks associated with contamination at or migrating from SEAD 25, surface water and sediment data from upstream locations should be used to distinguish site-related contamination and contamination that could have originated from off-site sources and to select site-related chemicals of potential concern.

- A rationale should be provided for the inclusion of data from samples collected to characterize background in the data sets.

Page 6-5 Toxicity data should be presented in hierarchal order.

Page 6-5, P4: ". . . literature-derived calculations . . ." were not and should not be used in the human health evaluation. The text should be corrected.

Page 6-7, Sec. 6.2.1.1, P1: ". . . four sites . . ." in the last sentence should be corrected as the background data set includes data from "the SEAD 25 RI, 25 ESIs, the Ash Landfill, and the OB Grounds site."

Page 6-9, P1: While referred to here as "replicates", these samples are referred to as "duplicates" in the remainder of Section 6.0. The terminology should be made consistent throughout.

Page 6-9, Section 6.2.2: The results of the split sample analyses are not mentioned in this subsection. A brief discussion of the comparability of the sample data to the split sample data should be presented.

Page 6-11, Sec. 6.2.2.3, P2: As no prior mention is made in Section 6.0, some discussion of Phase I and II samples and results should be provided. The statement regarding "comparison to reference standards" and the term "reference standard" should be clarified. No such comparison is made in Section 6.0.

Page 6-11, Sec. 6.2.2.3, P3: There is difference between a 95% upper confidence limit and a 95th percentile value. The USEPA's Supplemental Guidance to RAGS: Calculating the Concentration Term (USEPA, 1992; Publication 9285.7-08I) should be consulted and the text and tables in Section 6.0 should be revised accordingly.

Page 6-11, Sec. 6.2.2.3, P3: Clarification should be provided as to how non-detects are treated in each calculation involved with establishing the data sets and estimating the exposure point concentrations. It appears that in selecting chemicals of potential concern non-detects are set equal to the SQLs, whereas in the derivation of exposure point concentrations non-detects are set equal to one-half of the SQLs.

Page 6-12, Sec. 6.2.2.4, P4: The data qualifiers presented are typically used with organic chemical analyses. For completeness, data qualifiers used with the inorganic chemical analyses should also be provided.

Page 6-13, Sec. 6.2.2.5, P1: Sample handling and sample transportation should be included in the list of possible sources of sample contamination.

Page 6-16, Sec 6.2.3: It appears from the numbers of analyses reported in Table 6-3 that duplicate samples were included in the data sets as separate analyses. Data from duplicate samples should not be treated as separate analyses; data from duplicate samples should be "composited" or averaged. The analyses should be revised accordingly.

Page 6-26, P1: The discussion of the WRS test should be revised to include (per Gilbert, 1987) that the two data sets need not be drawn from normal distributions and that the test can handle a moderate number of non-detected values by treating them as ties. The methodology for handling ties should also be briefly presented, assuming they were handled as described in Gilbert (1987).

Page 6-26 The Wilcoxon Rank Sum test (WRS Test) is employed to compare on-site soil and groundwater data sets to background soil and groundwater data sets. The statistical method is generally appropriate, however the small sample size compromises its results.

Page 6-27, P1: The text should be revised to indicate that the "four analytes" are in groundwater.

Page 6-27, P2: The text should be revised to indicate that four inorganic analytes (arsenic, cadmium, selenium, and thallium), not "five", "were shown to occur in the SEAD 25 groundwater data set . . .".

Page 6-27 By convention, confidence limits are set at 95%, rather than 97.5%.

Figures 6-2 to 6-9: The figures should be revised to include the concentration units.

Page 6-37, P1: It is not clear, at this point in the text, what ". . . among the largest r measurements . . ." means; only later in the text is this term described. The text should be revised accordingly.

Page 6-37, P2: "Under normal conditions, . . ." should be rephrased to avoid confusion with "normal distribution". It does not seem that "low detection levels" would necessitate the use of ". . . non-detect values . . ." in conducting the Quantile test. The text should be revised accordingly.

Page 6-37 Typo noted: alpha should be .05, not .5

Page 6-39, Sec. 6.2.4: USEPA Region II guidance for conducting exposure assessments is to select 90th-95th percentile exposure parameters for the RME analyses and 50th percentile exposure parameters for the CT analyses, but not vary the exposure point concentrations in the two analyses. The CT analyses should be revised accordingly.

Page 6-39, Sec. 6.2.4, P2: The reference "(from Gilbert, 1997)" should be corrected to read "(from Gilbert, 1987)".

Page 6-39, Sec. 6.2.4, P3: In deriving exposure point concentrations, the underlying distribution of the data for each chemical of potential concern in each data set should be determined statistically and the appropriate equation should be used to calculate the 95% UCL concentration. The USEPA's Supplemental Guidance to RAGS, Calculating the Concentration Term, indicates that it is the USEPA's experience that most large environmental contaminant data sets from soil sampling are lognormally distributed rather than normally distributed and that in most cases it is reasonable to assume that soil sampling data are lognormally distributed. In cases where there is a question about the distribution of the data set, they recommend that a statistical test should be used to identify the best distributional assumption for the data set. The USEPA guidance should be consulted and the analyses should be revised accordingly. Gilbert (1987) should be consulted for the appropriate statistical tests. No basis (e.g., USEPA guidance, statistical validity, etc.) is provided for the use of the "Three RME and CT selection guidelines" or for the statement that these guidelines ". . . assure the use of conservative (i.e., health-protective) exposure point values . . .".

Table 6.3: Aroclor 1232 is incorrectly listed in the table. The table should be revised to list Aroclor 1242. The subheading for "Metals" should be corrected.

Table 6.3: Maximum values are used as the exposure point concentration. This practice is inappropriate when the 95% UCL is lower than the maximum recorded value, as is the case in this data set.

Page 6-56, Sec. 6.3.3.1: Consideration should be given to evaluating exposure of site maintenance workers to contaminants on respirable particulates made airborne during the "regular mowing of the area" indicated on Page 6-54.

Page 6-56, Sec. 6.3.3.2: Acknowledgment should be made of the potential for off-site populations to be exposed to contaminants in groundwater in the future.

Page 6-57, P4: The text should be revised to clarify the phrase "intended current land use scenario".

Page 6-58, top: The term "ideal scenarios" is inappropriate and should be reworded.

Page 6-58, P1: This text is redundant and somewhat inconsistent with earlier presentations. In general, redundant text should be eliminated so as to not burden the reader and to avoid inconsistencies in presentation.

Page 6-58, Sec. 6.3.4.2.1, P1: The text regarding groundwater transport modeling should be revised to include a reference to this analysis in the RI Report and to indicate that the results were used only in the discussion of fate and transport mechanisms.

Page 6-60, Sec. 6.3.4.5: Comments on the Integration of Exposure Pathways include:

- Both surface and subsurface soil data should be used to evaluate exposure to soil in the future, residential land use scenario as construction, utility repairs, and yardwork could easily bring contaminants detected in deeper soil to the surface. About 75% of the samples were collected at depths of less than or equal to 4 feet and the deepest samples were collected at a depth of 8 feet (i.e., the approximate depth of a basement).

- As mentioned previously, consideration should be given to evaluating exposure of site maintenance workers to contaminants on respirable particulates made airborne during the "regular mowing of the area".

- Consideration should be given to eliminating surface water ingestion as a pathway of concern as such exposure, during wading activities, seems unlikely.

- Consideration should also be given to evaluating the surface water and sediment pathways for an older child or adolescent rather than for the resident child/adult as it seems that these age groups might be more prone to wading activities.

- For the construction worker, potential exposure to VOCs passively released to the ambient air from soil is not as relevant as VOC release during activities, like digging an excavation, that may enhance VOC release.

- Construction workers also have the potential to be exposed to contaminants on respirable particulates made airborne during activities like digging an excavation. Construction worker exposure to VOCs and contaminated respirable particulates during intrusive activities in the soil should be evaluated.

Page 6-62, P1: The belief that biotic intake pathways, such as the ingestion of garden vegetables, ". . . would represent a minor incremental increase in uptake . . ." is unsupported. The text should be revised accordingly.

Page 6-62, Sec. 6.3.4.6: The text (here and throughout Section 6.0) should be revised to correct for the distinction between an exposure pathway (e.g., groundwater) and an exposure route (e.g., ingestion).

Page 6-63, Sec. 6.3.4.6.5, P1: Metals should be added to the list of chemical types detected in soil. For the on-site construction worker, the phrase "will come into contact with" should be changed to "could come in contact with".

Page 6-65, P2: The statement that "Short-term (i.e., subchronic) and acute exposures were not evaluated" is incorrect as the exposure duration for construction workers is one year. The text should be revised accordingly.

Page 6-65, P4: The assumption "that the adult would be at greatest risk" for "pathways involving inhalation of ambient air or groundwater" is unsupported. The exposure assessment should be revised to include exposure of resident children. The potential for adverse non-carcinogenic health effects in resident children should be evaluated separately as there are many instances in the intake tables where Intake (Nc) for the child is greater than Intake (Nc) for the adult.

Page 6-66, Sec. 6.3.5.1.1: The USEPA's Guideline for Predictive Baseline Emissions Estimation Procedures for Superfund Sites (USEPA, 1992, EPA-450/1-92-002) should be specifically referenced. Site-specific total organic carbon and moisture content data for soil obtained during the RI should be used in the analysis rather than default values.

Page 6-68, P1: Since the average emission rate is a function of "exposure interval", average exposure rates that correspond to the exposure duration for each potentially exposed population should be derived. It is incorrect to use emission rates derived for 350 days/year, 24 hours/day, for 30 years for each potentially exposed population. The analyses should be revised accordingly.

Page 6-68, P2: The output files provided in Appendix J indicate that Screen3 was used as the atmospheric dispersion model. The text (and the appendix title page) should be revised accordingly.

Page 6-68, P4: The text should be revised to include the location of each receptor and a discussion of why the nearest receptor is located 10 m from the source (presumably because it is at the downwind edge of the square area source).

Page 6-69, Sec. 6.3.5.1.2, P1: "Current off-site" use was not considered in this analysis. The text or the analysis should be revised accordingly.

Page 6-69, Sec. 6.3.5.1.2, P2: The text should be revised to:

- indicate that an inhalation rate of 20 m^3/day is appropriate for a construction worker since it corresponds to 2.5 m^3/hour over an 8-hour workday;
- indicate that 234 days is the EF for the construction worker in the CT analysis, and
- describe the 9-year ED and 5-year ED in the CT analysis.

Table 6-5: All parameters (e.g., H, K_d, K_{oc}) used to derive the ambient air concentrations should be provided so the reader can work through the calculations. One method of data presentation (e.g., scientific notation) should be selected and used consistently. The values for E_i/area appear incorrect; the calculations should be checked and the values revised accordingly.

Table 6-7: The text indicates that chemicals of potential concern without toxicological criteria were not carried through the quantitative risk assessment, yet such chemicals appear in this table and others throughout Section 6.0. The text or the tables should be revised accordingly.

Tables 6-7 to 6-12: The values for Intake (Nc) and Intake (Car) appear incorrect. The unit conversion and/or the calculations should be checked and the values revised accordingly.

Page 6-85, Sec. 6.3.5.3: Much of the methodology for assessing dermal exposure to soil is discussed in the corresponding section for sediment that appears later in the text. The methodology should be fully described here, the first time it is presented. The text should be revised to consistently include all parameters for both the RME and CT analyses and descriptions of each parameter. Assigning chemicals without credible ABSs for exposure to soil an ABS of 0% is misleading. It should be stated that USEPA Region II recommends quantifying dermal exposure for cadmium, arsenic, PCBs, dioxins/furans and pentachlorophenol (others are under development) only since credible values are not available for the other chemicals of concern. The text and tables should be revised accordingly. Rather than assigning a value of 0% ABS, these chemicals should be evaluated qualitatively in the uncertainty section.

Page 6-85: When combining childhood and adult risk estimates a composite 30 year duration (i.e., 6 childhood and 24 adult) should be used rather than individual 6 year (childhood) and 30 year (adult) durations.

Page 6-93, Sec. 6.3.5.4.1: The statement that "Antimony, arsenic, cadmium, selenium, and thallium were found to be above background" contradicts the text in Section 6.2.3. The text should be revised accordingly.

Page 6-93, Sec. 6.3.5.4.2, P2: While the USEPA only recommends that 6-year and 24-year exposure rates be used in estimating soil exposure and the associated cancer risks for an adult residing at a site for 30 years, using this approach consistently throughout the exposure assessment is acceptable. The text should be revised to consistently include all parameters for both the RME and CT analyses and descriptions of each parameter.

Page 6-96, Sec. 6.3.5.5.2: Much of the methodology for assessing dermal exposure to water is discussed in the corresponding section for surface water that appears later in the text. The methodology should be fully described here, the first time it is presented. The text should be revised to include the qualifications on the use of this approach by the USEPA in their Dermal Exposure Assessment: Principles and Applications (USEPA, 1992, EPA/600/8-91/011B). CW and CF are not needed in the equation for absorbed dose and the supporting text. Both parameters should appear in the equation for DA and the supporting text. The units (e.g., hours/day, events/day, etc.) should be checked and revised accordingly so they properly cancel in each equation.

Tables 6-27 and 6-28: The values for absorbed dose/event appear incorrect; the calculations should be checked and the values revised accordingly. The units for absorbed dose/event should be revised to mg/cm^2-event. The Permeability Coefficient appears as K_p in the text; the text or table should be revised accordingly. The parameter "B" does not appear to have been used in the calculations and should be deleted.

Page 6-100, Sec. 6.3.5.6.1, P2: The equation for C_{inf} should be revised to indicate that $[(E)(F_w)(Ct/1000)]$ is divided by F_a. The description of F_w should be revised to include the CT value of 8 L/min.

Tables 6-27 - 6-30: Dermal and inhalation pathways for water-borne contaminants are evaluated concurrently. Such an evaluation dictates the need to apportion the COCs between the water and vapor phases so as to avoid double counting.

Tables 6-29 and 6-30: The values for EPC-Air are incorrect since EPC-Groundwater was input in mg/L rather than the ug/L called for in the shower model. The columns for Efficiency of Release should be revised so that values do not appear as 0.00.

Page 6-106, P1: The USEPA guidance in RAGS (USEPA, 1989, EPA/540/1-89/002) recommends 20 m^3/day (or 0.83 m^3/hour) as the average inhalation rate for adults. The analyses should be revised accordingly.

Page 6-106, Sec. 6.3.5.7.1: The statement (here and throughout Sec. 6.3.5) that ". . . current concentrations are likely to be reduced over time." should be revised or eliminated since, in the absence of remedial action, concentrations might not be reduced until the source is depleted.

Page 6-106, Sec. 6.3.5.7.2: The text should be revised to include descriptions of the exposure parameters used in the analyses.

Page 6-107, Sec. 6.3.5.8.2, P1: As mentioned previously, consideration should be given to eliminating surface water ingestion as a pathway of concern as such exposure, during wading activities, seems unlikely. "The quantitative assessment of this exposure pathway . . ." does not include current uses. The text should be revised accordingly. CF is not needed in the equation for absorbed dose and the supporting text. The text should be revised to include both the bases and descriptions of the exposure parameters used in the analyses.

Page 6-110: There is no need to include the equation for DA_{event} twice; the text should be revised accordingly. The parameter "tau" does not appear in the equation for DA_{event} in the USEPA's Dermal Exposure Assessment: Principles and Applications. The reason for its inclusion here should be presented or the text, equation, and analyses should be revised accordingly. Values of the parameter "B" and "tau" are from Table 5-8 of the USEPA guidance; the text should be revised accordingly.

CF should appear in the equations for DA and DA_{event} and the supporting text in order for the units to properly cancel.

Page 6-110, P3: The text should be revised to read, ". . . if the exposure time per event (ET) is less than the breakthrough time . . . "

Page 6-114, P1: The USEPA in their Dermal Exposure Assessment: Principles and Applications recommends using a K_p of 1E-03 as the default for water. The text and analyses should be revised accordingly.

Page 6-114, Sec. 6.3.5.9: It is not clear what is meant by the phrases ". . . apparent lack of sediment, . . ." and "The sediment points on and around SEAD 25 are seasonal . . .". The text should be revised accordingly.

Page 6-115, Sec. 6.3.5.9.2: The units for IR should be revised to read "(mg sediment/day)". The text should be revised to include descriptions of the exposure parameters used in the analyses.

Page 6-121, Sec. 6.4: The toxicological criteria should be updated to reflect provisional criteria provided in the USEPA's Health Effects Assessment Summary Tables FY-1995 Annual (USEPA, 1995, EPA 540/R-95-036) and FY-1995 Supplement (USEPA, 1995, EPA/540/R-95/142). As discussed in the Draft Generic RI/FS Work Plan, the USEPA's Superfund Health Risk Technical Support Center should be contacted for provisional criteria for chemicals of concern without toxicological criteria in IRIS or HEAST. Table 6-41 (not Table 6-29 as indicated in P2) and all risk estimates should be revised accordingly.

Page 6-123, Sec. 6.4.1.2.: The USEPA's guidance in RAGS recommends multiplying, not dividing, oral RfDs by oral absorption efficiencies for use in characterizing risks from dermal exposure. The text and all risk estimates should be revised accordingly.

Page 6-124: There is no reason to assume 100 % absorption for the metals not listed here. Besides Owen (1990), there are other readily available literature sources that should be consulted for oral absorption efficiencies, including the ATSDR Toxicity Profiles and Carson et al.'s Toxicology and Biological Monitoring of Metals in Humans (Carson, B.L., H.V. Ellis, III and J. L McCann, 1986, Lewis Publishers, Inc.). The list and the appropriate analyses should be revised accordingly.

Page 124: The discussion regarding the adjustment of oral toxicity factors for dermal exposure is incorrect. Assuming 100% oral absorption when adjusting a toxicity factor to account for the difference between administered and absorbed dose serves to underestimate risk rather than overestimate it. Consequently, many of the adjusted dermal RfDs and Slope Factors in **Table 6-41** are calculated incorrectly. This error is most apparent for cadmium.

Page 6-124, Sec. 6.4.1.3: The text should be revised to include a statement that chronic RfDs and RfCs were used to characterize risks associated with less than chronic exposures.

Page 6-127, P1: It is unnecessarily conservative to assume that all chromium detected in site samples is the hexavalent species. Consideration should be given to characterizing chromium risks based on the toxicological criteria for trivalent chromium or to assuming that only a percentage of the total chromium is present as the hexavalent species. The USEPA regards all Aroclor mixtures as Group B probable human carcinogens. The text should be revised accordingly.

Table 6-41: The toxicological criteria listed in the table should be checked against the most recent IRIS entries and the 1995 HEAST and revised accordingly. The table should be revised to include provisional criteria provided by the Superfund Health Risk Technical Support Center. A few apparent errors (e.g., the inhalation RfD listed for 1,4-dichlorobenzene is the RfC) were noted that should be corrected. As there are two oral RfDs for cadmium, one for water exposure and one for food exposure, both RfDs should be listed and used to characterize risks associated with exposure to the respective media. The values for Dermal RfD and Carc. Slope Dermal should be revised as indicated in other comments.

Page 6-131, P2: Relative potencies of 0.01 and 0.001 are recommended for benzo[k]fluoranthene and chrysene, respectively, in the USEPA's Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993, EPA/600/R-93/089). The text, the slope factors in Table 6-41, and all corresponding analyses should be revised accordingly.

Page 6-131, Sec. 6.4.2.2: The USEPA's guidance in RAGS recommends dividing, not multiplying, oral slope factors by oral absorption efficiencies for use in characterizing risks from dermal exposure. The text and all risk estimates should be revised accordingly.

Page 6-132, Sec. 6.5: Comments on the Risk Characterization include:

- Risk estimates should be corrected to one significant figure as more than one significant figure implies a precision that is not possible with the current risk assessment methodologies.
- One convention for reporting risk estimates in scientific notation (i.e., 4E-04) should be used. The text or the tables should be revised accordingly. It might help the reader to indicate, for instance, that 4E-04 means either 0.0004 (as a hazard index) or 4 in 10,000 (as an estimated cancer risk).
- If the hazard indices or estimated cancer risks are less than or within the USEPA's risk criteria, there is no need to single out which exposure pathways, exposure routes, or chemicals of potential concern are the predominant contributors to the risk estimates. Doing so only brings undo attention to results that are of little significance.
- Stating that the risks from dermal exposure to soil or sediment are "zero" or 0.0E+00 is incorrect as absorbed dose was not quantified for most chemicals of potential concern. The text and the corresponding tables should be revised accordingly, if not eliminated altogether.

- The presentation of RME and CT risks is inconsistent, as quite often the CT risks are not presented. Similarly, the presentation of medium-specific risks is inconsistent as not all medium-specific risks are presented.

- Consistent terminology should be used throughout (e.g., USEPA-defined target range vs. USEPA target range).

- The potential for adverse health effects should be addressed qualitatively for all chemicals of concern without at least one toxicological criterion (i.e., an oral RfD, RfC, oral slope factor, or inhalation unit risk). Such a risk characterization could be in the form of a brief toxicological profile and a brief discussion of the extent and magnitude of site-related contamination for each chemical.

Page 6-134, P3: A reference should be provided for the "National Contingency Plan".

Page 6-134, Sec. 6.5.1.3: Since concentrations of TICs are unsupported best-guesses, qualifiers such as "fairly low" and other concentration-related statements should be removed from the text.

Page 6-150, P2: "Noncarcinogenic exposures for the Central Tendency scenario" were not "a full order of magnitude lower than the RME scenario". If that was the case, the CT hazard index would have to be 0.31. The text should be revised accordingly.

Page 6-166, P4: The chemical-specific hazard indices presented only account for about one- half the RME total hazard index. The text should be revised to include a more complete accounting, if possible.

Page 6-167, P1: The total RME pathway risk is 1.8E-06. The text should be revised accordingly.

Page 6-167, P4: The total pathway risk presented is for the CT scenario, not the RME scenario. The text should be revised accordingly.

Page 6-167, P5: The text should be revised to indicate that the CT risks were within the "USEPA target range".

Tables 6-70 and 6-71: The tables were not included in the copy of the draft RI Report.

Page 6-179, Sec. 6.5.4.2, P5: A total RME cancer risk below the USEPA target range should not be regarded as "elevated". The text should be revised accordingly.

Page 6-182, Sec. 6.5.5.2: There is a certain "double-counting" when estimating exposure to VOCs in groundwater from both inhalation and dermal contact as VOCs released into the air should not be available for dermal contact. In the inhalation of ambient air analyses, use of maximum 1-hour average concentrations to assess long-term exposure is very conservative. The text should be revised to indicate these exposures may be overestimated.

Page 6-182, Sec. 6.5.5.2, P4: It does not appear, based on the earlier text, that "several sources were checked" regarding soil absorption factors. It appears that only the USEPA's Dermal Exposure Assessment: Principles and Applications was consulted. The text should be revised accordingly.

Page 6-183, P1: Site-specific exposure frequencies that reflect seasonal conditions could have been used in the CT analysis. The CT analysis should be used to examine the sensitivity of the risk estimates to such parameters.

Page 6-184: The USEPA soil lead guidance cited is outdated. The USEPA's Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities (USEPA, 1994, EPA/540/F-94/043) should be consulted and the text revised accordingly. The current screening level for lead in residential soils is 400 ppm.

Page 6-184, P3: The statement that "Oral toxicity values were used without adjustment to calculate risks from dermal exposure . . ." is incorrect. The statement that ". . . carcinogenic risks from dermal exposure to PAH's were summed separately from other compounds" is incorrect as no such analysis was presented. The text should be revised accordingly.

Page 6-185, Sec. 6.5.5.5: As conducted, EPCs were also varied in the CT analysis. The text should be revised accordingly.

Appendix E: The curves generated by Aqtesolv should be provided in the appendix for review to check the portion of the data was used for the calculations.

Appendix F: Curves should be presented for the data presented in this Appendix.

Appendix I (ODAST Model): This model should be referred to in the text if it is being used to support the analysis. The equations given in the text do not correspond to the equations given in the appendix. The output graphs given in the appendix also seem to bear no relation to the information given in the text. The concentration input for BTEX at SEAD-25 given in the Appendix (3.04 mg/l) corresponds to Figure 4-3 but does not correspond to Table 5-6. (See also Model Output comment). As it stands, the information given in the appendix and the text is insufficient to determine if the model results are credible.

It is unclear what simplifications were made to the model for its application to SEAD-26. These should be more clearly stated.

The validity of the modeling effort for predicting the change in concentration with time is questionable since only one true data point is available for each site. For SEAD-25, the concentration versus time graph is generated from this single data point and an initial condition based on the results of a previous model run, and cannot be considered reliable. For SEAD-26 the prediction is based solely on an initial concentration in one well and cannot be considered reliable.

RCRA Programs Branch

1. In SEAD 25. Justify the assumption that natural attenuation of benzene, ethylbenzene, and total xylenes will occur in about 40 years in soil of SEAD-25. How do you demonstrate that VOCs are not migrating to an appreciable extent from soil to groundwater?

The fugacity and groundwater modeling systems should be described in detail.

2. It is anticipated that the following ARARs will be applicable during the remedial activities.

- 40 C.F.R. Part 261 - Identification and listing of hazardous waste;

- 40 C.F.R. Part 262 - Standards Applicable to Generators of Hazardous Waste;

- 40 C.FR. Part 264 - Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; and

- 40 C.F.R. Part 265 - Groundwater Monitoring.

- 40 C.F.R. Part 268 - Land Disposal Restrictions.

If you have any questions, please call me at (212) 637-4322.

Sincerely yours,

C. Struble

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