DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

November 7, 1996

REPLY TO
ATTENTION OF
Engineering and
Environmental Office

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. Kamal Gupta
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Gupta:

In accordance with Section 17.7 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA acknowledges EPA's letter, dated November 1, 1996, that states formal consultation concerning the Ash Landfill is not warranted.

EPA's letter is considered to close comments on both the revised Groundwater Modeling Report and the revised Feasibility Study for the site. Accordingly, these two documents will be combined as one finalized document incorporating comments received. In accordance with the provisions of the FFA, this document will be submitted not later than December 16, 1996, 45 days from closure of comments.

Questions may be directed to Stephen M. Absolom, BRAC Environmental Coordinator, at (607) 869-1309.

Sincerely,

Stephen W. Brooks
LTC, U.S. Army
Commanding Officer

MODE = MEMORY TRANSMISSION START=NOV-12 09:13 END=NOV-12 09:23

FILE NO.= 105

NO.	COM	ABBR/NTWK	STATION NAME/ TELEPHONE NO.	PAGES	PRG.NO.	PROGRAM NAME
001	OK	<02>	RANDY B	002/002		
002	OK	<04>	EPA CARLA	002/002		
003	OK	<05>	DEC KAMAL	002/002		
004	OK	<06>	ES MIKE D	002/002		
005	OK	<07>	COE HEALY	002/002		

-SENECA ENG/ENV -

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

SEP 2 3 1996

EXPRESS MAIL

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

Re: Revised Groundwater Modeling Report at the Ash Landfill Site
Revised Draft Feasibility Study (FS) Report at the Ash Landfill

Dear Mr. Absolom:

This letter is in response to SEDA's submittals of the revised documents referenced above. After reviewing the updated groundwater modeling report, results of the quarterly monitoring performed at the Ash Landfill and SEDA's responses to our comments on the FS report, EPA has determined that we cannot support natural attenuation as the preferred alternative to remediate the contaminant plume at the Ash Landfill. The Army's new modeling still indicates significant off-base migration, with the plume eventually reaching the farmhouse wells. Results included in the June 1996 groundwater monitoring report for the Ash Landfill indicated that an increase in VOC concentrations has been demonstrated in two of the off-site wells. Natural attenuation can remain as an alternative in the FS, but another groundwater cleanup alternative should be selected to present to the public as the proposed remedy.

Three scenarios were run with data collected after the soil removal action was completed. These most recent scenarios were run with 3 different degradation constants. Scenario 3A predicts after 50 years, the maximum concentration off-site at the SEDA fence line would be 176 ppb total VOCs, with the plume reaching the farmhouse wells in approximately 60 years, achieving maximum concentration of 10 ppb total VOCs in 140 years. Scenario 3C predicts the maximum concentration of 87 ppb total VOCs off-site at the SEDA fence line in 46 years, with the plume reaching the farmhouse wells in approximately 60 years achieving a maximum concentration of 1.4ppb total VOCs in approximately 130 years. Scenario 3B predicts the concentrations will be reduced to 5 ppb total VOCs in 12 years, with the plume fully degrading before it reaches the farmhouse wells.

Results included in the June 1996 groundwater monitoring report for the Ash Landfill indicated that VOCs were detected in two of the off-site wells, for the first time in March of 1996. Cis-1,2-Dichloroethene and Toluene were found in MW56 which is approximately 225 feet off SEDA property. Toluene was detected in MW47, about 375 feet off-site. Unfortunately, the Army's proposed contingency plan of buying out property and providing alternate water supplies as they become contaminated is not an adequate contingency plan. There are no off-site wells situated between MW56 and the SEDA fence line. However, on-site wells PT24 and MW29 (nearest the fence line) will be sampled with the September 1996 round of quarterly monitoring to give us an indication of how the plume is progressing near the SEDA fence line.

During our April conference calls, EPA discussed that three debris piles at the Ash Landfill showed lead at maximum concentrations of 1630 ppm, 2890 ppm and 1750 ppm. The Army agreed that these soils should be excavated to meet the 500 ppm cleanup level for lead already agreed to at the Open Burning Grounds. The Ash Landfill FS should be revised to include this soil remedy.

OUTSTANDING ISSUES PERTAINING TO SEDA'S RESPONSES TO EPA'S MARCH 22, 1996 ASH LANDFILL FS COMMENTS

Response to General Comment # 1:

The response makes the reasonable conclusion that a decrease in turbidity in ground water samples is associated with a decrease in the concentration of inorganic constituents. However, the conclusion that if turbidities were further reduced that concentrations of inorganic constituents would all be below ARARs is conjecture. The available information indicates that in some ground water samples certain ARARs for inorganic constituents are exceeded. For example, the turbidity in MW-53 was 40 NTUs, which is below the New York State Department of Environmental Conservation guidance of 50 NTUs for ground water samples, and ARARs for chromium, lead, and nickel were still exceeded.

The contention that the lead concentration in ground water samples from MW-44 would be lower due to the dewatering of soils during excavation for the thermal treatment seems to be inconsistent with the argument that turbidity causes elevated lead values. If the ground water itself did not contain the lead then how did removing ground water help to reduce future lead concentrations? Is the text implying that dewatering removed a sufficient amount of fine-grained sediment from the soil? In two places in the response to comment, it appears that the identification of the referenced tables is incorrect. In the second paragraph, the reference to Table A should to be Table B. In the third paragraph, the second reference to Table B should be Table A.

The text states that manganese is a commonly occurring element that is considerably less toxic than other metals. Manganese, while an essential nutrient, can cause a Parkinson's-like syndrome in doses not far removed from the Recommended Daily Allowance (RDA), and should therefore not be dismissed as relatively non-toxic.

Treatment of groundwater for dissolved metals will be coincident with its treatment for VOCs. The collection of groundwater which contains VOCs will also collect groundwater which contains dissolved metals. Due to the concentrations of dissolved metals in the groundwater, pretreatment by precipitation/flocculation will likely be necessary to minimize maintenance requirements of VOC removal equipment. Treatment of groundwater containing dissolved metals will need to meet applicable requirements prior to discharge.

Response to General Comment # 2:

The response to comment indicates that a contingency plan will be initiated if ground water monitoring indicates a statistically significant upward trend in the constituents of concern. The text indicates that the contingency plan includes the purchase or leasing of off-site land which has been affected. Other elements of the contingency plan are not specified in this response so that it is not possible to fully evaluate its effectiveness. It should be noted that in discussing the Natural Attenuation alternative, the Draft Ash Landfill Feasibility Study (Section 5.3.1.2, page 5-19) states that "there is some uncertainty associated with long term protectiveness since off-site land use cannot be controlled." If this statement is accurate then it is unclear how the contingency plan can rely on the ability to purchase or lease off-site property in the future. As SEDA is a base closure site, the objective of which should be to transfer property from government ownership, a contingency which requires the purchase of more property is inappropriate.

Response to Specific Comment # 6:

The response indicates that the dewatering during the excavation of soils for thermal treatment is believed to have reduced contaminant concentrations in the vicinity of MW-44. If there are recent analytical results which support this belief they should be cited.

Response to Specific Comment # 12:

In its response, Parsons E-S indicated that they could not find specific comment # 10 which was cross-referenced in specific comment # 12. However, comment #12 which cross-referenced comment # 10 was included in the March 22, 1996 letter.

PROGRAM SUPPORT BRANCH

Response to Specific Comment #4

It appears that in calculating summary risk statistics the total receptor risk from current on site hunters and future on site construction workers was added together. It is inappropriate to sum the risk from current and future exposure scenarios. Additionally, the risk summaries for both the current on site hunter and the future on site construction worker do not agree between the RI report (Table 6-48) and the FS report (Table 1-1).

Response to Specific Comment #5

The text includes the following incorrect statements:

> "The second factor (determining the lead clean-up level of 500 mg/kg) was the result of an EPA transport model study, which determined that a lead soil level in the range of 16 mg/kg, 88 mg/kg and 483 mg/kg would be protective of groundwater."
>
> and
>
> "Therefore, the range of concentrations between 88 mg/kg and 483 mg/kg is the allowable concentration of lead in soil that will not produce a concentration of lead in groundwater above the Federal action level of 15 μg/L."

The clean-up goal of 500 mg/kg for lead in soil was not based on the results of EPA's modeling study. The clean-up goal was based on the results of conference calls between the Army, EPA nad NYSDEC, summarized in Steve Absolom's June 30, 1995 letter to Kamal Gupta and Carla Struble, regarding the May 31, 1995 conference call.

Since September 1994, EPA has been requesting that the Army perform extnesive fate and trasport modleing of lead in soils to determine what specific concentration of residual lead remaining in soil would still be protective of groundwater and ensure ARARs would not be exceeded in the future as a result of lead leaching from soil to groundwater. The Army has not performed this modeling. EPA utilized the VLEACH model along with broad assumptions concerning existing site information in order to develop a screening level. In order to protect groundwater, the simulated soil cleanup level range was 16 mg/kg to 483 mg/kg for lead in soil. The reason EPA is requiring the Army to perform appropriate post-remediation groundwater monitoring at the OB Grounds is because there is currently no guarantee that 500 mg/kg of lead remaining in soil will be protective of groundwater.

As required by the Federal Facilities Agreement between our agencies, EPA anticipates that the Army will respond to and revise the Draft FS for the Ash Landfill to address the concerns expressed in this comment letter. In an effort to save time, the revised pages to the Ash Landfill FS and the Draft Proposed Plan for the Ash Landfill can be submitted simultaneously. If you have any questions, please call me at (212) 637-4322.

Sincerely yours,

Carla M. Struble, P.E.
Federal Facilities Section

Attachment

cc: K. Gupta, NYSDEC (w/attach)
R. Battaglia, USACE-NY (w/attach)
K. Healy, USACE-HD (w/attach)
M. Duchesneau, Parsons ES (w/attach)

ATTACHMENT

The following comments on the Groundwater Modeling Report are provided for information and discussion only. Further revisions to the document are not necessary. The approporiateness or inappropriateness of natural attenuation as a remedy for the Ash Landfill has been judged from the report in its present form.

GENERAL COMMENTS

- The justification of why the groundwater flow model is calibrated to a recharge value of 0.07 in/yr (p. 4-17) is still very dubious. The water balance analysis presented estimated a recharge value of 7.1 in/yr (p. 4-13). This analysis incorporated the evapotranspiration calculated by the Thornthwaite and Mather (T&M) method of 20.40 in/yr (p. 4-11). This value of recharge corresponds, in general to the seasonal water level fluctuations measured at the site. The report explains that the discrepancy between the water balance recharge value and the model calibrated value (i.e., 7 in/yr - 0.07 in/yr = 6.93 in/yr) is due to ET from the water table surface since the T&M method does not take this phenomenon into account. After extensive research into the T&M method, it appears that the assumption that excess water evapotranspirated beyond what is already calculated by the T&M method is unreasonable. This is because the T&M method assumes that all of the water needs of the plant are satisfied and does not delineate where the source of water is derived (i.e., groundwater or percolating rainfall). Perhaps, an alternative explanation is that the excess is removed from the subsurface directly by evaporation from the soil. However, the report states that this mechanism is relatively unimportant (p. 3-26). Therefore, it is still uncertain what is a reasonable explanation for why the model needs to be calibrated with such a low value for recharge. It is our position that adequate explanation of the extremely reduced recharge estimates has not been provide.

- This final report included three new modeling scenarios (i.e., 3A, 3B, 3C) which were not included in the draft report. The methodology and usefulness of these scenarios are not clear. For example, why were these scenarios conducted using initial concentrations from the February 1996 sampling event while the model was "calibrated" to the July 1995 sampling event? Our recommendation would have been to use the July 1995 calibrated model to reproduce the February 1996 concentrations in an attempt to verify the adequacy of the calibration and evaluate how well the model predicts contaminant migration. Once this had been accomplished then the model could have been used for future predictive scenarios with greater confidence.

- The Army provided a table of biodegradation indicators which was incomplete and in some cases did not support that biodegradation was occurring. For example, ethane and ethene were generally not detected, and there was no trend of increasing chloride concentration with distance from the source, which would be expected if complete dehalogenation was occurring. Also, oxygen levels provided in a previous submittal indicate that conditions may not be sufficiently anoxic to support complete reductive

dehalogenation. Again, The Army does not seem to be following their own guidance in terms of documenting natural attenuation.

SPECIFIC COMMENTS

Section 6.3.1 Basic Transport Package Parameters (p. 6-5): The report states that for Scenario 3, July 1995 water quality data was supplemented with February 1996 data. However, in the Summary and Conclusions (Section 7) the report states that this new data was not included in the scenario. Actually, it appears that the data were not combined, but rather different scenarios were conducted using each independent data set as initial conditions (e.g., Scenario 3 with July 1995 data and Scenario's 3A, 3B, & 3C with February 1996 data).

Section 6.4.1 Simulation of Plume from Origin with VOC Source - Scenario 1 (p. 6-18): This scenario was used for calibration purposes by varying the degradation rate constant (k) between 0.0005/day and 0.00005/day. The results of these two simulations were compared using two different sets of wells. For example, the simulation where k = 0.0005/day was compared with wells PT-12, PT-23, and MW-45 and the simulation where k = 0.00005/day was compared with wells PT-12, PT-29 and PT-24. Both of these degradation rates provided simulation results that are "within the range of measured values regardless of the source term used." It is unclear which of the degradation rates, if either, are representative of site conditions and why two different sets of wells were used to evaluate the simulation.

Section 6.5.2 Future Plume Migration without VOC Source - Scenario 3 (p. 6-32)
The value of the degradation rate for the fourth simulation under Scenario 3C should have been changed from 0.000009/day to 0.00009/day.

The second paragraph states that the maximum concentration measured in July 1995 in PT-18 was 23,000μg/L and that no data was available from MW-44 because this well was destroyed during the source area removal. However, on page 6-36 (Scenario 3-A) the report states that February 1996 data indicate the maximum concentration at the source area wells PT-18 and MW-44 was 1,132μg/L. Some explanation should have been included regarding whether the well MW-44 was reconstructed prior to the February 1996 sampling event and, if so, whether it has similar construction characteristics (e.g., screened interval).

Section 6.5.2 Future Plume Migration without VOC Source - Scenario 3-C (p. 6-41)
The sentence in the fourth paragraph "Analysis of Scenario 3-C results (a moderately conservative run compared to Scenarios 3-A and 3B)..." is not valid. This simulation is conservative only with respect to Scenario 3-B.

Section 6.6 Sensitivity Analysis (p. 6-44)
It is unclear why the sensitivity analysis was conducted on the model simulations using the February 1996 data as initial conditions while the model calibration was conducted using the July 1995 data. Also, a sensitivity analysis is typically conducted on the calibrated model prior to conducting future predictive scenarios.

RESPONSE TO COMMENTS FOR
U. S. EPA
DRAFT FINAL FEASIBILITY STUDY REPORT
AT THE ASH LANDFILL
SENECA ARMY DEPOT ACTIVITY
ROMULUS, NY
MARCH 22, 1996

GENERAL COMMENTS

Comment #1 **Response to comments Presented in the letter, Comment #2, pages 4-6:**

The NYSDEC classification for groundwater at SEDA is Class GA - protection for a source of drinking water. CERCLA's implementing regulations, The National Oil and Hazardous Substance Contingency Plan ('NCP'), state that groundwater that is not currently a drinking water source, but is a potential drinking water source in the future, should be protected to levels appropriate to its use as a drinking water source. The intended use of SEDA and the Ash Landfill have yet to be definitely determined.

Contrary to what was stated in Parson's response to EPA's comments, the NY State groundwater standard GA is not more applicable to the site than Federal MCLs. Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), and the NCP (see 40 CFR Part 300.430(f)) establish as threshold criteria for remedy selection the protection of human health and the environment and the attainment of cleanup levels consistent with legally applicable or relevant and appropriate standards ("ARARs"). The NCP also states that Maximum Contaminant Levels (MCLs), which are enforceable drinking water standards promulgated under the Safe Drinking Water Act, and Maximum Contaminant Level Goals (MCLGs) above zero, are indeed relevant in considering cleanup levels for water that is or may be used for drinking, unless more stringent promulgated State standards exist.

Metals in groundwater are not effectively addressed by the groundwater alternatives. There seems to be an implicit assumption that elevated metals are an artifact of sampling and acidifying turbid samples. However, this cannot be assumed. Parsons ES states that turbidity is the cause for many of the exceedances. Turbidity measurements for a majority of the groundwater samples were not included in the RI Report and therefore could not be related to metal concentrations. If turbidity is the cause of the exceedances, low turbidity samples (filtered or low-flow purging) should be directly compared to turbid samples. In addition, low flow sampling methods should be used to obtain representative and complete metals levels in the aquifer as soon as possible.

Response #1 Agreed. We acknowledge EPA's argument that NY State Class GA groundwater standards are not more applicable than the Federal MCLs, and MCLs are relevant in considering cleanup levels for water that may be used for drinking. In response, further consideration of chemical ARARs for groundwater will include both Federal MCLs and NY State Class GA groundwater standards, the lowest of which will be the cleanup level for groundwater at the Ash Landfill.

With regard to metals in groundwater, we still maintain that turbidity is the cause of the exceedences of metals standards in groundwater at the Ash Landfill. In order to demonstrate that turbidity is the cause of these exceedences, high turbidity samples were compared to low turbidity samples (Table A). Turbidity data for many of the

groundwater samples collected in January 1992 (which were not previously included on Table 2-7 of the Ash RI) has been included in the current metals data set. Table A presents all of the available turbidity and metals data for each well at the Ash Landfill. For each well, the sample with the highest turbidity was compared to the sample with the lowest turbidity and the percent reduction in the metals concentration when the high and low turbidity samples were compared is shown in the far right hand column of Table A.

The analysis indicates that the metals concentrations are significantly reduced in the low turbidity samples, often below the MCL or GA standards. However, in some instances the turbidity in the least turbid sample was still relatively high and the concentration still exceeded the standard; the metals that exceed MCL or GA standards are highlighted in Table A. In all, metals concentrations in 10 wells exceed their respective MCL or GA standards. The metals that exceeded their standards in the 10 wells are as shown in collapsed form on Table B. The metals iron, manganese, and sodium were not included in this tally of 10 wells because these metals are very common (i.e., naturally occurring) in soil and groundwater and, more importantly, they are generally considered to be significantly less toxic than many of the other metals. Thus, exceedences by these metals are not believed to justify their consideration in remedial alternatives for groundwater, especially when turbidity is believed to be the cause of these and other exceedences at the site.

This discussion focuses on the more toxic metals cited in the Table B. For many of these metals, the concentration is significantly reduced from the higher turbidity sample to the lower turbidity sample, and often the concentration was reduced to below the standard (e.g., PT-18, PT-19, MW-28, MW-31, and MW-32) (Table A). For many of the latter wells in Table B, only one sample was available so no turbidity comparison could be made, however, the turbidities in the samples from these wells were relatively high (MW-43 through MW58D).

Lead exceeded the standards in 8 wells (Table B). Lead exceedences generally ranged from 17.3 µg/L to 28.8 µg/L, which is only slightly above the MCL and NYS Class GA standard values of 15 µg/L and 25 µg/L, respectively. Also, the sample from MW-56 contained a concentration of 44 µg/L and a turbidity of 18,000 NTUs. Considering the relatively high turbidity in these samples, and the relationship between turbidity and lead concentration demonstrated from other on-site samples, less turbid samples from these wells would likely have lower concentrations of lead. Because these concentrations are already only slightly above the standards, low turbidity samples would in all likelihood be below the MCL and Class GA standards. At MW-44, the lead concentrations was 147 µg/L (NTU = 100), which is the highest exceedence at the site. Currently, the lead concentration in groundwater at MW-44 is believed to be significantly lower since the removal action was performed and approximately 921,136 gallons of groundwater was removed from this area of the site.

Chromium exceeded the standards in 7 wells (Table B). Chromium exceedences generally ranged from 59 µg/L to 88.4 µg/L in 6 of the samples, and they are below the Federal MCL of 100 µg/L but above the NYS Class GA standard of 50 µg/L. One sample from MW-56 contained a chromium concentration of 351µg/L, but this concentration was associated with an extremely high turbidity value (18,000 NTUs). Again, all of these exceedences are related to high turbidity samples, and less turbid samples would result in lower chromium values, presumably below the Class GA standard.

Nickel exceeded the standards in 6 wells (Table B). Nickel exceedences generally ranged from 101 µg/L to 122 µg/L, only slightly above the Federal MCL of 100. The highest nickel concentration (533 µg/L) was associated with a turbidity value of 18,000 NTUs in MW-56. Again, less turbid samples would likely result in nickel concentrations below the MCL standard.

The remaining metals (zinc, antimony, barium, beryllium, and copper) exceeded their standards in one to three wells, and like the metals cited above, their exceedences are believed to be caused by the high turbidities in the samples (Table B).

Lastly, the filtered samples demonstrate that at even lower turbidities, the metals concentrations in these samples are reduced such that only one exceedence occurred; antimony was found in PT-26 at a concentration of 53.1 µg/L. It is noteworthy that PT-26 is located approximately 2,500 feet southwest of the Ash Landfill and is not in close proximity to any of the other wells on-site, yet exceedences for chromium, lead, nickel, and antimony were measured in this well. The high turbidity in this well is likely responsible for the many of the exceedences.

On the basis of the data presented in the attached tables, metals are not a believed to be a constituent of concern at the site and, therefore, metals in groundwater should not be considered in the migration control alternatives in the Ash Landfill FS.

Additionally, we have already implemented a low-flow sampling method for the RI/FS investigations that are currently being conducted at other sites at SEDA. The sampling method involves a low-flow purge with a submersible pump (i.e., bladder pump or centrifugal pump) followed by low-flow sampling using the same pump; aquifer stabilization criteria (such as temperature, pH, conductivity, Eh, DO, and turbidity) are measured with an in-line flow cell during the well purging process. This method has been effective in obtaining low turbidity samples from the wells at several SEADs.

Comment #2 **Response to General Comment #1, beginning on page 6:**

a) The response to Comment #1 states that alternative MC-2, Natural Attenuation, complies with all of the ARARs. This contradicts the Draft FS which was quoted in the original comment. The reasoning given is that "*with the passing of time*, the concentrations of VOCs in the groundwater would ultimately be reduced to levels below the NY State GA standards for groundwater" (italics added). It is difficult to see how this complies with ARARs. If this type of reasoning is to be used, the FS should state at time period after which ARARs would be achieved and should provide adequate technical support for the statement.

b) Also, it is acknowledged in the description of MC-1 (FS p. 3-17), the no-action alternative, that it "will not meet the Remedial Action Objectives due to exceedance of the GA groundwater ARAR." The description of MC-2 indicates that there is no substantial difference between this alternative and MC-1. The only additional actions to be taken in MC-2 are that institutional controls are to be added, and of these, deed restrictions are the only control which is not already in place. Note also that in Section 3.6.2.9 (p. 3-35) where the alternatives are being screened for ARAR compliance, it is stated that MC-2 "scores low." It is unclear how an alternative can "score low" in ARAR compliance. Either an alternative complies with ARARs or it does not. Even if there is a basis for a ranking (such as the number of ARARs complied with), MC-1 and MC-2 should be ranked equally which they are not. Additionally, in reference to the

ARAR compliance description in Section 3.6.2.9 on p. 3-35, on going monitoring does not affect compliance with ARARs.

There are circumstances under which ARARs may be waived and these are given in the USEPA guidance. If there is a reason to waive the ARARs, it can be done in accordance with Section 121(d)(4) of CERCLA.

Response #2

a) MC-2, the Natural Attenuation Alternative, will comply with all of the ARARs including the Federal MCLs or NY State GA standards for groundwater. Section 5.4 which presents a detailed description of Alternative MC-2, has been revised and currently presents technical support for the natural attenuation hypothesis including the results of the Groundwater Modeling Study, which is presented in its entirety in Appendix F of the FS Report, and historical groundwater data from the site. Three scenarios were modeled in the groundwater modeling study. Scenario 3 -B models the effects of the source removal conducted in the spring of 1995. Scenario 3-B uses post-remediation starting concentrations at the source area and uses a degradation constant (k) of 0.0005/day, which is considered representative of the site conditions. Based on the results of the groundwater modeling study for this scenario, the concentrations of VOCs at points on-site will be reduced to below 5 ug/L after approximately 15 years. At a point approximately 200 feet west of the SEDA boundary, the maximum concentrations of VOCs is 3.3 ug/L after approximately 10 years. For this scenario, the models predict that the plume will not move a great distance from the Ash Landfill, and will be completely degraded before it reaches the farmhouse.

Historical groundwater data collected from monitoring wells at the Ash Landfill indicate that degradation of the existing groundwater plume is likely occurring based upon measured concentrations of the breakdown products in downgradient wells. This data supports the proposal that removal of the source material combined with the microbial community at the site would eliminate the plume prior to the plume reaching the off-site receptors (i.e., the farmhouse). These supporting historical data as well as the results of the groundwater modeling study are presented in the discussion of Alternative MC-2 in Section 5 of the FS report.

b) All the Migration Control alternatives including the No-Action Alternative, MC-1, will comply with the ARARs. Therefore, all the migration control alternatives have been equally ranked in regard to compliance with ARARs in Section 3.6.2.9. The difference between the alternatives is in the time-to-compliance when concentrations of VOCs in the groundwater would be reduced to levels below the criteria. As discussed above, MC-2 will comply with the Federal or NY State GA standards for groundwater on-site after approximately 15 years.

Additional remedial actions have been added to MC-2 in order to control exposure to the VOC plume by receptors off-site. The remedial actions include an extensive groundwater monitoring program involving monitoring wells located along the boundary between the Ash Landfill and the off-site farm, and within the plume area. A contingency plan for off-site receptors will be initiated if the groundwater monitoring data indicates a statistically significant upward trend in the constituents of concern. The contingency plan includes purchasing or leasing the off-site land which has been impacted by the groundwater plume, deed restrictions of the off-site property, and providing an alternative water supply. The text in Section 3 and 5 of the FS has been revised to describe the additional institutional controls for MC-2.

Comment #3 **Response to General Comment #3, beginning on page 9:**

a) In the response to comment #3, regarding the fact that the methodology used for screening the remedial technologies and developing the remedial alternatives does not correspond with the methods outlined in the CERCLA RI/FS guidance document, Parsons ES has taken exception to this comment as "non-productive". They also note that the guidance states (p. 1-3) that the approach outlined is not a "rigid step-by-step approach that must be followed identically at every site." In Section 1.1, p. 1-3 of the FS it was Parsons ES that indicated that they would follow the guidance with the statement that "This report is organized in accordance with "Guidance for Conducting Remedial Investigations and Feasibility studies Under CERCLA," EPA/540/G-89/004, October 1988." Substantive deviations from the method in the guidance, such as combining the technology and process screening effort into one effort, should be noted clearly in the text. Also in the guidance, Section 1.2 Purpose of the Guidance, it states that "This guidance describes the general procedures for conducting an RI/FS." There is really no other guidance by which FSs are conducted - this guidance document does, in fact, represent the logic and organization that EPA expects to see in an FS. The guidance presents a uniform method of conducting and presenting FSs which assists both writers, readers, and reviewers in following a complex process. Significant variations from this should be logical and easily understandable by the reader.

The major concern in the original comment was not that the draft FS did not follow the guidance line by line, but that the FS deviated sufficiently such that it would not be able to fulfill the purpose for which it was intended, which is to provide a logical process for evaluating technologies and alternatives, and to provide a sound basis for the selection of the preferred alternative and preparation of the proposed plan.

Much of this has been remedied in the Draft-final FS, but a fundamental problem remains in Sections 3 and 5 regarding the development and screening, and detailed analysis of the alternatives. The final objective of an FS is to present alternatives which can address the site as a whole. This FS presents alternatives for either "source control" or "migration control", but none of the alternatives addresses the site as a whole. While the guidance make allowances for formulating media-specific actions and evaluating them separately in cases where the interactions between media are not significant, it is clear that these actions are to be combined into site-side alternatives which address all media (Guidance, Section 4.2.6 Assemble Alternatives). Implicit in this is that if the interactions between the media are determined to be insignificant, the backup for this should be presented in the FS. This was not done. The latest point at which these media-specific actions are to be combined into site-wide remedial alternatives is prior to the comparative analysis of the alternatives. Regarding the part of the response which says that "following guidance...would have required a discussion of forty-two (42) different remedial alternatives", note Section 4.3.3.1 of the guidance, entitled Guidelines for Screening, which indicates that such a large number of remedial alternatives is not required.

The FS as it now stands presents two separate and parallel groups of "alternatives" each of which addresses a particular medium. The groups are separated to the extent that each has its own "no-action" alternative; two separate "no-action" alternatives are presented for the site. These are established at the beginning of the alternative development and are carried all of the way through the detailed analysis. The rationale for this should be clearly presented and supported as part of the detailed analysis of the alternatives. At the conclusion of the FS it is unclear whether the preferred alternative should be one of all of the alternatives given, or one each of the source and migration control alternatives.

Parsons ES is advocating another method for choosing the preferred site-wide alternative by implying in the comment response, "The best time to combine the source control or migration control alternatives is during the ROD...". This is not acceptable.

A table summarizing the results of the detailed analysis for each alternative with respect to each of the nine criteria should also be prepared as indicated by the guidance in Section 6.2.4, Presentation of Individual Analyses.

b) Additional alternative evaluation and modeling

In light of the non-ideal predictions made by the current modeling scenarios, one of the most significant deficiencies of the FS and supporting modeling is that the Army failed to evaluate a range of alternatives which would attain cleanup levels within varying time frames. Instead, natural attenuation with source removal was compared to natural attenuation without source removal. The value of this comparison is minimal since the source term has already been removed.

In accordance with Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites (EPA/540/G-88/003), the FS should be revised to compare the cleanup efficiencies of a number of different alternatives. The cutoff drain described in alternatives MC-4-7 should be one modeled scenario. Another modeling scenario should include a trench or well point system to capture contamination within the 1000 ppb VOC isocontour. another scenario would involved pumping in both the near source and edge of plume locations. The off-site impacts of these scenarios as well as calculated times to attain cleanup levels should be provided for each alternative. Only with this comparative information can a considered, protective, cost-effective decision be made on site groundwater.

c) Table 2-11, it is not clear why dewatering and SVE were not considered in light of the volatility of the contaminants and thin, shallow contaminated zone. Please explain.

Response #3 a) Sections 3 and 5 of this FS develop and screen alternatives and provide a detailed analysis of the screened alternatives in terms of two separate media-specific groups, Source Control and Migration Control. According the Section 4.2.6 of the Guidance, the alternatives may be formulated into media-specific actions and may be evaluated separately if the interactions between media are not significant. Since the Removal Action has been conducted for source soils for the VOC plume at the "Bend-in-the-Road", the source of the volatiles in the groundwater plume has been eliminated. The RAO for the groundwater plume now includes management of the migration of the plume. The remedial actions for the soils at the site involve removing the landfills and debris piles in order to prevent dermal contact and ingestion of soils contaminated with metals and PAHs. Therefore, with the removal action complete, any interaction between the two media are not considered to be significant and the RAOs and remedial actions for the two media have become independent of each other. Furthermore, the separation of the alternatives into Source Control and Migration Control provides a more efficient means to achieve the RAOs as evidenced by the Removal Action conducted by the Army to remove the source of the VOCs in the groundwater.

The rationale discussed above for separation of alternatives into Source Control for soils and Migration Control for groundwater has been added to the introduction of Sections 3 and 5.

A discussion has been added to the conclusion of Section 5 which states that a preferred alternative must be selected for each media-specific group, i.e., Migration Control and Source Control.

We agree that a table summarizing the results of the detailed analysis for each alternative with respect to the nine criteria is necessary. This table helps summarize the detailed analysis.

b) The modeling of natural attenuation with and without source removal was conducted to supply technical support for the natural attenuation hypothesis. With regard to additional alternative evaluation and modeling, modeling of the various scenarios presented in the comment would involve an extensive effort. This modeling may not be necessary since these Migration Control alternatives may be screened out based on the nine criteria and not on the time to attain clean-up levels.

c) While high vacuum well points are used for construction dewatering, dewatering well points would not be an effficent technology in the tight soils at the Ash Landfill. Because of the limited radius of influence, well points would have to be spaced at close intervals which would not be cost effective. The trench system which has been proposed in the FS is a more efficient technology because it works as a system of infinite well points.

SPECIFIC COMMENTS

Comment #1 **Response to Specific Comment #6, p. 12-13:**

Semi-volatile organic concentrations were detected above applicable standards in MW-44, and should not be considered insignificant. As for metals, see the discussion concerning "Response to Comments Presented in the letter, Comment #2".

Response #1 We acknowledge that three SVOCs were detected above their respective standards in MW-44 during the RI investigation; this is the only well where standards for SVOCs were exceeded. Phenol at 5 µg/L exceeded it NYSDEC Class GA standard of 1µg/L. Naphthalane was found at 66 µg/L and exceeded its GA standard of 50 µg/L. Lastly, pentachlorophenol was detected at 54 µg/L and exceeded the Federal MCL and GA standard of 1 µg/L. In light of these small exceedences, we believe that the current groundwater chemistry conditions at MW-44 are drastically different than when this well was sampled for the RI. The reason for this is that during the course of the excavating the soil source areas A and B at the Ash Landfill (which encompassed MW-44), 921,136 gallons of groundwater were removed and treated. The removal and treatment of this groundwater would have remediated the groundwater in the area of MW-44 such that the concentrations of these three SVOCs are in all likelihood below their respective standards today.

Metals - see response for comment above.

Comment #2 **Response to Specific Comment #9, p.13:**

It was agreed that this comment was appropriate but no response was made. The response to this comment is important because in Section 2.2.2, p. 2-11 the text states that "In all instances of risk calculation and ARAR/TBC comparison, the 95th UCL or maximum detected concentration, whichever is lower, is used as either the value of comparison or the exposure dose calculation of the risk (i.e., the Exposure Point

Concentration [EPC])." It should be verified that the appropriate concentration was used for the exposure Point Concentration.

Response #2 Verify the 95th UCL or max detected concentration used in table what is mean by verify in terms of a response

Comment #3 **Response to Specific Comment #11, p. 13:**

The text on page 2-20 should state what statistic the 95th UCL is of. Presumably, it is of the mean.

Response #3 Agreed. The 95 UCL is of the mean as stated in the comment. This clarification has been added to the text on page 2-20 of the Ash Landfill FS.

Comment #4 **Response to Specific Comment #12, p.14:**

See Response to Specific Comment #10, above.

Response #4 Acknowledged. However, it is unclear to us what comment is being referred to (we do not see a specific comment #10 above) and ,therefore, we can not address the comment.

Comment #5 **Response to Specific Comment #13, p.14:**

There are still some inconsistencies in the table regarding whether technologies are screened or retained, e.g. in Table 2-10, ex-situ treatment/chemical extraction/aqueous solvent, and disposal/RCRA Landfill.

Response #5 Agreed. The inconsistencies in Table 2-20 were corrected. Under the Process column heading in Table 2-20, aqueous solvent and RCRA landfill were screened out.

Comment #6 **Response to Specific Comment #14, p.15:**

This comment was acknowledged and an explanation given, but not responded to in the document. The explanation and the existing text in the document explain in a generic sense why the alternatives were developed separately, but do not explain on a site specific basis why this was appropriate. The rationale for taking this approach in the alternatives development should address the specific situation at the site and support the implicit assertion that the source and migration options are independent. See also the Response to General Comment #3.

Response #6 Agreed. The explanation for the separate development and detailed analysis of the Migration Control and Source Control alternatives has been added to Section 3.1 of the FS report. Please refer to the Response to General Comments #3 for the explanation of the development of alternatives by media.

Comment #7 **Response to Specific Comment #18, p.16:**

Based on a telephone conference call on October 6, 1995 between the USEPA, SEDA, Army Corps, Parsons ES and Malcolm Pirnie, it was recognized that the trench would not intercept contaminant flow in the competent bedrock, if present. There are no monitoring wells installed in the competent bedrock in the areas where the highest concentrations of chlorinated organics were detected in the groundwater (MW-44 and

PT-18). If groundwater contamination in the bedrock is detected in the future, the inclusion of deeper (competent rock) extraction wells or a similar collection system may be necessary.

Response #7 Agreed. We acknowledge that there are not bedrock wells in the areas where the highest concentrations of VOCs were detected in the groundwater (MW-44 and PT-18). And, if groundwater contamination in the bedrock is detected in the future, the inclusion of deeper extraction wells or a similar collection system may be necessary.

Comment #8 **Response to Specific Comment #20, p.16:**

Parsons ES references its response to Comment #1, which only addresses ARARs, not all nine criteria.

Response #8 Disagree. The referenced section is not meant to provide a detailed discussion of how each alternative meets the nine criteria, but is the comparative analysis of the various alternatives. The detailed discussion for Alternative MC-2 is provided in Section 5.3.

ROBERT S. KERR ENVIRONMENTAL RESEARCH CENTER

GENERAL COMMENT

Comment #1 The FS report did not provide any conclusions or recommendations regarding which of the proposed remediation alternatives would be the most appropriate at containing the groundwater contamination at the Ash Landfill. In particular, there are some questions concerning the various Source Control and Migration Control alternatives and their link with the fate and transport modeling discussed in the Groundwater Modeling Report. It is unclear which, if any, of the modeling scenarios represents any of the FS alternatives. More discussion needs to be included regarding the simulation of the effectiveness of the various remediation alternatives.

Response #1 Acknowledged. First, the draft version of the Ash FS did include a "Conclusions and Recommendations" section that included a recommended remedial alternative for the site, however, we were asked by the NYSDEC in the last round of comments to remove this section, and we did so. NYSDEC felt that is was premature to recommend an alternative in the FS. Rather, NYSDEC recommended that upon finalization of the FS report, the Army should propose their recommended alternative through a draft proposed remedial action plan (see section 3 of EPA Guidance for Conducting RI/FS under CERCLA, EPA/540/G-89-004, OSWER Directive 9355.3-0.1, October 1988 and IAG Section 12 and Attachment 2).

Second, modeling was performed to provide an indication as to the effectiveness of a natural attenuation alternative at the Ash Landfill site; this is alternative MC-2 in the Ash Landfill FS. In the modeling report this was equivalent to Scenario 3, which simulated the plume migration after the VOC source materials were removed during the removal action. No other FS alternatives were modeled.

SPECIFIC COMMENTS

Comment #1 Section 2.4.1 Estimate of Quantities to be Remediated: Page 2-37 discusses that " the ecological risk assessment does suggest that metals, albeit small, may be a source of increased chronic risk." However, an in-depth analysis of the fate and transport of metals in the subsurface has not been adequately presented in the report. Further

discussion should be included if the migration of metals in the subsurface is considered potentially important

Response #1 Acknowledged. **RESOLUTION IS NEEDED FOR THIS COMMENT.**

For reasons given in the response to General Comment # 1 above, we do not feel that the migration of metals in groundwater is considered important at the Ash Landfill site. Metals - response given above. - is migration of metals in the subsurface considered to be potentially important.

Comment #2 Section 3.2 Assembly of Alternatives: Page 3-5 states that alternative MC-2 "uses natural attenuation for reduction of contaminant levels in the plume...". However, it is unclear how this alternative would be applicable to heavy metals in the subsurface. Also stated on this page is that "Although NYSDEC groundwater standards are exceeded in on-site wells, the concentrations are being reduced by natural processes and will reach an allowable level in the future." This statement is vague, requires more proof and should mention the length of time for contaminant concentrations to reduce to below groundwater standards.

Response #2 First, we believe the metals of concern that exceed standards in 10 groundwater wells are caused by elevated turbidity in these samples, and it is not necessary to include remedies for the potential migration of metals in groundwater in the FS. Thus, the natural attenuation alternative, which clearly does not address impacts from metals, would be used for VOCs found in the groundwater at the Ash Landfill.

A more detailed discussion on the natural attenuation process including technical data has been added to Section 5, which describes Alternative MC-2.

Comment #3 Section 3.3.5 SC-4; Page 3-14 states that for Source Control Alternative 4 will use hydrochloric acid (HCL) to extract metals from the soil. Table 2-1 presents the various types of heavy metal detected in soil samples. However, we are not aware that HCL will effectively extract any lead (Pb) species from soil. A commonly used acid to extract lead from soils is nitric acid (USEPA, 1992).

Response #3 Agreed. A combination of flurosilcic acid, nitric acid, and hydrochloric acid have been used to extract metal contaminants from the soil. The text on page 3-14 was changed to reflect this.

Comment #4 Section 5.3.1.2 Migration Control - Protectiveness: Page 5-19 states that "there is some uncertainty associated with the long-term protectiveness since off-site land use cannot be controlled". This appears to be the major limitation or weakness of this alternative since on-site institutional control and monitoring will not reduce the risk of off-site contaminant movement. Scenario 3 of the contaminant transport modeling predicts the "natural attenuation" alone will not reduce off-site concentrations to below drinking water standards within the next ~ 150 years (Figure 6-16, Parsons, 1996).

Response #4 Agreed. Please refer to the Response to General Comment #2.

PROGRAM SUPPORT BRANCH PRE-REMEDIAL AND TECHNICAL SUPPORT SECTION

GENERAL COMMENTS

Comment #1 1. Natural Attenuation

The Interim Army Policy on Natural Attenuation for Environmental Restoration states:

"Natural Attenuation typically requires extensive monitoring to ensure that the predicted natural processes are taking place...Additionally, there should be a readily available contingent remedy for the site. It will take credible scientific data, site characterization data and predictive modeling to prove that natural processes are sufficient to reduce risk in the timeframe required. The army will need that proof (emphasis added) to ensure the acceptability of the actual attenuation remedy."

In view of this policy, the discussion of the anticipated efficacy of the natural attenuation alternative is inadequate. Although anaerobic reduction of TCE to breakdown products is occurring to some degree at the site, there is insufficient data to demonstrate the effectiveness of this approach. As researchers from the Kerr Lab pointed out in previous comments, it is not clear that there is sufficient oxidizable carbon and anaerobic or methanogenic conditions throughout the plume. For example, the FS assumes that there is little vinyl chloride present in the plume because it has volatilized into the atmosphere. However, the absence of vinyl chloride may also be explained by insufficient carbon to produce vinyl chloride from DCE.

In addition, overall site loss of contaminants must be documented using statistically significant trends in contaminant levels to show that a reduction in the total mass of contaminants is occurring at the site. Also a complete mass balance should be completed to show that decreases in contaminant and electron acceptor concentrations can be correlated to increases in metabolic byproduct concentrations.

Currently, the Army's own modeling (noting that the modeling still needs numerous revisions outlined in RSKERL's comments) illustrates that natural attenuation alone will not contain the plume on-site or reduce off-site concentrations to acceptable levels for over 100 years. In fact, the modeling predicts that in 100 years after source removal, cleanup levels will be exceeded up to 1200 feet off-base and within 600 feet of an existing well.

Response #1 Agreed. As stated in the Comment, the Natural Attenuation alternative, MC-2, is required by Interim Army Policy to have (1) an extensive monitoring program to ensure that the natural processes are taking place and (2) a contingent remedy for the site. Therefore, as part of MC-2, groundwater monitoring wells will be installed along to the Ash Landfill boundary which is adjacent to the farm and on the downgradient portion of the VOC groundwater plume. The groundwater monitoring wells will be sampled for approximately 30 years and the data will be used to determine any statistically significant trends in contaminant levels. If the concentrations of the contaminants in the groundwater from these wells indicate an upward trend, a contingency plan will be initiated. This plan, which is described in detail in the Section 5 description of Alternative MC-2, includes purchasing off-site property which has been impacted by the plume, applying deed restrictions on the off-site property, and providing an alternative water supply to off-site receptors.

In addition, while we acknowledge the Kerr comments, we feel that the available data suggests that reductive dechlorination of TCE is a plausible mechanism for reducing the mass of chlorinated VOCs at the Ash Landfill site. The effectiveness of the natural attenuation mechanism was documented in the groundwater model, which showed that the plume would eventually degrade to below ARARS.

To provide a "big picture" view of the historical trends in the concentration of TCE, 1,2-DCE and vinyl chloride in selected monitoring wells at the Ash Landfill were generated. These plots document the overall loss of VOCs at the site both due to natural and unnatural mechanisms.

We do not feel that it is appropriate or practical to perform a complete mass balance showing decreases in contaminant and electron acceptor concentrations, and correlation to increases in metabolic byproduct concentrations. This would require a lengthy sampling and analysis program. However, the Army does intend to continue to implement the quarterly sampling for VOCs at the Ash Landfill and document the overall loss of mass of TCE, 1,2-DCE and vinyl chloride from the wells on-site.

Comment #2 Cleanup Times and the Range of Alternatives

a) The discussion of the long-term protectiveness of migration control alternatives alludes to cleanup times for the different alternatives. These cleanup time estimates are not referenced properly in the text, and as subsequent comments state are inadequate since they do not consider partitioning from the solid phase. The only alternative that was modeled was natural attenuation and the time to achieve cleanup levels was not provided. It is not clear why these rough calculations were presented when the site has already been modeled using the much more sophisticated MT3D model. It is not clear why MT3D was not used to predict cleanup time frames. Please explain.

A range of alternatives must be developed and the estimated cleanup time frames for all alternatives provided. As written, the FS does not provide for an alternative that calls for source control of the concentrated portions of the plume and natural attenuation plus institutional controls for the remainder of the plume. This approach is a hybrid between natural attenuation and the double trench approaches described in the FS. Also it is not clear why none of the alternatives address the off-site contamination. Modeling and additional information on institutional controls should be used to support not remediating this potentially vulnerable area. Discussion regarding the uncertainties of these modeled estimates should also be included. For example, how uncertainties of key modeling parameters affect cleanup time frames should be discussed.

b) In order to represent a range of Source Control Alternatives, *SC-2: Excavation of both landfills/Disposal in an off-site non-hazardous Subtitle D landfill* should not be eliminated and should be carried through the Detailed Analysis of Alternatives, Section 5 of the FS. Although *Table 3-3, Screening of Source Control Alternatives* shows SC-2 as the lowest scoring alternative, it's only 3, 5 and 6 points lower than the retained alternatives. Hardly a significant difference. SC-2 represents the only off-site remedial alternative and a midpoint for cost at $17.5 million, as opposed to the retained alternatives, *SC-3: Consolidation and Capping* at $1.86 million and *SC-4: Soil Washing and Solidification* at $32 million.

Response #2 a) Agreed. Alternative MC-2 has been revised as described in the Response to General Comment #2. Alternative MC-2 includes natural attenuation combined with institutional controls for both on-site and off-site receptors.

b) Agreed. The Source Control alternative, SC-2, has been retained and carried through the Detailed Analysis of alternatives.

SPECIFIC COMMENTS

Comment #1 Table 2-10 - The institutional controls described here (deed restrictions) are only relevant to those contaminated areas on base. Please describe in detail what institutional controls may be implemented in the off-site groundwater plume area.

Response #1 Agreed. A detailed discussion of the institutional controls that may by implemented off-site is presented in Section 5 in the description of Migration Control alternative, MC-2. A groundwater monitoring program will be conducted and will include monitoring wells along the Ash Landfill boundary along the downgradient portion of the plume. If the groundwater data indicate an upward trend in the concentrations of VOC contaminants, a contingency plan will be initiated. This plan includes purchasing or leasing the off-site property adjacent to the Ash Landfill, a deed restriction for this property, and supplying drinking water for impacted off-site residences.

Comment #2 Page 3-5, natural attenuation - In light of the uncertainty of many key parameters such as biodegradation rate, retardation rate and hydraulic conductivity, it is not possible to absolutely conclude the plume is at steady state and will not spread off-site.

Response #2 Agreed. We can not absolutely conclude that the plume will not migrate off-site. However, in reviewing the text on page 3-5, we can not identify any statements that claim this. Therefore, we are not sure what change, if any, EPA would like us to make on this page. As a note, the natural attenuation alternative does include institutional controls as a contingency if continued monitoring indicates that the VOC plume is migrating off-site and ARARS for VOCs are exceeded.

Comment #3 Page 3-8: The text in the FS states that approximately 23,000 cubic yards of soil was removed and treated. However, the Final Report on the Ash Landfill Immediate Response dated July 1995 and prepared by IT Corporation for the U.S. Army Corps of Engineers, Omaha District states on page ix that 455,000 cubic yards of soil material was excavated and treated. This discrepancy should be explained and corrected.

Response #3 Agreed. The number of cubic yards of soil removed at treated was approximately 23,000, as was stated in the FS report. The value of 455,000 cubic yards cited in the Final Report on the Ash Landfill Immediate Response (IT Corporation, 1995) is believed to be in error. The Project Narrative of the IT report states that "approximately 35,000 tons (455,000 cubic yards) of soil material was excavated and treated...", and it is apparent that there was an error when converting tons to cubic yards. Considering that 1 cubic yard equals approximately 1.5 tons, 35,000 tons is roughly 23,000 cubic yards. No change was made the to the text in the Ash Landfill FS.

Comment #4 Section 3.3.2 Page 3-9: The text states, "Under these exposure scenarios, the total site risks totaled 1.0×10^{-4} for carcinogenic and non-carcinogenic risks, and the Hazard Index (HI) was 0.24." From where in the Risk Assessment for the Ash Landfill were these values obtained?

Response #4 These values were obtained from Table 1-1 of Section 1 of the Ash FS Report. The Risk Assessment tables for the Baseline Case are provided in Appendix B of the FS Report.

Comment #5 Section 3.3.2 Page 3-9: The conclusions stated in the text reads, "These two criteria, risk and ARAR compliance, are the only two criteria used to determine if a remedial action is required, therefore, no action is required for source soils." EPA cannot agree with this statement. The risk issues have not been entirely addressed. Risk assessment for lead is not performed by the conventional cancer (slope factor) and/or non-cancer (reference dose) methodologies. Soil and sediment sampling points at the Ash Landfill exceed lead cleanup levels the Army, NYSDEC and EPA agreed to for soils and sediments at the Open Burning Grounds at SEDA.

Response #5 Agreed. Lead is not considered as part of the risk assessment because the EPA has withdrawn the allowable Reference Dose (RfD) value for lead. The site-specific clean-up goal for soil and on-site sediment at the OB Grounds was established at 500 mg/kg for lead. This concentration was based on the results of two studies. The first was the output of the UBK model, which indicated that 500 mg/kg would be protective of human, residential exposure. The second factor was the result of an EPA transport model study, which determined that a lead soil level in the range of 16 mg/kg, 88 mg/kg, and 483 mg/kg would be protective of groundwater. That is, the range of concentrations between 16 mg/kg and 483 mg/kg is the allowable concentration of lead in soil that will not produce a concentration of lead in groundwater above the Federal action level of 15 ug/L. The background concentration of lead in soil was determined to be 30 mg/kg, and therefore the lowest value, 16 mg/kg was eliminated.

Post-Prove-Out soil samples were collected and analyzed for the TCLP (metals) from the treated soils representative of Areas A and B. The TCLP metal analytical data presented in the IT report and in Appendix E of this FS Report indicates that the maximum concentrations of lead was 814 mg/kg in one sample. The remaining concentrations of lead ranged from 4.4 mg/kg to 401 mg/kg, which are below the remediation goal of 500 mg/kg. According to Table 2-8 in the FS Report, removal of Case 1 through Case 4 soils will result in a maximum lead concentration of 40.20 mg/kg and a 95th UCL of the mean of 24.96 mg/kg, which are both below the 500 mg/kg goal established for the OB Grounds.

The sentence in Section 3.3.2 which is referenced in the comment has been removed. Furthermore, the site specific clean-up goal of remediating soil with lead concentrations greater than 500 mg/kg has been added to the RAOs for soil. A discussion of this goal, which was adopted from the OB Grounds FS, has been added to Section 2.2.6.

Comment #6 Page 3-11, para. 2 - In light of the elevated metals found in site groundwater it is not possible to conclude that migration into groundwater is not occurring as is stated here. Please revise accordingly.

Response #6 See the response for comment above that address metals in groundwater.

Comment #7 Page 3-17, institutional controls - The description of institutional controls described for alternative MC-2 is insufficient. Will the 24-hour guard be posted around the facility 75 years from now? How will deed restrictions be implemented? Are there plans to buy up the off-base property that is currently contaminated or expected to become contaminated?

Response #7 Refer to the Response to General Comment #1 of the Program Support Branch Pre-Remedial and Technical Support Section. The response describes the institutional controls which will be included in this alternative. Details concerning the

implementation of deed restrictions and plans for purchasing off-site properties will be developed if Alternative MC-2 is selected as the appropriate remedial action.

The reference to a 24-hour guard has been removed because closure of SEDA under BRAC95 would terminate this institutional control.

Comment #8 Page 5-38, last sentence - This sentence seems to conflict with the previous sentence stating that the treatment system would be dismantled after the groundwater reaches cleanup levels. Please clarify.

Response #8 Agreed. The sentences have been clarified. The last sentence now reads, "Providing proper O&M is performed, the treatment system will be permanent for the duration of the remedial action.

Comment #9 Page 5-42, para. 3 - The calculations found in Appendix A should be referenced here.

Response #9 Agreed. Appendix A has been cited in the third paragraph on page 5-42 as recommended.

APPENDIX A

Comment #1 The calculations to determine cleanup times are in error because they do not account for partitioning of contaminants from the solid to liquid phases. Cleanup time frames can be calculated using the simple models presented in the appendix of the Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites (EPA/540/G-88/003). However, since MT3D modeling has already been conducted for the site, we recommend use of this model to determine cleanup times (or ranges) for all alternatives.

The reason for including the no-removal option when the work has already been completed is also not clear.

Response #1 **RESOLUTION IS NEEDED FOR THIS COMMENT.**

The removal option was removed from consideration in the FS as an alternative, however, it was included in the text to document that the removal action was performed.

Comment #2 Page 2-9 - The last line of the calculations should add the mass in the soil to the mass in the groundwater, not subtract the mass in the groundwater from the mass in the soil as is done here.

Response #2 Agree. The total mass of VOCs in soil and groundwater at the site would be calculated by adding the total in the soil (1,228 pounds) and the total in the water (583 pounds). This change was made to page 2 of 9. If the removal action had not taken place, the total mass that would have to be treated by the groundwater pump and treat system would be the total in the water (583 pounds). After the removal action, the total mass that would require treatment would be 36 pounds, which is the amount of mass outside the area treated in the removal action; according to these calculations the removal action treated 1,228 pounds in soil and 547 pounds in water (583 pounds - 36 pounds = 547 pounds). A value of 583 pounds should have been used for the starting mass in groundwater not 691. By using 583 pounds instead of 691 pounds for the treatment scenario without the removal action, the other calculations that use this value are not significantly affected considering that a safety factor has been added in. In the end, less

starting mass in the groundwater means that the system reaches its goal sooner than originally calculated.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

Written Comment

CF
Tom
Smith
J Cannon

MAR 2 2 1996

EXPRESS MAIL

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

File

Re: Revised Draft Feasibility Study (FS) Report at the Ash Landfill

Dear Mr. Absolom:

This is regarding the above referenced document dated December 1995 prepared by Parsons Engineering Science (ES), Inc. for the Seneca Army Depot Activity through the U.S. Army Corps of Engineers. EPA received this document January 11, 1996. We have reviewed the Army responses to EPA comments on the Draft FS and find them to be acceptable with the exceptions noted below. We have included additional comments in order that this document provides the appropriate basis for selection of the preferred remedial alternative at the Ash Landfill.

GENERAL COMMENTS

Response to Comments Presented in the letter, Comment #2, pages 4-6:
The NYSDEC classification for groundwater at SEDA is Class GA - protection for a source of drinking water. CERCLA's implementing regulations, The National Oil and Hazardous Substance Contingency Plan ("NCP"), state that groundwater that is not currently a drinking water source, but is a potential drinking water source in the future, should be protected to levels appropriate to its use as a drinking water source. The intended use of SEDA and the Ash Landfill have yet to be definitely determined.

Contrary to what was stated in Parson's response to EPA's comments, the NY State groundwater standard GA is <u>not</u> more applicable to the site than Federal MCLs. Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), and the NCP (see 40 CFR Part 300.430(f)) establish as threshold criteria for remedy selection the protection of human health and the environment and the attainment of cleanup levels consistent with legally applicable or relevant and appropriate standards ("ARARs"). The NCP also states that Maximum Contaminant Levels (MCLs),which are enforceable drinking water standards promulgated under the Safe Drinking Water Act, and Maximum Contaminant Level Goals (MCLGs) above zero, are

indeed relevant in considering cleanup levels for water that is or may be used for drinking, unless more stringent promulgated State standards exist.

Metals in ground water are not effectively addressed by the ground-water alternatives. There seems to be an implicit assumption that elevated metals are an artifact of sampling and acidifying turbid samples. However, this cannot be assumed. Parsons ES states that turbidity is the cause for many of the exceedances. Turbidity measurements for a majority of the groundwater samples were not included in the RI Report and therefore could not be related to metal concentrations. If turbidity is the cause of the exceedances, low turbidity samples (filtered or low-flow purging) should be directly compared to turbid samples. In addition, low flow sampling methods should be used to obtain representative and complete metals levels in the aquifer as soon as possible.

Response to General Comment #1, beginning on page 6: The response to Comment #1 states that alternative MC-2, Natural Attenuation, complies with all of the ARARs. This contradicts the Draft FS which was quoted in the original comment. The reasoning given is that "*with the passing of time*, the concentrations of VOCs in the groundwater would ultimately be reduced to levels below the NY State GA standards for groundwater" (italics added). It is difficult to see how this complies with ARARs. If this type of reasoning is to be used, the FS should state a time period after which ARARs would be achieved and should provide adequate technical support for the statement.

Also, it is acknowledged in the description of MC-1 (FS p. 3-17), the no-action alternative, that it "will not meet the Remedial Action Objectives due to exceedance of the GA groundwater ARAR." The description of MC-2 indicates that there is no substantial difference between this alternative and MC-1. The only additional actions to be taken in MC-2 are that institutional controls are to be added, and of these, deed restrictions are the only control which is not already in place. Note also that in Section 3.6.2.9 (p. 3-35) where the alternatives are being screened for ARAR compliance, it is stated that MC-2 "scores low." It is unclear how an alternative can "score low" in ARAR compliance. Either an alternative complies with ARARs or it does not. Even if there is a basis for a ranking (such as the number of ARARs complied with), MC-1 and MC-2 should be ranked equally which they are not. Additionally, in reference to the ARAR compliance description in Section 3.6.2.9 on p. 3-35, on going monitoring does not affect compliance with ARARs.

There are circumstances under which ARARs may be waived and these are given in the USEPA guidance. If there is a reason to waive the ARARs, it can be done in accordance with Section 121(d)(4) of CERCLA.

Response to General Comment #3, beginning on page 9: In the response to comment #3, regarding the fact that the methodology used for screening the remedial technologies and

developing the remedial alternatives does not correspond with the methods outlined in the CERCLA RI/FS guidance document, Parsons ES has taken exception to this comment as "non-productive". They also note that the guidance states (p. 1-3) that the approach outlined is not a "rigid step-by-step approach that must be followed identically at every site." In Section 1.1, p 1-3 of the FS it was Parsons ES that indicated that they would follow the guidance with the statement that "This report is organized in accordance with 'Guidance for Conducting Remedial Investigations and Feasibility studies Under CERCLA,' EPA/540/G-89/004, October 1988." Substantive deviations from the method in the guidance, such as combining the technology and process screening effort into one effort, should be noted clearly in the text. Also in the guidance, Section 1.2 Purpose of the Guidance, it states that "This guidance describes the general procedures for conducting an RI/FS." There is really no other guidance by which FSs are conducted – this guidance document does, in fact, represent the logic and organization that EPA expects to see in an FS. The guidance presents a uniform method of conducting and presenting FSs which assists both writers, readers, and reviewers in following a complex process. Significant variations from this should be logical and easily understandable by the reader.

Tomorrow

The major concern in the original comment was not that the draft FS did not follow the guidance line by line, but that the FS deviated sufficiently such that it would not be able to fulfill the purpose for which it was intended, which is to provide a logical process for evaluating technologies and alternatives, and to provide a sound basis for the selection of the preferred alternative and preparation of the proposed plan.

Much of this has been remedied in the Draft-final FS, but a fundamental problem remains in Sections 3 and 5 regarding the development and screening, and detailed analysis of the alternatives. The final objective of an FS is to present alternatives which can address the site as a whole. This FS presents alternatives for either "source control" or "migration control", but none of the alternatives addresses the site as a whole. While the guidance makes allowances for formulating media-specific actions and evaluating them separately in cases where the interactions between media are not significant, it is clear that these actions are to be combined into site-wide alternatives which address all media (Guidance, Section 4.2.6 Assemble Alternatives). Implicit in this is that if the interactions between the media are determined to be insignificant, the backup for this should be presented in the FS. This was not done. The latest point at which these media-specific actions are to be combined into site-wide remedial alternatives is prior to the comparative analysis of the alternatives. Regarding the part of the response which says that "following guidance ... would have required a discussion of forty-two (42) different remedial alternatives.", note Section 4.3.3.1 of the guidance, entitled Guidelines for Screening, which indicates that such a large number of remedial alternatives is not required.

The FS as it now stands presents two separate and parallel groups of "alternatives" each of which addresses a particular medium. The groups are separated to the extent that each has its own "no-action" alternative; two separate "no-action"alternatives are presented for the site. These are established at the beginning of the alternative development and are carried all of the way through the detailed analysis. The rationale for this should be clearly presented and supported as part of the detailed analysis of the alternatives. At the conclusion of the FS it is unclear whether the preferred alternative should be one of all of the alternatives given, or one each of the source and migration control alternatives.

Parsons ES is advocating another method for choosing the preferred site-wide alternative by implying in the comment response, "The best time to combine the source control or migration control alternatives is during the ROD...". This is not acceptable.

PRAP

A table summarizing the results of the detailed analysis for each alternative with respect to each of the nine criteria should also be prepared as indicated by the guidance in section 6.2.4, Presentation of Individual Analyses.

Additional alternative evaluation and modelling

In light of the non-ideal predictions made by the current modelling scenarios, one of the most significant deficiencies of the FS and supporting modelling is that the Army failed to evaluate a range of alternatives which would attain cleanup levels within varying time frames. Instead, natural attenuation with source removal was compared to natural attenuation without source removal. The value of this comparison is minimal since the source term has already been removed.

In accordance with Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites (EPA/540/G-88/003), the FS should be revised to compare the cleanup efficiencies of a number of different alternatives. The cutoff drain described in alternatives MC-4 - 7 should be one modelled scenario. Another modelling scenario should include a trench or well point system to capture contamination within the 1000 ppb VOC isocontour. Another scenario would involved pumping in both the near source and edge of plume locations. The off-site impacts of these scenarios as well as calculated times to attain cleanup levels should be provided for each alternative. Only with this comparative information can a considered, protective, cost-effective decision be made on site ground water.

Table 2-11, it is not clear why dewatering and SVE were not considered in light of the volatility of the contaminants and thin, shallow contaminated zone. Please explain.

ADDE to TABLE Explain why

SPECIFIC COMMENTS

Response to Specific Comment #6, p.12-13: Semi-volatile organic concentrations were detected above applicable standards in MW-44, and should not be considered insignificant. As for metals, see the discussion concerning "Response to Comments Presented in the letter, Comment #2".

Response to Specific Comment #9, p. 13: It was agreed that this comment was appropriate but no response was made. The response to this comment is important because in section 2.2.2, p. 2-11 the text states that "In all instances of risk calculation and ARAR/TBC comparison, the 95th UCL or maximum detected concentration, whichever is lower, is used as either the value of comparison or the exposure dose calculation of the risk (i.e., the Exposure Point Concentration [EPC])." It should be verified that the appropriate concentration was used for the Exposure Point Concentration.

Response to Specific Comment #11, p. 13: The text on page 2-20 should state what statistic the 95th UCL is of. Presumably, it is of the mean.

Response to Specific Comment #12, p.14: See Response to Specific Comment #10, above.

Response to Specific Comment #13, p. 14: There are still some inconsistencies in the table regarding whether technologies are screened or retained, e.g. in Table 2-10, Ex-situ treatment/chemical extraction/aqueous solvent, and disposal/RCRA Landfill.

Response to Specific Comment #14, p. 15: This comment was acknowledged and an explanation given, but not responded to in the document. The explanation and the existing text in the document explain in a generic sense why the alternatives were developed separately, but do not explain on a site specific basis why this was appropriate. The rationale for taking this approach in the alternatives development should address the specific situation at the site and support the implicit assertion that the source and migration options are independent. See also the Response to General Comment #3.

Response to Specific Comment #18, p.16: Based on a telephone conference call on October 6, 1995 between the USEPA, SEDA, Army Corps, Parsons ES and Malcolm Pirnie, it was recognized that the trench would not intercept contaminant flow in the competent bedrock, if present. There are no monitoring wells installed in the competent bedrock in the areas where the highest concentrations of chlorinated organics were detected in the groundwater (MW-44 and PT-18). If groundwater contamination in the bedrock is detected in the future, the inclusion of deeper (competent rock) extraction wells or a similar collection system may be necessary.

Response to Specific Comment #20, p.16: Parsons ES references its response to Comment #1, which only addresses ARARs, not all nine criteria. → Expand

ROBERT S. KERR ENVIRONMENTAL RESEARCH CENTER

GENERAL COMMENT

The FS report did not provide any conclusions or recommendations regarding which of the proposed remediation alternatives would be the most appropriate at containing the groundwater contamination at the Ash Landfill. In particular, there are some questions concerning the various Source Control and Migration Control alternatives and their link with the fate and transport modeling discussed in the Groundwater Modeling Report. It is unclear which, if any, of the modeling scenarios represents any of the FS alternatives. More discussion needs to be included regarding the simulation of the effectiveness of the various remediation alternatives.

SPECIFIC COMMENTS

Section 2.4.1 Estimate of Quantities to be Remediated: Page 2-37 discusses that "the ecological risk assessment does suggest that metals, albeit small, may be a source of increased chronic risk". However, an in-depth analysis of the fate and transport of metals in the subsurface has not been adequately presented in the report. Further discussions should be included if the migration of metals in the subsurface is considered potentially important.

Section 3.2 Assembly of Alternatives: Page 3-5 states that alternative MC-2 "uses natural attenuation for reduction of contaminant levels in the plume...". However, it is unclear how this alternative would be applicable to heavy metals in the subsurface. Also stated on this page is that "Although NYSDEC groundwater standards are exceeded in on-site wells, the concentrations are being reduced by natural processes and will reach an allowable level in the future." This statement is vague, requires more proof and should mention the length of time for contaminant concentrations to reduce to below groundwater standards.

Section 3.3.5 SC-4: Page 3-14 states that for Source Control Alternative 4 will use hydrochloric acid (HCL) to extract metals from the soil. Table 2-1 presents the various types of heavy metal detected in soil samples. However, we are not aware that HCL will effectively extract any lead (Pb) species from soil. A commonly used acid to extract lead from soils is nitric acid (USEPA, 1992).

Section 5.3.1.2 Migration Control - Protectiveness: Page 5-19 states that "there is some uncertainty associated with the long-term protectiveness since off-site land use cannot be controlled". This appears to be the major limitation or weakness of this alternative since on-site institutional control and monitoring will not reduce the risk of off-site contaminant movement. Scenario 3 of the contaminant transport modeling predicts that "natural attenuation" alone will not reduce off-site concentrations to below drinking water standards within the next ~150 years (Figure 6-16, Parsons, 1996).

PROGRAM SUPPORT BRANCH
PRE-REMEDIAL AND TECHNICAL SUPPORT SECTION

General Comments

1. Natural Attenuation

The Interim Army Policy on Natural Attenuation for Environmental Restoration states:

"Natural Attenuation typically requires extensive monitoring to ensure that the predicted natural processes are taking place....Additionally, there should be a readily available contingent remedy for the site. It will take credible scientific data, site characterization data and predictive modelling to prove that natural processes are sufficient to reduce risk in the timeframe required. The army will need that proof (emphasis added) to ensure the acceptability of the actual attenuation remedy."

In view of this policy, the discussion of the anticipated efficacy of the natural attenuation alternative is inadequate. Although anaerobic reduction of TCE to breakdown products is occurring to some degree at the site, there is insufficient data to demonstrate the effectiveness of this approach. As researchers from the Kerr Lab pointed out in previous comments, it is not clear that there is sufficient oxidizable carbon and anaerobic or methanogenic conditions throughout the plume. For example, the FS assumes that there is little vinyl chloride present in the plume because it has volatilized into the atmosphere. However, the absence of vinyl chloride may also be explained by insufficient carbon to produce vinyl chloride from DCE.

In addition, overall site loss of contaminants must be documented using statistically significant trends in contaminant levels to show that a reduction in the total mass of contaminants is occurring at the site. Also a complete mass balance should be completed to show that decreases in contaminant and electron acceptor concentrations can be correlated to increases in metabolic byproduct concentrations.

Currently, the Army's own modelling (noting that the modelling still needs numerous revisions outlined in RSKERL's comments) illustrates that natural attenuation alone will not contain the plume on-site or reduce off-site concentrations to acceptable levels for over 100 years. In fact, the modelling predicts that in 100 years after source removal, cleanup levels will be exceeded up to 1200 feet off-base and within 600 feet of an existing well.

2. Cleanup Times and the Range of Alternatives

The discussion of the long-term protectiveness of migration control alternatives alludes to cleanup times for the different alternatives. These cleanup time estimates are not referenced properly in the text, and as subsequent comments state are inadequate since they do not consider partitioning from the solid phase. The only alternative that was even modelled was natural attenuation and the time to achieve cleanup levels was not provided. It is not clear why these rough calculations were presented when the site has already been modelled using the much more sophisticated MT3D model. It is not clear why MT3D was not used to predict cleanup time frames. Please explain.

A range of alternatives must be developed and the estimated cleanup time frames for all alternatives provided. As written, the FS does not provide for an alternative that calls for source control of the concentrated portions of the plume and natural attenuation plus institutional controls for the remainder of the plume. This approach is a hybrid between natural attenuation and the double trench approaches described in the FS. Also it is not clear why none of the alternatives address the off-site contamination. Modeling and additional information on institutional controls should be used to support not remediating this potentially vulnerable area. Discussion regarding the uncertainties of these modelled estimates should also be included. For example, how uncertainties of key modelling parameters affect cleanup time frames should be discussed.

In order to represent a range of Source Control Alternatives, *SC-2: Excavation of both landfills/Disposal in an off-site non-hazardous Subtitle D landfill* should not be eliminated and should be carried through the Detailed Analysis of Alternatives, Section 5 of the FS. Although *Table 3-3, Screening of Source Control Alternatives* shows SC-2 as the lowest scoring alternative, it's only 3, 5 and 6 points lower than the retained alternatives. Hardly a significant difference. SC-2 represents the only off-site remedial alternative and a midpoint for cost at $17.5 million, as opposed to the retained alternatives, *SC-3: Consolidation and Capping* at $1.86 million and *SC-4: Soil Washing and Solidification* at $32 million .

Specific Comments

Table 2-10 - The institutional controls described here (deed restrictions) are only relevant to those contaminated areas on base. Please describe in detail what institutional controls may be implemented in the off-site ground-water plume area.

Page 3-5, natural attenuation - In light of the uncertainty of many key parameters such as biodegradation rate, retardation rate and hydraulic conductivity, it is not possible to absolutely conclude that the plume is at steady state and will not spread off-site.

Page 3-8: The text in the FS states that approximately 23,000 cubic yards of soil was removed and treated. However, the Final Report on the Ash Landfill Immediate Response dated July 1995 and prepared by IT Corporation for the US Army Corps of Engineers, Omaha District states on page ix that 455,000 cubic yards of soil material was excavated and treated. This discrepancy should be explained and corrected.

Section 3.3.2 Page 3-9: The text states, "Under these exposure scenarios, the total site risks totaled 1.0×10^{-4} for carcinogenic and non-carcinogenic risks, and the Hazard Index (HI) was 0.24." From where in the Risk Assessment for the Ash Landfill were these values obtained?

Section 3.3.2 Page 3-9: The conclusion stated in the text reads, "These two criteria, risk and ARAR compliance, are the only two criteria used to determine if a remedial action is required, therefore, no action is required for source soils." EPA cannot agree with this statement. The risk issues have not been entirely addressed. Risk assessment for lead is not performed by the conventional cancer (slope factor) and/or non-cancer (reference dose) methodologies. Soil and sediment sampling points at the Ash Landfill exceed lead cleanup levels the Army, NYSDEC and EPA agreed to for soils and sediments at the Open Burning Grounds at SEDA.

Page 3-11, para. 2 - In light of the elevated metals found in site ground water it is not possible to conclude that migration into ground-water is not occurring as is stated here. Please revise accordingly.

Page 3-17, institutional controls - The description of institututional controls described for alternative MC-2 is insufficient. Will the 24-hour guard be posted around the facility 75 years from now? How will deed restrictions be implemented? Are there plans to buy up the off-base property that is currently contaminated or expected to become contaminated?

Page 5-38, last sentence - This sentence seems to conflict with the previous sentence stating that the treatment system would be dismantled after the ground-water reaches cleanup levels. Please clarify.

Page 5-42, para. 3 - The calculations found in Appendix A should be referenced here.

Appendix A

The calculations to determine cleanup times are in error because they don't account for partitioning of contaminants from the solid to liquid phases. Cleanup time frames can be calculated using the simple models presented in the appendix of the Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites (EPA/540/G-88/003). However, since MT3D modelling has already been conducted for the site, we recommend use of this model to determine cleanup times (or ranges) for all alternatives.

The reason for including the no-removal option when the work has already been completed is also not clear.

Page 2-9 - The last line of the calculations should add the mass in the soil to the mass in the ground-water, not subtract the mass in the ground-water from the mass in the soil as is done here.

It would be premature to submit a proposed plan before EPA has had an opportunity to see the revised Draft Groundwater Modeling Report at the Ash Landfill Site and the next submittal of the FS Report at the Ash Landfill Site. EPA provided comments on these documents on March 1, 1996 and in today's letter. For scheduling purposes, please inform us as to when to expect the next submittal of the Ground Water Modeling Report.

As required by the Federal Facilities Agreement between our agencies, EPA anticipates that the Army will respond and revise the Draft FS for the Ash Landfill dated December 1995 to address the concerns expressed in this comment letter. In order to avoid any misunderstandings, we would like to schedule a conference call to discuss these comments with you and your staff. I look forward to hearing from you at your earliest convenience and can be reached at 212-637-4322.

Sincerely yours,

Carla M. Struble, P.E.
Federal Facilities Section

cc: K. Gupta, NYSDEC
R. Battaglia, USACOE-NY
K. Healy, USACOE-HD
M. Duchesneau, Parsons ES

PARSONS ENGINEERING SCIENCE, INC.

Prudential Center • Boston, Massachusetts 02199-7697 • (617) 859-2000 • Fax: (617) 859-2043

May 28, 1996

Commander
U.S. Army Corps of Engineers
Engineering and Support Center, Huntsville
Attn: Ms. Richards CEHND-PM
4820 University Square
Huntsville, AL 35816-1822

SUBJECT: **Seneca Army Depot Activity, Ash Landfill**
Response to Comments for the Draft Final Feasibility Study Report
and the revised Groundwater Modeling Report

Dear Ms. Richards:

Parsons Engineering Science is pleased to submit for your review the reponse to comments for the Draft Final Feasiblity Study Report and the revised Groundwater Modeling Report for the Ash Landfill. The Army has requested that the submittal of these response to comments to the USEPA be extended to May 30, 1996. The date for submittal of the revised Feasibility Study Report has been extended to June 21, 1996.

If you have any questions, please do not hesitate to call me at (617) 859-2492 to discuss them.

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.

Michael Duchesneau, P.E.
Project Manager

MD/cmf/D#15

RESPONSE TO COMMENTS FOR
U. S. EPA
DRAFT FINAL FEASIBILITY STUDY REPORT
AT THE ASH LANDFILL
SENECA ARMY DEPOT ACTIVITY
ROMULUS, NY
MARCH 22, 1996

GENERAL COMMENTS

Comment #1 **Response to comments Presented in the letter, Comment #2, pages 4-6:**

The NYSDEC classification for groundwater at SEDA is Class GA - protection for a source of drinking water. CERCLA's implementing regulations, The National Oil and Hazardous Substance Contingency Plan ("NCP"), state that groundwater that is not currently a drinking water source, but is a potential drinking water source in the future, should be protected to levels appropriate to its use as a drinking water source. The intended use of SEDA and the Ash Landfill have yet to be definitely determined.

Contrary to what was stated in Parson's response to EPA's comments, the NY State groundwater standard GA is not more applicable to the site than Federal MCLs. Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), and the NCP (see 40 CFR Part 300.430(f)) establish as threshold criteria for remedy selection the protection of human health and the environment and the attainment of cleanup levels consistent with legally applicable or relevant and appropriate standards ("ARARs"). The NCP also states that Maximum Contaminant Levels (MCLs), which are enforceable drinking water standards promulgated under the Safe Drinking Water Act, and Maximum Contaminant Level Goals (MCLGs) above zero, are indeed relevant in considering cleanup levels for water that is or may be used for drinking, unless more stringent promulgated State standards exist.

Metals in groundwater are not effectively addressed by the groundwater alternatives. There seems to be an implicit assumption that elevated metals are an artifact of sampling and acidifying turbid samples. However, this cannot be assumed. Parsons ES states that turbidity is the cause for many of the exceedances. Turbidity measurements for a majority of the groundwater samples were not included in the RI Report and therefore could not be related to metal concentrations. If turbidity is the cause of the exceedances, low turbidity samples (filtered or low-flow purging) should be directly compared to turbid samples. In addition, low flow sampling methods should be used to obtain representative and complete metals levels in the aquifer as soon as possible.

Response #1 Agreed. We acknowledge EPA's argument that NY State Class GA groundwater standards are not more applicable than the Federal MCLs, and MCLs are relevant in considering cleanup levels for water that may be used for drinking. In response, further consideration of chemical ARARs for groundwater will include both Federal MCLs and NY State Class GA groundwater standards, the lowest of which will be the cleanup level for groundwater at the Ash Landfill.

With regard to metals in groundwater, we still maintain that turbidity is the cause of the exceedences of metals standards in groundwater at the Ash Landfill. In order to demonstrate that turbidity is the cause of these exceedences, high turbidity samples were compared to low turbidity samples (Table A). Turbidity data for many of the

groundwater samples collected in January 1992 (which were not previously included on Table 2-7 of the Ash RI) has been included in the current metals data set. Table B presents all of the available turbidity and metals data for each well at the Ash Landfill. For each well, the sample with the highest turbidity was compared to the sample with the lowest turbidity and the percent reduction in the metals concentration when the high and low turbidity samples were compared is shown in the far right hand column of Table B.

The analysis indicates that the metals concentrations are significantly reduced in the low turbidity samples, often below the MCL or GA standards. However, in some instances the turbidity in the least turbid sample was still relatively high and the concentration still exceeded the standard; the metals that exceed MCL or GA standards are highlighted in Table B. In all, metals concentrations in 10 wells exceed their respective MCL or GA standards. The metals that exceeded their standards in the 10 wells are as shown in collapsed form on Table B. The metals iron, manganese, and sodium were not included in this tally of 10 wells because these metals are very common (i.e., naturally occurring) in soil and groundwater and, more importantly, they are generally considered to be significantly less toxic than many of the other metals. Thus, exceedences by these metals are not believed to justify their consideration in remedial alternatives for groundwater, especially when turbidity is believed to be the cause of these and other exceedences at the site.

This discussion focuses on the more toxic metals cited in the Table A. For many of these metals, the concentration is significantly reduced from the higher turbidity sample to the lower turbidity sample, and often the concentration was reduced to below the standard (e.g., PT-18, PT-19, MW-28, MW-31, and MW-32) (Table B). For many of the latter wells in Table B, only one sample was available so no turbidity comparison could be made, however, the turbidities in the samples from these wells were relatively high (MW-43 through MW58D).

Lead exceeded the standards in 8 wells (Table A). Lead exceedences generally ranged from 17.3 μg/L to 28.8 μg/L, which is only slightly above the MCL and NYS Class GA standard values of 15 μg/L and 25 μg/L, respectively. Also, the sample from MW-56 contained a concentration of 44 μg/L and a turbidity of 18,000 NTUs. Considering the relatively high turbidity in these samples, and the relationship between turbidity and lead concentration demonstrated from other on-site samples, less turbid samples from these wells would likely have lower concentrations of lead. Because these concentrations are already only slightly above the standards, low turbidity samples would in all likelihood be below the MCL and Class GA standards. At MW-44, the lead concentrations was 147 μg/L (NTU = 100), which is the highest exceedence at the site. Currently, the lead concentration in groundwater at MW-44 is believed to be significantly lower since the removal action was performed and approximately 921,136 gallons of groundwater was removed from this area of the site.

Chromium exceeded the standards in 7 wells (Table A). Chromium exceedences generally ranged from 59 μg/L to 88.4 μg/L in 6 of the samples, and they are below the Federal MCL of 100 μg/L but above the NYS Class GA standard of 50 μg/L. One sample from MW-56 contained a chromium concentration of 351μg/L, but this concentration was associated with an extremely high turbidity value (18,000 NTUs). Again, all of these exceedences are related to high turbidity samples, and less turbid samples would result in lower chromium values, presumably below the Class GA standard.

Nickel exceeded the standards in 6 wells (Table A). Nickel exceedences generally ranged from 101 μg/L to 122 μg/L, only slightly above the Federal MCL of 100. The highest nickel concentration (533 μg/L) was associated with a turbidity value of 18,000 NTUs in MW-56. Again, less turbid samples would likely result in nickel concentrations below the MCL standard.

The remaining metals (zinc, antimony, barium, beryllium, and copper) exceeded their standards in one to three wells, and like the metals cited above, their exceedences are believed to be caused by the high turbidities in the samples (Table A).

Lastly, the filtered samples demonstrate that at even lower turbidities, the metals concentrations in these samples are reduced such that only one exceedence occurred; antimony was found in PT-26 at a concentration of 53.1 μg/L. It is noteworthy that PT-26 is located approximately 2,500 feet southwest of the Ash Landfill and is not in close proximity to any of the other wells on-site, yet exceedences for chromium, lead, nickel, and antimony were measured in this well. The high turbidity in this well is likely responsible for the many of the exceedences.

On the basis of the data presented in the attached tables, metals are not a believed to be a constituent of concern at the site and, therefore, metals in groundwater should not be considered in the migration control alternatives in the Ash Landfill FS.

Additionally, we have already implemented a low-flow sampling method for the RI/FS investigations that are currently being conducted at other sites at SEDA. The sampling method involves a low-flow purge with a submersible pump (i.e., bladder pump or centrifugal pump) followed by low-flow sampling using the same pump; aquifer stabilization criteria (such as temperature, pH, conductivity, Eh, DO, and turbidity) are measured with an in-line flow cell during the well purging process. This method has been effective in obtaining low turbidity samples from the wells at several SEADs.

Comment #2 **Response to General Comment #1, beginning on page 6:**

a) The response to Comment #1 states that alternative MC-2, Natural Attenuation, complies with all of the ARARs. This contradicts the Draft FS which was quoted in the original comment. The reasoning given is that "*with the passing of time*, the concentrations of VOCs in the groundwater would ultimately be reduced to levels below the NY State GA standards for groundwater" (italics added). It is difficult to see how this complies with ARARs. If this type of reasoning is to be used, the FS should state at time period after which ARARs would be achieved and should provide adequate technical support for the statement.

b) Also, it is acknowledged in the description of MC-1 (FS p. 3-17), the no-action alternative, that it "will not meet the Remedial Action Objectives due to exceedance of the GA groundwater ARAR." The description of MC-2 indicates that there is no substantial difference between this alternative and MC-1. The only additional actions to be taken in MC-2 are that institutional controls are to be added, and of these, deed restrictions are the only control which is not already in place. Note also that in Section 3.6.2.9 (p. 3-35) where the alternatives are being screened for ARAR compliance, it is stated that MC-2 "scores low." It is unclear how an alternative can "score low" in ARAR compliance. Either an alternative complies with ARARs or it does not. Even if there is a basis for a ranking (such as the number of ARARs complied with), MC-1 and MC-2 should be ranked equally which they are not. Additionally, in reference to the

ARAR compliance description in Section 3.6.2.9 on p. 3-35, on going monitoring does not affect compliance with ARARs.

There are circumstances under which ARARs may be waived and these are given in the USEPA guidance. If there is a reason to waive the ARARs, it can be done in accordance with Section 121(d)(4) of CERCLA.

Response #2

a) MC-2, the Natural Attenuation Alternative, will comply with all of the ARARs including the Federal MCLs or NY State GA standards for groundwater. Section 5.4 which presents a detailed description of Alternative MC-2, has been revised and currently presents technical support for the natural attenuation hypothesis including (1) the results of the Groundwater Modeling Study, which is presented in its entirety in Appendix F of the FS Report, and (2) historical groundwater data from the site. Three scenarios were modeled in the groundwater modeling study. Scenario 3 -B models the effects of the source removal conducted in the spring of 1995. Scenario 3-B uses post-remediation starting concentrations at the source area and uses a degradation constant (k) of 0.0005/day, which is considered representative of the site conditions. Based on the results of the groundwater modeling study for this scenario, the concentrations of VOCs at points on-site will be reduced to below 5 ug/L after approximately 15 years. At a point approximately 200 feet west of the SEDA boundary, the maximum concentrations of VOCs is 3.3 ug/L after approximately 10 years. For this scenario, the models predict that the plume will not move a great distance from the Ash Landfill, and will be completely degraded before it reaches the farmhouse.

Historical groundwater data collected from monitoring wells at the Ash Landfill indicate that degradation of the existing groundwater plume is likely occurring based upon measured concentrations of the breakdown products in downgradient wells. This data supports the proposal that removal of the source material combined with the microbial community at the site would eliminate the plume prior to the plume reaching the off-site receptors (i.e., the farmhouse). These supporting historical data as well as the results of the groundwater modeling study are presented in the discussion of Alternative MC-2 in Section 5 of the FS report.

b) Agreed. All the Migration Control alternatives including the No-Action Alternative, MC-1, will comply with the ARARs. Therefore, all the migration control alternatives have been equally ranked in regard to compliance with ARARs in Section 3.6.2.9. The difference between the alternatives is in the time-to-compliance when concentrations of VOCs in the groundwater would be reduced to levels below the criteria. As discussed above, the groundwater modeling study predicts that natural attenuation alternatives will comply with the Federal or NY State GA standards for groundwater on-site after approximately 15 years.

Additional remedial actions have been added to MC-2 in order to control exposure to the VOC plume by off-site receptors. The remedial actions include an extensive groundwater monitoring program involving monitoring wells located along the boundary between the Ash Landfill and the off-site farm, and within the plume area. A contingency plan for off-site receptors will be initiated if the groundwater monitoring data indicates a statistically significant upward trend in the constituents of concern. The contingency plan includes purchasing or leasing the off-site land which has been impacted by the groundwater plume, deed restrictions of the off-site property, and providing an alternative water supply. The text in Section 3 and 5 of the FS has been revised to describe the additional institutional controls for MC-2.

Comment #3 **Response to General Comment #3, beginning on page 9:**

a) In the response to comment #3, regarding the fact that the methodology used for screening the remedial technologies and developing the remedial alternatives does not correspond with the methods outlined in the CERCLA RI/FS guidance document, Parsons ES has taken exception to this comment as "non-productive". They also note that the guidance states (p. 1-3) that the approach outlined is not a "rigid step-by-step approach that must be followed identically at every site." In Section 1.1, p. 1-3 of the FS it was Parsons ES that indicated that they would follow the guidance with the statement that "This report is organized in accordance with "Guidance for Conducting Remedial Investigations and Feasibility studies Under CERCLA," EPA/540/G-89/004, October 1988." Substantive deviations from the method in the guidance, such as combining the technology and process screening effort into one effort, should be noted clearly in the text. Also in the guidance, Section 1.2 Purpose of the Guidance, it states that "This guidance describes the general procedures for conducting an RI/FS." There is really no other guidance by which FSs are conducted - this guidance document does, in fact, represent the logic and organization that EPA expects to see in an FS. The guidance presents a uniform method of conducting and presenting FSs which assists both writers, readers, and reviewers in following a complex process. Significant variations from this should be logical and easily understandable by the reader.

The major concern in the original comment was not that the draft FS did not follow the guidance line by line, but that the FS deviated sufficiently such that it would not be able to fulfill the purpose for which it was intended, which is to provide a logical process for evaluating technologies and alternatives, and to provide a sound basis for the selection of the preferred alternative and preparation of the proposed plan.

Much of this has been remedied in the Draft-final FS, but a fundamental problem remains in Sections 3 and 5 regarding the development and screening, and detailed analysis of the alternatives. The final objective of an FS is to present alternatives which can address the site as a whole. This FS presents alternatives for either "source control" or "migration control", but none of the alternatives addresses the site as a whole. While the guidance make allowances for formulating media-specific actions and evaluating them separately in cases where the interactions between media are not significant, it is clear that these actions are to be combined into site-side alternatives which address all media (Guidance, Section 4.2.6 Assemble Alternatives). Implicit in this is that if the interactions between the media are determined to be insignificant, the backup for this should be presented in the FS. This was not done. The latest point at which these media-specific actions are to be combined into site-wide remedial alternatives is prior to the comparative analysis of the alternatives. Regarding the part of the response which says that "following guidance...would have required a discussion of forty-two (42) different remedial alternatives", note Section 4.3.3.1 of the guidance, entitled Guidelines for Screening, which indicates that such a large number of remedial alternatives is not required.

The FS as it now stands presents two separate and parallel groups of "alternatives" each of which addresses a particular medium. The groups are separated to the extent that each has its own "no-action" alternative; two separate "no-action" alternatives are presented for the site. These are established at the beginning of the alternative development and are carried all of the way through the detailed analysis. The rationale for this should be clearly presented and supported as part of the detailed analysis of the alternatives. At the conclusion of the FS it is unclear whether the preferred alternative

should be one of all of the alternatives given, or one each of the source and migration control alternatives.

Parsons ES is advocating another method for choosing the preferred site-wide alternative by implying in the comment response, "The best time to combine the source control or migration control alternatives is during the ROD...". This is not acceptable.

A table summarizing the results of the detailed analysis for each alternative with respect to each of the nine criteria should also be prepared as indicated by the guidance in Section 6.2.4, Presentation of Individual Analyses.

b) Additional alternative evaluation and modeling

In light of the non-ideal predictions made by the current modeling scenarios, one of the most significant deficiencies of the FS and supporting modeling is that the Army failed to evaluate a range of alternatives which would attain cleanup levels within varying time frames. Instead, natural attenuation with source removal was compared to natural attenuation without source removal. The value of this comparison is minimal since the source term has already been removed.

In accordance with Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites (EPA/540/G-88/003), the FS should be revised to compare the cleanup efficiencies of a number of different alternatives. The cutoff drain described in alternatives MC-4-7 should be one modeled scenario. Another modeling scenario should include a trench or well point system to capture contamination within the 1000 ppb VOC isocontour. another scenario would involved pumping in both the near source and edge of plume locations. The off-site impacts of these scenarios as well as calculated times to attain cleanup levels should be provided for each alternative. Only with this comparative information can a considered, protective, cost-effective decision be made on site groundwater.

c) Table 2-11, it is not clear why dewatering and SVE were not considered in light of the volatility of the contaminants and thin, shallow contaminated zone. Please explain.

Response #3

a) Sections 3 and 5 of this FS develop and screen alternatives and provide a detailed analysis of the screened alternatives in terms of two separate media-specific groups, Source Control and Migration Control. According the Section 4.2.6 of the Guidance, the alternatives may be formulated into media-specific actions and may be evaluated separately if the interactions between media are not significant. Since the Removal Action has been conducted for source soils for the VOC plume at the "Bend-in-the-Road", the source of the volatiles in the groundwater plume has been eliminated. The RAO for the groundwater plume now includes management of the migration of the plume. The remedial actions for the soils at the site involve removing the landfills and debris piles in order to prevent dermal contact and ingestion of soils contaminated with metals and PAHs. Therefore, with the removal action complete, any interaction between the two media are not considered to be significant and the RAOs and remedial actions for the two media have become independent of each other. Furthermore, the separation of the alternatives into Source Control and Migration Control provides a more efficient means to achieve the RAOs as evidenced by the Removal Action conducted by the Army to remove the source of the VOCs in the groundwater.

The rationale discussed above for separation of alternatives into Source Control for soils and Migration Control for groundwater has been added to the introduction of Sections 3 and 5.

A discussion has been added to the conclusion of Section 5 which states that a preferred alternative must be selected for each media-specific group, i.e., Migration Control and Source Control.

Tables summarizing the results of the detailed analysis for each alternative with respect to the nine criteria have been added to Section 5.

b) The modeling of natural attenuation with and without source removal was conducted to supply technical support for the natural attenuation hypothesis. With regard to additional alternative evaluation and modeling, modeling of the various scenarios presented in the comment would involve an extensive effort. This modeling may not be necessary since these Migration Control alternatives may be screened out based on the nine criteria and not on the time to attain clean-up levels.

c) While high vacuum well points are effectively used for construction dewatering, dewatering well points would not be an effficent technology in the tight soils at the Ash Landfill. Because only a limited radius of influence could be developed under site conditions, well points would have to be spaced at close intervals which would not be cost effective. The trench system which has been proposed in the FS is a more efficient technology because it works as a system of infinite well points.

SPECIFIC COMMENTS

Comment #1 **Response to Specific Comment #6, p. 12-13:**

Semi-volatile organic concentrations were detected above applicable standards in MW-44, and should not be considered insignificant. As for metals, see the discussion concerning "Response to Comments Presented in the letter, Comment #2".

Response #1 We acknowledge that three SVOCs were detected above their respective standards in MW-44 during the RI investigation; this is the only well where standards for SVOCs were exceeded. Phenol at 5 µg/L exceeded it NYSDEC Class GA standard of 1µg/L. Naphthalane was found at 66 µg/L and exceeded its GA standard of 50 µg/L. Lastly, pentachlorophenol was detected at 54 µg/L and exceeded the Federal MCL and GA standard of 1 µg/L. In light of these small exceedences, we believe that the current groundwater chemistry conditions at MW-44 are drastically different than when this well was sampled for the RI. The reason for this is that during the course of the excavating the soil source areas A and B at the Ash Landfill (which encompassed MW-44), 921,136 gallons of groundwater were removed and treated. The removal and treatment of this groundwater would have remediated the groundwater in the area of MW-44 such that the concentrations of these three SVOCs are in all likelihood below their respective standards today.

Metals - see response for comment above.

Comment #2 **Response to Specific Comment #9, p.13:**

It was agreed that this comment was appropriate but no response was made. The response to this comment is important because in Section 2.2.2, p. 2-11 the text states

that 'In all instances of risk calculation and ARAR/TBC comparison, the 95th UCL or maximum detected concentration, whichever is lower, is used as either the value of comparison or the exposure dose calculation of the risk (i.e., the Exposure Point Concentration [EPC]).' It should be verified that the appropriate concentration was used for the exposure Point Concentration.

Response #2 The Exposure Point Concentrations presented in Table 2-1 have been verified to be the lower of the two values, the 95th UCL of the mean or the maximum detected concentration.

In response to the original comment #9, the 95th UCL of the mean may be lower than the arithmetic mean depending on the data set. For example, the arithmetic mean may be skewed by high data values. Also, for those data sets which are not normally distributed, the 95th UCL of the mean is calculated using the log transformed data. The arithmetic mean of the log transformed data is referred to as the geometric mean. The geometric mean of the log transformed data may be sufficiently lower than the arithmetic mean, and therefore the use of the geometric mean could yield a 95th UCL of the mean which is lower than the arithmetic mean.

Comment #3 **Response to Specific Comment #11, p. 13:**

The text on page 2-20 should state what statistic the 95th UCL is of. Presumably, it is of the mean.

Response #3 Agreed. The 95 UCL is of the mean as stated in the comment. This clarification has been added to the text on page 2-20 of the Ash Landfill FS.

Comment #4 **Response to Specific Comment #12, p.14:**

See Response to Specific Comment #10, above.

Response #4 Acknowledged. However, it is unclear to us what comment is being referred to (we do not see a specific comment #10 above) and ,therefore, we can not address the comment.

Comment #5 **Response to Specific Comment #13, p.14:**

There are still some inconsistencies in the table regarding whether technologies are screened or retained, e.g. in Table 2-10, ex-situ treatment/chemical extraction/aqueous solvent, and disposal/RCRA Landfill.

Response #5 Agreed. The inconsistencies in Table 2-20 were corrected. Under the Process column heading in Table 2-20, aqueous solvent and RCRA landfill were screened out.

Comment #6 **Response to Specific Comment #14, p.15:**

This comment was acknowledged and an explanation given, but not responded to in the document. The explanation and the existing text in the document explain in a generic sense why the alternatives were developed separately, but do not explain on a site specific basis why this was appropriate. The rationale for taking this approach in the alternatives development should address the specific situation at the site and support the implicit assertion that the source and migration options are independent. See also the Response to General Comment #3.

Response #6 Agreed. The explanation for the separate development and detailed analysis of the Migration Control and Source Control alternatives has been added to Section 3.1 of the FS report. Please refer to the Response to General Comments #3 for the explanation of the development of alternatives by media.

Comment #7 **Response to Specific Comment #18, p.16:**

Based on a telephone conference call on October 6, 1995 between the USEPA, SEDA, Army Corps, Parsons ES and Malcolm Pirnie, it was recognized that the trench would not intercept contaminant flow in the competent bedrock, if present. There are no monitoring wells installed in the competent bedrock in the areas where the highest concentrations of chlorinated organics were detected in the groundwater (MW-44 and PT-18). If groundwater contamination in the bedrock is detected in the future, the inclusion of deeper (competent rock) extraction wells or a similar collection system may be necessary.

Response #7 Agreed. We acknowledge that there are not bedrock wells in the areas where the highest concentrations of VOCs were detected in the groundwater (MW-44 and PT-18). And, if groundwater contamination in the bedrock is detected in the future, the inclusion of deeper extraction wells or a similar collection system may be necessary.

Comment #8 **Response to Specific Comment #20, p.16:**

Parsons ES references its response to Comment #1, which only addresses ARARs, not all nine criteria.

Response #8 Disagree. The referenced section is not meant to provide a detailed discussion of how each alternative meets the nine criteria, but is the comparative analysis of the various alternatives. The detailed discussion for Alternative MC-2 in Section 5.3 provides the rationale for Alternative MC-2 achieving the criteria.

ROBERT S. KERR ENVIRONMENTAL RESEARCH CENTER

GENERAL COMMENT

Comment #1 The FS report did not provide any conclusions or recommendations regarding which of the proposed remediation alternatives would be the most appropriate at containing the groundwater contamination at the Ash Landfill. In particular, there are some questions concerning the various Source Control and Migration Control alternatives and their link with the fate and transport modeling discussed in the Groundwater Modeling Report. It is unclear which, if any, of the modeling scenarios represents any of the FS alternatives. More discussion needs to be included regarding the simulation of the effectiveness of the various remediation alternatives.

Response #1 Acknowledged. First, the draft version of the Ash FS did include a "Conclusions and Recommendations" section that included a recommended remedial alternative for the site, however, we were asked by the NYSDEC in the last round of comments to remove this section, and we did so. NYSDEC felt that is was premature to recommend an alternative in the FS. Rather, NYSDEC recommended that upon finalization of the FS report, the Army should propose their recommended alternative through a draft proposed remedial action plan (see section 3 of EPA Guidance for Conducting RI/FS

under CERCLA, EPA/540/G-89-004, OSWER Directive 9355.3-0.1, October 1988 and IAG Section 12 and Attachment 2).

Second, modeling was performed to provide an indication as to the effectiveness of a natural attenuation alternative at the Ash Landfill site; this is alternative MC-2 in the Ash Landfill FS. In the modeling report this was equivalent to Scenario 3, which simulated the plume migration after the VOC source materials were removed during the removal action. No other FS alternatives were modeled.

SPECIFIC COMMENTS

Comment #1 Section 2.4.1 Estimate of Quantities to be Remediated: Page 2-37 discusses that " the ecological risk assessment does suggest that metals, albeit small, may be a source of increased chronic risk." However, an in-depth analysis of the fate and transport of metals in the subsurface has not been adequately presented in the report. Further discussion should be included if the migration of metals in the subsurface is considered potentially important

Response #1 Acknowledged. For reasons given in the response to General Comment # 1 on page 1, we do not feel that the migration of metals in groundwater is considered important at the Ash Landfill site.

Comment #2 Section 3.2 Assembly of Alternatives: Page 3-5 states that alternative MC-2 'uses natural attenuation for reduction of contaminant levels in the plume...". However, it is unclear how this alternative would be applicable to heavy metals in the subsurface. Also stated on this page is that "Although NYSDEC groundwater standards are exceeded in on-site wells, the concentrations are being reduced by natural processes and will reach an allowable level in the future." This statement is vague, requires more proof and should mention the length of time for contaminant concentrations to reduce to below groundwater standards.

Response #2 First, we believe the metals of concern that exceed standards in 10 groundwater wells are caused by elevated turbidity in these samples, and it is not necessary to include remedies for the potential migration of metals in groundwater in the FS. Thus, the natural attenuation alternative, which clearly does not address impacts from metals, would be used for VOCs found in the groundwater at the Ash Landfill.

A more detailed discussion about the natural attenuation process including supporting technical data has been added to Section 5.4.1, which describes Alternative MC-2, the Natural Attenuation Alternative. This discussion includes an estimate of the length of time for contaminants of concern to be reduced to below groundwater standards based on the results of the groundwater modeling study.

Comment #3 Section 3.3.5 SC-4: Page 3-14 states that for Source Control Alternative 4 will use hydrochloric acid (HCL) to extract metals from the soil. Table 2-1 presents the various types of heavy metal detected in soil samples. However, we are not aware that HCL will effectively extract any lead (Pb) species from soil. A commonly used acid to extract lead from soils is nitric acid (USEPA, 1992).

Response #3 Agreed. A combination of flurosilcic acid, nitric acid, and hydrochloric acid have been used to extract metal contaminants from the soil. The text on page 3-14 was changed to reflect this.

Comment #4 Section 5.3.1.2 Migration Control - Protectiveness: Page 5-19 states that "there is some uncertainty associated with the long-term protectiveness since off-site land use cannot be controlled". This appears to be the major limitation or weakness of this alternative since on-site institutional control and monitoring will not reduce the risk of off-site contaminant movement. Scenario 3 of the contaminant transport modeling predicts the "natural attenuation" alone will not reduce off-site concentrations to below drinking water standards within the next ~ 150 years (Figure 6-16, Parsons, 1996).

Response #4 Agreed. Please refer to the Response to General Comment #2 (b).

PROGRAM SUPPORT BRANCH PRE-REMEDIAL AND TECHNICAL SUPPORT SECTION

GENERAL COMMENTS

Comment #1 1. Natural Attenuation

The Interim Army Policy on Natural Attenuation for Environmental Restoration states:

"Natural Attenuation typically requires extensive monitoring to ensure that the predicted natural processes are taking place...Additionally, there should be a readily available contingent remedy for the site. It will take credible scientific data, site characterization data and predictive modeling to prove that natural processes are sufficient to reduce risk in the timeframe required. The army will need that proof (emphasis added) to ensure the acceptability of the actual attenuation remedy."

In view of this policy, the discussion of the anticipated efficacy of the natural attenuation alternative is inadequate. Although anaerobic reduction of TCE to breakdown products is occurring to some degree at the site, there is insufficient data to demonstrate the effectiveness of this approach. As researchers from the Kerr Lab pointed out in previous comments, it is not clear that there is sufficient oxidizable carbon and anaerobic or methanogenic conditions throughout the plume. For example, the FS assumes that there is little vinyl chloride present in the plume because it has volatilized into the atmosphere. However, the absence of vinyl chloride may also be explained by insufficient carbon to produce vinyl chloride from DCE.

In addition, overall site loss of contaminants must be documented using statistically significant trends in contaminant levels to show that a reduction in the total mass of contaminants is occurring at the site. Also a complete mass balance should be completed to show that decreases in contaminant and electron acceptor concentrations can be correlated to increases in metabolic byproduct concentrations.

Currently, the Army's own modeling (noting that the modeling still needs numerous revisions outlined in RSKERL's comments) illustrates that natural attenuation alone will not contain the plume on-site or reduce off-site concentrations to acceptable levels for over 100 years. In fact, the modeling predicts that in 100 years after source removal, cleanup levels will be exceeded up to 1200 feet off-base and within 600 feet of an existing well.

Response #1 Agreed. As stated in the Comment, the Natural Attenuation alternative, MC-2, is required by Interim Army Policy to have (1) an extensive monitoring program to ensure that the natural processes are taking place and (2) a contingent remedy for the site. Therefore, as part of MC-2, a groundwater monitoring program will be conducted and

will consist of sampling new and existing monitoring wells. Groundwater monitoring wells will be installed along the Ash Landfill boundary which is adjacent to the farm and on the downgradient portion of the VOC groundwater plume. The groundwater monitoring wells will be sampled for approximately 30 years and the data will be used to determine any statistically significant trends in contaminant levels. If the concentrations of the contaminants in the groundwater from these wells indicate an upward trend, a contingency plan will be initiated. This plan, which is described in detail in Section 5.4.1.1, Definition of Alternative MC-2, includes purchasing off-site property which has been impacted by the plume, applying deed restrictions on the off-site property, and providing an alternative water supply to off-site residences.

In addition, while we acknowledge the Kerr comments, we feel that the available data suggests that reductive dechlorination of TCE is a plausible mechanism for reducing the mass of chlorinated VOCs at the Ash Landfill site. The effectiveness of the natural attenuation mechanism was documented in the groundwater model, which showed that the plume would eventually degrade to below ARARS.

To provide a "big picture" view, plots of the historical trends in the concentration of TCE, 1,2-DCE and vinyl chloride in selected monitoring wells at the Ash Landfill were generated. These plots document the overall loss of VOCs at the site both due to natural and unnatural mechanisms.

We do not feel that it is appropriate or practical to perform a complete mass balance showing decreases in contaminant and electron acceptor concentrations, and correlation to increases in metabolic byproduct concentrations. This would require a lengthy sampling and analysis program. However, the Army does intend to continue to implement the sampling for VOCs at the Ash Landfill and document the overall loss of mass of TCE, 1,2-DCE and vinyl chloride from the wells on-site.

Comment #2 Cleanup Times and the Range of Alternatives

a) The discussion of the long-term protectiveness of migration control alternatives alludes to cleanup times for the different alternatives. These cleanup time estimates are not referenced properly in the text, and as subsequent comments state are inadequate since they do not consider partitioning from the solid phase. The only alternative that was modeled was natural attenuation and the time to achieve cleanup levels was not provided. It is not clear why these rough calculations were presented when the site has already been modeled using the much more sophisticated MT3D model. It is not clear why MT3D was not used to predict cleanup time frames. Please explain.

A range of alternatives must be developed and the estimated cleanup time frames for all alternatives provided. As written, the FS does not provide for an alternative that calls for source control of the concentrated portions of the plume and natural attenuation plus institutional controls for the remainder of the plume. This approach is a hybrid between natural attenuation and the double trench approaches described in the FS. Also it is not clear why none of the alternatives address the off-site contamination. Modeling and additional information on institutional controls should be used to support not remediating this potentially vulnerable area. Discussion regarding the uncertainties of these modeled estimates should also be included. For example, how uncertainties of key modeling parameters affect cleanup time frames should be discussed.

b) In order to represent a range of Source Control Alternatives, *SC-2: Excavation of both landfills/Disposal in an off-site non-hazardous Subtitle D landfill* should not be

eliminated and should be carried through the Detailed Analysis of Alternatives, Section 5 of the FS. Although *Table 3-3, Screening of Source Control Alternatives* shows SC-2 as the lowest scoring alternative, it's only 3, 5 and 6 points lower than the retained alternatives. Hardly a significant difference. SC-2 represents the only off-site remedial alternative and a midpoint for cost at $17.5 million, as opposed to the retained alternatives, *SC-3: Consolidation and Capping* at $1.86 million and *SC-4: Soil Washing and Solidification* at $32 million.

Response #2 a) Response is currently being resolved.

b) Agreed. The Source Control alternative, SC-2, has been retained and carried through the Detailed Analysis of alternatives.

SPECIFIC COMMENTS

Comment #1 Table 2-10 - The institutional controls described here (deed restrictions) are only relevant to those contaminated areas on base. Please describe in detail what institutional controls may be implemented in the off-site groundwater plume area.

Response #1 Agreed. A detailed discussion of the institutional controls that may by implemented off-site is presented in Section 5.4.1, which is in the description of Migration Control alternative, MC-2. A groundwater monitoring program will be conducted and will include monitoring wells along the Ash Landfill boundary along the downgradient portion of the plume. If the groundwater data indicate an upward trend in the concentrations of VOC contaminants, a contingency plan will be initiated. This plan includes purchasing or leasing the off-site property adjacent to the Ash Landfill, a deed restriction for this property, and supplying drinking water for impacted off-site residences.

Comment #2 Page 3-5, natural attenuation - In light of the uncertainty of many key parameters such as biodegradation rate, retardation rate and hydraulic conductivity, it is not possible to ~~absolutely conclude the plume is at steady state and will not spread off-site~~.

Response #2 Agreed. We can not absolutely conclude that the plume will not migrate off-site. However, in reviewing the text on page 3-5, we can not identify any statements that claim this. Therefore, we are not sure what change, if any, EPA would like us to make on this page. As a note, the natural attenuation alternative does include institutional controls as a contingency if continued monitoring indicates that the VOC plume is migrating off-site and ARARS for VOCs are exceeded.

Comment #3 Page 3-8: The text in the FS states that approximately 23,000 cubic yards of soil was removed and treated. However, the Final Report on the Ash Landfill Immediate Response dated July 1995 and prepared by IT Corporation for the U.S. Army Corps of Engineers, Omaha District states on page ix that 455,000 cubic yards of soil material was excavated and treated. This discrepancy should be explained and corrected.

Response #3 Agreed. The number of cubic yards of soil removed and treated was approximately 23,000, as was stated in the FS report. The value of 455,000 cubic yards cited in the Final Report on the Ash Landfill Immediate Response (IT Corporation, 1995) is believed to be in error. The Project Narrative of the IT report states that "approximately 35,000 tons (455,000 cubic yards) of soil material was excavated and treated...", and it

is apparent that there was an error when converting tons to cubic yards. Considering that 1 cubic yard equals approximately 1.5 tons, 35,000 tons is roughly 23,000 cubic yards. No change was made the to the text in the Ash Landfill FS.

Comment #4 Section 3.3.2 Page 3-9: The text states, "Under these exposure scenarios, the total site risks totaled 1.0×10^{-4} for carcinogenic and non-carcinogenic risks, and the Hazard Index (HI) was 0.24." From where in the Risk Assessment for the Ash Landfill were these values obtained?

Response #4 These values were obtained from Table 1-1 of Section 1 of the Ash FS Report. The Risk Assessment tables for the Baseline Case are provided in Appendix B of the FS Report.

Comment #5 Section 3.3.2 Page 3-9: The conclusions stated in the text reads, "These two criteria, risk and ARAR compliance, are the only two criteria used to determine if a remedial action is required, therefore, no action is required for source soils." EPA cannot agree with this statement. The risk issues have not been entirely addressed. Risk assessment for lead is not performed by the conventional cancer (slope factor) and/or non-cancer (reference dose) methodologies. Soil and sediment sampling points at the Ash Landfill exceed lead cleanup levels the Army, NYSDEC and EPA agreed to for soils and sediments at the Open Burning Grounds at SEDA.

Response #5 Agreed. Lead is not considered as part of the risk assessment because the EPA has withdrawn the allowable Reference Dose (RfD) value for lead. The site-specific clean-up goal for soil and on-site sediment at the OB Grounds was established at 500 mg/kg for lead. This concentration was based on the results of two studies. The first was the output of the UBK model, which indicated that 500 mg/kg would be protective of human, residential exposure. The second factor was the result of an EPA transport model study, which determined that a lead soil level in the range of 16 mg/kg, 88 mg/kg, and 483 mg/kg would be protective of groundwater. The background concentration of lead in soil was determined to be 30 mg/kg, and therefore the lowest value, 16 mg/kg was eliminated. Therefore, the range of concentrations between 88 mg/kg and 483 mg/kg is the allowable concentration of lead in soil that will not produce a concentration of lead in groundwater above the Federal action level of 15 ug/L.

Although the future land use for the Ash Landfill is not certain and is currently considered to be as a meadow, the clean-up goal for lead in soil of 500 mg/kg will be used for the Ash Landfill also. The site specific clean-up goal of remediating soil with lead concentrations greater than 500 mg/kg has been added to the RAOs for soil. A discussion of this goal, which was adopted from the OB Grounds FS, has been added to Section 2.2.6.

The removal of the proposed volumes of soil (Case 1 through Case 4) at the Ash Landfill will result in lead concentrations below the clean-up goal of 500 mg/kg. The Removal Action at the Bend-in-the Road has already lowered the concentrations of lead as evidenced by the post-prove out soil sampling. Post-prove-out soil samples were collected and analyzed for the TCLP (metals) from the treated soils representative of Areas A and B at the Bend-in-the-Road. The TCLP metal analytical data presented in the IT report and in Table 3-3 of Appendix E of this FS Report indicate that the maximum concentrations of lead was 814 mg/kg in one sample. The remaining concentrations of lead ranged from 4.4 mg/kg to 401 mg/kg, which are below the remediation goal of 500 mg/kg. According to Table 2-8 in the FS Report, removal of the remaining Case 2 through Case 4 soils will result in a maximum lead concentration

of 40.20 mg/kg and a 95th UCL of the mean of 24.96 mg/kg, which are both below the 500 mg/kg goal established for the OB Grounds.

The sentence in Section 3.3.2, which states that only risk and ARAR compliance are used to determine if a remedial action is required, has been removed.

Comment #6 Page 3-11, para. 2 - In light of the elevated metals found in site groundwater it is not possible to conclude that migration into groundwater is not occurring as is stated here. Please revise accordingly.

Response #6 See the response for comment above that address metals in groundwater.

Comment #7 Page 3-17, institutional controls - The description of institutional controls described for alternative MC-2 is insufficient. Will the 24-hour guard be posted around the facility 75 years from now? How will deed restrictions be implemented? Are there plans to buy up the off-base property that is currently contaminated or expected to become contaminated?

Response #7 Refer to the Response to General Comment #1 of the Program Support Branch Pre-Remedial and Technical Support Section. The response describes the institutional controls which will be included in this alternative. Details concerning the implementation of deed restrictions and plans for purchasing off-site properties will be developed if Alternative MC-2 is selected as the appropriate remedial action.

The reference to a 24-hour guard has been removed because closure of SEDA under BRAC95 would terminate this institutional control.

Comment #8 Page 5-38, last sentence - This sentence seems to conflict with the previous sentence stating that the treatment system would be dismantled after the groundwater reaches cleanup levels. Please clarify.

Response #8 Agreed. The sentences have been clarified. The last sentence now reads, "Providing proper O&M is performed, the treatment system will be permanent for the duration of the remedial action.

Comment #9 Page 5-42, para. 3 - The calculations found in Appendix A should be referenced here.

Response #9 Agreed. Appendix A has been cited in the third paragraph on page 5-42 as recommended.

APPENDIX A

Comment #1 The calculations to determine cleanup times are in error because they do not account for partitioning of contaminants from the solid to liquid phases. Cleanup time frames can be calculated using the simple models presented in the appendix of the Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites (EPA/540/G-88/003). However, since MT3D modeling has already been conducted for the site, we recommend use of this model to determine cleanup times (or ranges) for all alternatives.

The reason for including the no-removal option when the work has already been completed is also not clear.

Response #1 Comment is currently being resolved.

The removal option was removed from consideration in the FS as an alternative, however, it was included in the text to document that the removal action was performed.

Comment #2 Page 2-9 - The last line of the calculations should add the mass in the soil to the mass in the groundwater, not subtract the mass in the groundwater from the mass in the soil as is done here.

Response #2 Agree. The total mass of VOCs in soil and groundwater at the site would be calculated by adding the total in the soil (1,228 pounds) and the total in the water (583 pounds). This change was made to page 2 of 9. If the removal action had not taken place, the total mass that would have to be treated by the groundwater pump and treat system would be the total in the water (583 pounds). After the removal action, the total mass that would require treatment would be 36 pounds, which is the amount of mass outside the area treated in the removal action; according to these calculations the removal action treated 1,228 pounds in soil and 547 pounds in water (583 pounds - 36 pounds = 547 pounds). A value of 583 pounds should have been used for the starting mass in groundwater not 691. By using 583 pounds instead of 691 pounds for the treatment scenario without the removal action, the other calculations that use this value are not significantly affected considering that a safety factor has been added in. In the end, less starting mass in the groundwater means that the system reaches its goal sooner than originally calculated.

COMMENTS FOR
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY (USEPA)
DRAFT GROUNDWATER
MODELING REPORT
MARCH 1996

GENERAL COMMENTS

Comment #1

It is obvious that a significant amount of work was conducted regarding the subsurface modeling for the Ash Landfill. The modeling approach appears to be sound. However, there are two fundamental concerns that need to be addressed prior to the model being appropriately used to evaluate any remedial alternative. Also, it is unclear why the first two modeling scenarios were conducted if the source has already been removed. As previously stated, it would be more appropriate to use the numerical model to simulate effectiveness of each proposed remedial alternative discussed in the FS report.

The two fundamental concerns of the fate and transport modeling are discussed below. First, the MODFLOW model does not adequately simulate the conceptual model presented. Specifically, the model was calibrated using a value of recharge from precipitation of 0.058 inches/year from a total reported of 34.3 inches/year. This value is only - 0.2% of the total precipitation and is probably not reasonable give the climatic and hydrologic conditions of upstate New York and the hydrogeologic conceptual model presented. Another indication is the overall volumetric water balance calculated by the model. The conceptual estimate of total inflow (Qin) into the model was presented as 243, 949 ft3/day, however, the model simulated the total inflow at 2,003 ft3/day. The model under simulates the conceptual estimate of total inflow by over 100% which is probably not reasonable given the 5.4 mi2 size of the active domain.

Response #1

We acknowledge the EPA's comment regarding the comparison of the conceptual and numerical models. However, we feel that the MODFLOW model does accurately simulate the conceptual model represented for the site, but further explanation of the conceptual model is required based on the issues raised in the comment; the further explanation was added to Section 4.3 of the modeling report. Generally, we feel that the wrong comparisons were made in the comment, which lead to conclusions that were not completely accurate, given the information that was presented in the Ash Landfill remedial investigation report and the conceptual model portion of the modeling report. We agree with the intent of the comment, which is that the conceptual model must match the numerical model, and we a have provided additional evidence and explanation to support the conceptual model presented in the section 4 of the report.

Clearly, when Q_{in} (243,958.65 ft^3/day) from precipitation is compared to Q_{out} (2,257.4 ft^3/day) at Seneca Lake there is an obvious discrepancy. However,

there is another component of the conceptual model that has not been considered by EPA, but must be considered to explain the apparent discrepancy - that is evapotranspiration from groundwater. Conceptual model assumptions, such as boundary conditions, groundwater flow parameters, etc., are believed to represent the flow system accurately and they are not believed to be responsible for the disagreement in the two flows. On the basis of the calculation presented earlier in this section, the groundwater flow system can only transport a finite amount of groundwater, and clearly not the amount of water that would result from 7 inches of percolation per year. Instead, the discrepancy is believed to be caused by the lack of the Thornthwaite and Mather (1957) water balance method to account for evapotranspiration from groundwater after percolation has occurred, a phenomena that we believe is significant at the Ash Landfill site. Their method accounts for most of the water balance considerations for the Ash Landfill site (such as precipitation, runoff, evapotranspiration of precipitation, and infiltration) but, it does not have a method to account for further loss of water, after infiltration has occurred, caused by capillary upward movement of groundwater in the shallow, fine-grained till aquifer, which eventually transpires and/or evaporates into the atmosphere. This is an important consideration in the Ash Landfill conceptual model.

To evaluate whether the evaporative loss of groundwater is a valid concept at the Ash Landfill, we analyzed historical groundwater data and evaluated possible mechanisms by which water could be lost from the aquifer system. First, we argue that historical groundwater observations in monitoring wells provide support for the percolation value derived from the Thornthwaite and Mather (1957) method. Then, we argue that ET from groundwater is a reasonable, and likely, mechanism by which water is lost from the aquifer, when compared to alternative mechanisms.

To determine if the percolation number calculated using the Thornthwaite and Mather (1957) method was reasonable, we compared seasonal increases in the saturated thickness of the till/weathered shale aquifer (Figure 3-8 and Table 3-1) to the total annual percolation value of 7 inches. First, we determined how much water was added to the system from a period when the water table was low (late summer early fall) to a period when the water table was high (late winter and spring). On the basis of the data shown in Table 3-1, the average change in the water table was 5.4 feet. The amount of percolation that would be required to cause the water table to rise 5.4 feet would be obtained by multiplying the total rise in feet of water in the wells for a season by the effective porosity of the till (0.15) [The effective porosity was used because it represents the available space through which water can move, assuming some water would be bound up in the interstices of the till]. Therefore, an 5-foot rise in the water table would require an infiltration of approximately 9 inches of

water. Following the same line of reasoning, 7 inches of infiltration (which was calculated in the water balance) would result in a water level rise of 3.9 feet (7 inches ÷ 0.15 = 46.7 inches or 3.9 feet) or approximately 4 feet, which is close the average change observed calculated from the well observations of approximately 5 feet. Therefore, the infiltration value of 7 inches is in line with the observed changes in the saturated thickness of the till/weathered shale aquifer and this amount of infiltration is a necessity in order to be able to account for the seasonal rise in the water table observed in the wells on-site. This also means that the Q_{in} (i.e., percolation) from precipitation is reasonable and was calculated based on annual percolation of 0.59 feet (approximately 7 inches) taken from the water balance determined using the method of Thornthwaite and Mather (1957). Thus, based on a comparison of Q_{in} vs Q_{out}, significantly more water would have to be removed from the groundwater flow system in order for the two flows to balance.

Several mechanisms for the loss of water from the aquifer were considered for the conceptual model; horizontal, downward and upward movement were considered. First, the K_h values in the till are not believed to be high enough to transport the water horizontally and cause the observed decrease in the water table. Second, the poor vertical connection between the till and the competent shale aquifers, as wells as the low K_h value in the competent shale, suggests that downward movement of groundwater into the bedrock as a means of getting rid of the water is not reasonable. Therefore, the third concept, upward movement groundwater via evapotranspiration, was considered to be the most reasonable alternative, given the site conditions (i.e., the fine-grained nature of the till, shallowness of the till/weathered shale aquifer, the shallow depth of the water table, the open, vegetated land surface at the site, etc.).

The concept of evapotranspirative loss of groundwater from unconfined, fine-grained till aquifers to explain large fluctuations in the water table (especially where the water table is close to a vegetated land surface) is not uncommon and has been documented by many researchers (i.e., Jones et al., 1992; Cravens and Ruedisili, 1987; Hendry, 1988; and Keller et al., 1988) - these papers were forwarded to EPA on April 16, 1996. Section 3.5.7.2 presents a detailed discussion of their findings. We believe that the characteristics and behavior of the aquifer flow system at the Ash Landfill suggest that this phenomenon is occurring at the Ash Landfill and in the surrounding area.

Thus, it is reasonable to conclude that a significant amount of the water that percolates into the groundwater flow system at the Ash Landfill is later lost to evapotranspiration and is never discharged to Seneca Lake. Although it would be difficult to calculate the actual net recharge value (Qin) [perc -

evapotranspiration] based on the conceptual model information, this value would be approximately 1.6 x 10^{-5} ft/day (or 0.07 in/yr), considering the fact that the aquifer system can only transport a finite amount of groundwater to Seneca Lake.

We believe that the aquifer conditions on the Ash Landfill site are not typical (e.g., equivalent to a sandy aquifer conditions that are commonly modeled), and atypical conditions, such as significant loss of groundwater from ET, need to be part of the conceptual model. believe the site date indicates that and that the conceptual model but instead deserves consideration for circumstances that are not typically found in deep sandy aquifers. ET loss from groundwater is the only reasonable method by which the loss of groundwater from the till aquifer can be explained given the physical site conditions and the hydrogeologic characteristics of the site.

Also, this analysis precludes consideration of increasing the runoff coefficient to alleviate the concerns over the apparent discrepancy between the amount of infiltration (Qin) in the conceptual model and the net recharge value used in the numerical model. Because increasing the runoff coefficient would result in less infiltration into the groundwater flow system and an obvious discrepancy between the observed changes in the water levels in the monitoring wells and the ability of the hydrologic system to account for these changes via infiltration.

Comment #2

Secondly, there is a question of whether it is reasonable to assume that the hydraulic conditions at the landfill are in steady-state. Measured water levels fluctuate seasonally up to a maximum of 8.72 feet within the till/weathered shale aquifer that is reported to be at most 11.6 fee thick. This large seasonal fluctuation (~75% of a total aquifer thickness) may influence the fate and transport of contaminants within the groundwater. A numerical model calibrated to annually averaged water levels while neglecting this seasonal variation may lead to significant errors when used to predict the fate and transport of contaminants into the future.

Response #2

Agreed. We agree that additional information would be helpful to assess whether it is reasonable to assume that the hydraulic conditions at the Ash Landfill are in steady-state. Much of this information was included in Ash RI and was not repeated in the modeling document. To provide more complete support for the use of an annually-averaged water table, additional data was added to the modeling report (sections 3.5.2 and 3.5.7.2). The analysis below demonstrates that the groundwater flow directions and gradients are not affected by the seasonal water level changes and simulating an annually averaged steady-state flow system does not compromise the contaminant transport modeling results. First, groundwater topography maps from two different seasons show generally the same flow direction. Also, the hydraulic gradients were also generally the same for these two periods. Lastly, we believe that it is reasonable to use an average water table to simulate long-term net transport of a contaminants at the Ash Landfill in a steady-state groundwater flow system.

SPECIFIC COMMENTS

Comment #1

Section 3.5.4, Groundwater Velocity.

Estimates of groundwater velocity presented on page 3-14 are incorrect. It appears that a wrong conversion factor must have been used. For example, the average linear velocity for the till/weathered shale aquifer was calculated as 27.4 feet/year assuming a hydraulic conductivity of 4.5 x 10-4 cm/sec, a hydraulic gradient of 1.95 x 10-2, and an effective porosity of 20%. However, this value should be 45.4 feet/year. The same discrepancy occurs where the effective porosity was assumed to be 15%, the groundwater velocity was presented as 36.5 feet/year, but it should actually be 60.5 feet/year.

The average linear velocity for the competent shale aquifer was calculated as 7.3 feet/year assuming a hydraulic conductivity of 3.73 x 10-5 cm/sec, a hydraulic gradient of 2.5 x 10-2 and an effective porosity of 6.75%. However, this value should be approximately 15 feet/year.

Response #1

Agreed. The wrong conversion factor was used to calculate the groundwater velocities presented on page 3-14. These velocities have been recalculated and the correct numbers have been included in the report. For the till the average linear velocities for the 20 percent and 15 percent effective porosities are 45.4 feet/year and 60.5 feet/year, respectively. For the shale, the average linear velocity is approximately 15 feet/year. The text changes were made to Section 3.5.4.

Comment #2

Figure 3-5.

The groundwater flow model was calibrated under steady state conditions, however this figure illustrates that there are extensive seasonal waster level changes. For example, water levels fluctuate up to a maximum of 8.72 feet within the till/weathered shale aquifer that is a maximum of 12 feet thick (p. 3-16). This rather large seasonal fluctuation is hardly an indication that the flow system is in steady-state conditions throughout the year.

There needs to be some analysis provided that groundwater flow directions and velocities are not affected by these water level changes and that simulating an annually averaged "steady-state" flow system does not compromise the contaminant transport modeling results.

Response #2

Agreed. See the response for General Comment number 2 above.

Comment #3

Section 5.2.2.1, Basic Package.

This section discusses that the uppermost layer (model layer 1) is considered to be an unconfined aquifer, but it was simulated as a confined aquifer within MODFLOW. The justification presented was that the model was not stable since the layer was only 12 feet thick and the instability was due to simulating a thin aquifer unit (p. 5-8). According to Appendix C, all layers within the model were assigned a LAYCON equal to zero in MODFLOW. This layer-type designation sets transmissivity to a constant value (McDonald and Harbaugh, 1988), thereby ignoring water level fluctuations. However, this is a violation of

the conceptual model presented and simply stating that the model's instability was due to simulating a thin aquifer unit is not adequate. MODFLOW is used in many applications with model layers less than 12 feet thick without any difficulties. The numerical instability problem is most likely due a to poor representation of the conceptual model and not MODFLOW's inability to simulate stead-state conditions in a thin aquifer.

Response #3

Agreed. We acknowledge that the modeling report is inconsistent in the instance that was pointed out in the comment; this has been clarified in the text. Having just shown that the conceptual model is representative of the flow system at the site, we believe that the by simulating Layer 1 as confined does not significantly affect the flow model results. We are aware that by setting LAYCON equal to zero in MODFLOW that the transmissivity is set to a constant value. However, we are not trying to simulate seasonal water level fluctuations in this model. While we are aware that MODFLOW can simulate thin layers (much less than one-foot thick), the solution package was much more stable using the confined setting for layer 1. The solution used was PCG2, several others were tried in the course of getting the model to run, but none were successful when layer one was set to unconfined. As stated in the modeling report, by setting the layer one to confined, the transmissivity is a constant value for this layer. We are not simulating seasonal effects with this model. The heads calculated by the model are not affected by this model representation.

We do not feet that the reason is because of a poor representation of the conceptual model.

Comment #4

Table 5-1.

This table presents that the aquifer type for model layer one was simulated as an unconfined aquifer. However, the report on page 5-8 states that the uppermost model layer was simulated as a confined aquifer.

The uncertainty attributed to the vertical hydraulic conductivity for both layers 1 & 2 was determined to be "medium to high", however, neither of these parameters were calibrated.

Response #4

Agreed. A note has been added to Table 5-1 to explain the model type for layer 1.

Acknowledged. Vertical hydraulic conductivities (K_v)s for layers 1 and 2 was not used in the model calibration phase because these were not considered to be significant the model was found to be relatively insensitive to Kv.

Comment #5

Section 5.3, Model Calibration.

Page 5-14 states that the model was "calibrated" using a recharge from precipitation value of 0.00001332 ft/day or 0.058 inches/year. This means that

the model is calibrated to only 0.2% of the annual precipitation which is unrealistically low and is contrary to the conceptual model presented. Page 4-15 states that the average annual precipitation is 34.3 inches/year while 20.4 inches/year (59%) is evapotranspirated, 6.8 inches/year (20%) is surface runoff, and 7.1 inches/year (21%) is available for recharge to the groundwater system. The "calibrated" value of 0.058 inches/year is only a small fraction of the initial conceptual estimate of 7.1 inches/year. The need for this low "calibrated" recharge is an indication that the model does not appropriately simulate the conceptual model presented.

Response #5 Acknowledged. See the response for General Comment 1, above.

Comment #6 Section 5.3.1, Hydraulic Heads.

This section discusses the method used for evaluating the model calibration against a calculated seasonal arithmetic mean of water level elevations. This elaborate method to derive the seasonal arithmetic mean was determined to be "reasonably acceptable" as representative of steady-state water levels from which to calibrate the model against (p. 5-14). In relation to our previous comments, more analysis needs to be presented since this may not be true.

Response #6 Agreed. See the response for General Comment 2, above and changes to the text in Sections 3.5.2 and 3.5.7.2.

Comment #7 5.3.3, Groundwater Velocity and Advective Travel Time.

The values used for groundwater flow velocities are incorrect as previously mentioned. According to the assumptions on page 3-14, the values should ranged between 45.4 feet/year and 60.5 feet/year and not the reported 27.4 feet/year and 36.5 feet/year, respectively.

Response #7 Agreed. See the response for specific comment 1. Also, the velocity values have been recalculated and the correct numbers were included in Section 5.3.3.

Comment #8 Section 5.5, Groundwater Flow Model Results.

Another indication that the model does not adequately simulate the conceptual model is the comparison of the volumetric water budget presented on page 5-31. The total calibrated recharge over the 5.4 mi2 model domain was simulated to be 2,003.9 ft3/day (page 5-31). However, the total conceptual estimate of recharge (i.e., Qin) over the model domain was presented as 243,949 ft3/day (page 4-13). Therefore the water balance indicates that the model is under simulating recharge into the groundwater system by over 100%. This discrepancy could have a significant impact on the results of the contaminant transport modeling and certainly does not indicate that the model is sufficiently calibrated.

Response #8 Acknowledged. See the General Response 1, above.

Comment #9 Section 6.3.5, Chemical Reaction Package Parameters.

The method for determining the biodegradation rate for the VOC plume discussed on pages 6-8 and 6-9 needs more clarification.

The paper written by Wiedemeir et.al. (1995) uses trimethylbenzene and its isomers as tracers for estimating the biodegradation rate for BTEX. These tracers have similar Henry's Law constants and soil sorption coefficients as those of BTEX. However, in this application sodium (Na) is used as a conservative tracer for estimating the degradation rates for TCE and DEC. However, since this tracer has markedly different Henry's Law and sorption characteristics and errors may result in the biodegradation rate estimates.

The reference "Wilson et. al. (1994)" on page 6-9 is not cited in the references section.

Annotation needs to be corrected for the equation presented on page 6-9. For example, "Ana and nab" should be "Naa and Nab", respectively.

Response #9

Agreed. More explanation has been provide for the method for determining the biodegradation rate for the VOC plume in Section 6.3.5. Again, we acknowledge that in an ideal world we would have like to have used a better tracer compound than Na at the Ash Landfill, but none was available. We used Na because it was believed to provide a reasonable estimate of k, and it was only tracer available at the site. **HOWEVER, WE SUGGEST THAT BY USING NA WE ARE BEING MORE CONSERVATIVE BECAUSE NA DOES NOT BREAK DOWN IN THE GROUNDWATER FLOW SYSTEM, IT TENDS TO NOT SORB ONTO SOIL PARTICLES IN THE AQUIFER, AND IT DOES NOT VOLATILIZE. THUS, WE DERIVED A MORE CONSERVATIVE BIODEGRADATION RATE THAN WE WOULD HAVE IF WE USED A VOLATILE COMPOUND WITH NEARLY IDENTICAL CHARACTERISTICS.**

Agreed. The reference to Wilson et al. (1994) on page 6-9 has been added to Section 7.0, the references.

Agreed. The annotations were corrected for the equation presented on page 6-9.

Comment #10

Section 6.4.1, Simulation of Plume from Origin with VOC Source - Scenario 1:

Page 6-16 states that the transport model was calibrated by varying the degradation constant and dispersivity (longitudinal and transverse) to obtain the best plume configuration. However, there was no explanation of why the adsorption constant (K_d) was not calibrated. This value was obtained from the literature (Table 6-1) and not from site-specific soil sampling.

Response #10

Acknowledged. We agree that K_d is a parameter that affects the transport of constituents in the VOC plume at the Ash Landfill, however, we believe the model was best calibrated by varying the biodegradation constant (k) and dispersivity. The biodegradation constant was considered to be the most unknown variable of those that control the plume configuration. Consequently,

we believed that calibration of the plume was best performed by varying predominantly this parameter. Although a K_d value for TCE (0.013 ml/g) was obtained from literature, we believe that this value was reasonable considering that most of the mass that comprised the VOC plume was represented by TCE. For these reasons, K_d was not varied during the calibration process. Also, sensitivity analysis shows that within the range of Kds considered to represent the constituents in the plume on-site (0.013 ml/g for TCE and 0.006 ml/g for 1,2-DCE), the concentrations calculated by the numerical model were not significantly different; they were only slightly higher when the K_d for 1,2-DCE was used. Given the trial and error nature of the calibration method, the sources from which the parameters that affect the movement of the plume were obtained, and the relative degree of sensitivity of the model to these parameters, we believe it was reasonable to vary the degradation constant and dispersivity to obtain the calibrated plume configuration. The information in this response was added to the discussion of plume calibration in Scenario 1 (Section 6.4.1).

Comment #11

Section 6.6, Sensitivity Analysis Page 6-31.

States that "The purpose of the sensitivity analysis was to determine how sensitive the model is to variations or uncertainty in the degradation constant rate (k) parameter". The sensitivity analysis should include other model input parameters such as dispersivity and adsorption constant. Since the transport model was constructed using input parameter values primarily from the literature (Table 6-1), it is imperative to test the model's sensitivity to each of them.

Response #11

Agreed. A sensitivity analysis was performed on other parameters suggested in the comment, such as dispersivity and K_d. The results of this analysis have been added to Section 6.6, Sensitivity Analysis.

Comment #12

Section 7.0, Summary and Conclusions.

The statement at the bottom of page 7-1 is very confusing and appears to be contradictory: "Parsons ES was able to provide supporting information that the conditions at the site are favorable for biotic reductive dechlorination, although the conditions are not strongly favorable". This statement needs to be explained further.

Give the number of apparent errors, EPA cannot concur with the summary and conclusions presented. The Army should make the necessary corrections and reevaluate the results providing us with a revised document.

Response #12

Agreed. The statement at the bottom of page 7-1 has been clarified so that it is not confusing and contradictory.

We believe that the information provided in these responses and in the revised modeling report addresses the EPA concerns and provides support for the summary and conclusions in Section 7.0 of the modeling report.

D#15/Comments/Ashland/USEPA.DOC

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5403

REPLY TO
ATTENTION OF

MCHB-TS-REH (40)

2 OCT 2001

MEMORANDUM FOR Division Engineer, US Army Engineering and Support Center - Huntsville (CEHNC-PM-ED/MAJ Sheets), 4820 University Square, Huntsville, AL 35816-1822

SUBJECT: Response to Comments, Draft Final Proposed Remediation Action Plan, Ash Landfill, Seneca Army Depot, Romulus, New York, 24 September 2001

1. The US Army Center for Health Promotion and Preventive Medicine (USACHPPM) reviewed this document on behalf of the Office of The Surgeon General pursuant to AR 200-1 Environmental Protection and Enhancement). Thank you for the opportunity to review this document. It does not have to be resubmitted to USACHPPM for further review prior to finalization. We agree with the changes the contractor has made in response to the concerns of the State of New York Department of Health.

2. This document was reviewed by Mr. Keith Hoddinott, Environmental Health Risk Assessment Program, DSN 584-5209 or commercial (410) 436-5209.

FOR THE COMMANDER:

Bonnie J. Galbreth

for DAVID L. DAUGHDRILL
Program Manager, Environmental Health
Risk Assessment

CF:
HQDA(DASG-HS-PE)
USAMEDCOM (MCHO-CL-W)
AMC (AMCEN-A)
USACE (CENWO-HX-H)
SENECA AD (SDSSE-HE)
USACE (Resident Office/CENAN-PP-M)
USAEC (SFIM-AEC-ERO)

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5403

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REPLY TO ATTENTION OF
MCHB-TS-REH (40)

2 OCT 2001

MEMORANDUM FOR Division Engineer, US Army Engineering and Support Center -Huntsville (CEHNC-PM-ED/MAJ Sheets), 4820 University Square, Huntsville, AL 35816-1822

SUBJECT: Response to Comments, Draft Feasibility Memorandum for Zero Valence Iron Continuous Reactive Wall at the Ash Landfill, Seneca Army Depot, Romulus, New York, 24 September 2001

1. The US Army Center for Health Promotion and Preventive Medicine (USACHPPM) reviewed this document on behalf of the Office of The Surgeon General pursuant to AR 200-1 (Environmental Protection and Enhancement). Thank you for the opportunity to review this document. It does not have to be resubmitted to USACHPPM for further review prior to finalization. We agree with the changes the contractor has made in response to the concerns of the USEPA and the State of New York.

2. This document was reviewed by Mr. Keith Hoddinott, Environmental Health Risk Assessment Program, DSN 584-5209 or commercial (410) 436-5209.

FOR THE COMMANDER:

Bonnie J. Galbreath
for DAVID L. DAUGHDRILL
Program Manager, Environmental
Health Risk Assessment

CF:
HQDA(DASG-HS-PE)
USAMEDCOM (MCHO-CL-W)
AMC (AMCIS-A)
USACE (CENWO-HX-H)
SENECA AD (SDSSE-HE)
USACE (Resident Office/CENAN-PP-M)
USAEC (SFIM-AEC-ERO)

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AT THE ASH LANDFILL

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PART I: HEALTH AND SAFETY PLAN

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

NOV 0 2 2001

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

Re: *Draft Feasibility Memorandum for the Reactive Wall at the Ash Landfill*
Seneca Army Depot, Romulus, NY

Dear Steve:

On September 26, 2001 we received your response to our November 2, 2000 comment letter regarding the continuous permeable reactive barrier (PRB) Treatability Study for the Ash Landfill Operable Unit (SEAD-03, 06, 08, 14 & 15).

After review of your response, EPA finds that the Army has addressed our comments adequately, and recommends moving forward with the Proposed Plan that includes this remediation alternative. EPA is currently reviewing the Draft Final Proposed Plan and will be providing comments on that document separately.

With regard to the Permeable Reactive Barrier (PRB) groundwater remediation alternative, EPA is deferring discussion of additional concerns until the Remedial Design (RD) stage for this project is reached, provided that the PRB is formally selected as the chosen remedy for the site, after public comment on the Final Proposed Plan and finalization of the Record of Decision (ROD).

A facsimile of this letter will be sent to you today. If you have any questions, please call me at (212) 637-4323.

Sincerely yours,

Julio F. Vazquez

Julio F. Vazquez, RPM
Federal Facilities Section

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
290 BROADWAY
NEW YORK, NY 10007-1866

DATE 11-05-01

TO 607 869-1362

FAX NUMBER

FROM Julio Vazquez

PHONE NUMBER 212 637-4323

FAX NUMBER - (212) 637-3256

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COMMENTS:

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

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

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Dear Steve:

On September 26, 2001 we received your response to our November 2, 2000 comment letter regarding the continuous permeable reactive barrier (PRB) Treatability Study for the Ash Landfill Operable Unit (SFAD-03, 06, 08, 14 & 15).

After review of your response, EPA finds that the Army has addressed our comments adequately, and recommends moving forward with the Proposed Plan that includes this remediation alternative. EPA is currently reviewing the Draft Final Proposed Plan and will be providing comments on that document separately.

With regard to the Permeable Reactive Barrier (PRB) groundwater remediation alternative, EPA is deferring discussion of additional concerns until the Remedial Design (RD) stage for this project is reached, provided that the PRB is formally selected as the chosen remedy for the site, after public comment on the Final Proposed Plan and finalization of the Record of Decision (ROD).

A facsimile of this letter will be sent to you today. If you have any questions, please call me at (212) 637-4323.

Sincerely yours,

Julio F. Vazquez

Julio F. Vazquez, RPM
Federal Facilities Section

cc: A. Thorne, NYSDEC
D. Geraghty, NYSDOH
R. Scott, NYSDEC-Avon
K. Healy, USACE-HD
T. Heino, Parsons ES
E. Kashdan, GF

MODE = MEMORY TRANSMISSION START=NOV-14 08:58 END=NOV-14 09:00

FILE NO.= 245

NO.	COM	ABBR/NTWK	STATION NAME/ TELEPHONE NO.	PAGES	PRG.NO.	PROGRAM NAME
001	OK	<06>	PARSONS TODD	002/002		
002	OK	<07>	COE HEALY	002/002		

-SENECA ENG/ENV -

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

NOV 0 2 2001

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

Re: *Draft Feasibility Memorandum for the Reactive Wall at the Ash Landfill*
Seneca Army Depot, Romulus, NY

Dear Steve:

On September 26, 2001 we received your response to our November 2, 2000 comment letter regarding the continuous permeable reactive barrier (PRB) Treatability Study for the Ash Landfill Operable Unit (SEAD-03, 06, 08, 14 & 15).

After review of your response, EPA finds that the Army has addressed our comments adequately, and recommends moving forward with the Proposed Plan that includes this remediation alternative. EPA is currently reviewing the Draft Final Proposed Plan and will be providing comments on that document separately.

With regard to the Permeable Reactive Barrier (PRB) groundwater remediation alternative, EPA is deferring discussion of additional concerns until the Remedial Design (RD) stage for this project is reached, provided that the PRB is formally selected as the chosen remedy for the site, after public comment on the Final Proposed Plan and finalization of the Record of Decision (ROD).

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Sincerely yours,

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Federal Facilities Section

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why a full 3D compliance well?

PARSONS ENGINEERING SCIENCE, INC.

TECHNICAL MEMORANDUM (MEETING DISCUSSION)

TO: Steve Absolom, David Sheets, Kevin Healy, Randy Battaglia

DATE: October 23, 2001

FROM: Todd Heino, Paul Feshbach-Meriney, and Steve Brauner

SUBJECT: Bench-Scale Treatability Report for Permeable Reactive Barrier Installation at the Ash Landfill, Seneca Army Depot Activity, Romulus, New York

Gentlemen:

The purpose of this memorandum is to present a list of conclusions that Parsons has drawn from the recently completed Treatability Report. We have also summarized the Treatability Report to aid in your review of the document (attached). Parsons previously forwarded a copy of the report to your attention. The following items summarize our technical conclusions regarding PRB design at the Ash Landfill.

1. Permeable Reactive Barrier (PRB) wall thickness, calculated using reported ground water velocities and NYSDEC GA Standards, is expected to vary from 1.3 to 3.5 feet for Connelly iron (a likely design scenario) and 1.4 to 6.4 feet for Peerless iron (6.4 feet is an unlikely design scenario) for the Ash Landfill site (See ETI Table 6, shown below);

EXIST or NEW?

2. Based on a water corrosion rate of between 0.1 and 1.0 mmol/kg Fe/day, the mass of iron in the wall is predicted to last at least 49 years;

3. Based on comparison with site waters and the corresponding performance of PREs at other sites, cations and anions in the site ground water are not expected to reduce the activity of the wall due to mineral precipitate clogging.

4. Based on the lack of observed biofouling during the bench-scale test for this site, and results from field studies at other sites, biofouling is not expected to adversely affect PRB performance.

5. Based on the observation that DOC concentrations were essentially unchanged during the column-study, the presence of relatively high DOC concentrations in the site ground water is not expected to adversely affect PRB performance.

6. Based on experience with reactive walls at other sites, the proposed PRBs are expected to perform as specified for a minimum of 10 years with no operation and maintenance requirements. what would these be ?

7. The factor of safety for the reactive walls lies in the specification of design groundwater velocity as a maximum (rather than an average) and in the specification of VOC influent concentrations that are the maximum concentrations observed upgradient of each wall.

8. Middle PRB Wall, the proposed design could allow low concentrations to break through either of these walls. Breakthrough under these circumstances would be temporary, and may not happen at all. The design of the Compliance Wall is believed to be sufficient to prevent VOC concentration breakthrough.

W/ATTACHMENT

Summary of:

Bench-Scale Treatability Report in Support of a Granular Iron Permeable Reactive Barrier Installation at the Ash Landfill, Seneca Army Depot Activity, Romulus, New York

this should have addressed existing wall

Purpose: The purpose of this bench-scale treatability report is to support the design of granular iron permeable reactive barriers (PRBs) for treatment of dissolved chlorinated volatile organic compounds (VOCs) present in ground water at the Ash Landfill site.

Content: This report presents the procedures, results, and data interpretation of a column test and batch-study examining the effectiveness of treating chlorinated VOCs in site ground water using two types of granular iron.

Rationale: The primary VOCs present at the Ash Landfill site, TCE and cis1,2-DCE, have been successfully treated at other sites using reactive iron PRBs. This bench-scale test was initiated to provide site-specific design parameters for the three PRBs proposed as the Selected Remedy for migration control at the Ash Landfill site.

Objectives: The following factors were investigated to assist in design of PRBs at the field scale:

1. Degradation rates of chlorinated VOCs found in site ground water (i.e., TCE and 1,2cis-DCE) for two commercially-available types of granular iron;
2. Production and subsequent degradation rates of chlorinated VOCs that occur during the reductive dechlorination process (i.e., 1,2cis-DCE and VC from TCE);
3. Effects of dissolved organic carbon (DOC) found in site groundwater on VOC degradation rates;
4. Effects of inorganic chemical precipitation on the long-term operation and maintenance of the PRBs; and
5. Estimation of the volume of iron material required, based on specified influent and effluent concentrations, ground water velocity, and VOC degradation rates.

Bench-Scale Test Methods:

1. Site ground water was pumped through two columns packed with 100 percent granular iron. One column contained granular iron obtained from Connelly GPM; the second contained granular iron obtained from Peerless Metal Powders and Abrasives, Inc. Each column had 9 monitoring points – one for influent, one for effluent, and seven along the flow path; and
2. Two rotating batch tests (one for each iron source) using effluent from the column studies were conducted in glass vials. Samples were collected at six times, ranging from 1 to 195 hours, from the initiation of the test.

Bench-Scale Results:

Summary of Column Study Results (See also Table 1, below)

1. Concentrations of TCE and trans-DCE were reduced below detection within the residence time afforded by the design of the column study.
2. Concentrations of 1,2cis-DCE and VC were reduced significantly by both types of iron, but insufficient residence time was afforded by the column study method to reduce concentrations of these compounds to below detection.
3. The residence times for VOCs were consistently shorter for the column containing Connelly iron, relative to the column containing Peerless iron.

Table 1 Column Study Results

VOC	Influent Concentration (µg/L)	Connelly Iron Effluent Concentration (µg/L)	Connelly Iron Residence Time (hours)	Peerless Iron Effluent Concentration (µg/L)	Peerless Iron Residence Time (hours)
TCE	2,066	bd	9.9	bd	11.2
1,2cis-DCE	6170	676	24.6[1]	573	27.9[2]
trans-DCE	36	bd	7.5	bd	8.5
VC	106	41	24.6[1]	31	27.9[2]

[1] Residence time for 1,2 cis-DCE and VC is equal to the entire residence time of the Connelly column since concentrations of these compounds were not reduced below detection.

[2] Residence time for 1,2 cis-DCE and VC is equal to the entire residence time of the Peerless column since concentrations of these compounds were not reduced below detection

Summary of Batch Study Results (See also Table 2, below)

1. Effluent from the column studies was used as influent for the batch study. Concentrations of 1,2cis-DCE and VC were reduced to less than 15 µg/L and below detection, respectively.

Table 2 Batch Study Results

VOC	Connelly Iron Initial Concentration (µg/L)	Connelly Iron Final Concentration[3] (µg/L))	Peerless Iron Initial Concentration (µg/L)	Peerless Iron Final Concentration[3] (µg/L))
1,2cis-DCE	791	14	353	8
VC	39	bd	14	bd

[3] Final concentrations were measured 195 hours after the start of each batch test.

Summary of Geochemical Results:

1. Measurements of DOC in the influent and effluent showed the DOC concentrations were virtually unchanged in the column study;
2. The effect of the presence of elevated DOC in the site ground water is accounted for in the degradation rates observed in the column studies;
3. Changes in inorganic species were consistent with observations during other column PRB studies with similar influent ground water characteristics; and
4. Redox potential and pH trends were consistent with bench-scale tests for other sites with relatively high total VOC concentrations.

Parameters Used for Field-Scale PRB Design:

1. Required residence times were calculated using the column study data and a first order static kinetics model.
2. Field degradation rates were decreased (and the corresponding VOC half-lives increased) to account for temperature. The temperature in the bench-scale study was 25°C, whereas the minimum ground water temperature has been recorded as 5°C.
3. Influent concentrations for PRB design were specified using the maximum values measured upgradient of each proposed wall.
4. Effluent concentrations for PRB design were specified as 5 µg/L for TCE and DCE, and 2 µg/L for VC, which represent the NYSDEC Class GA ground water standards for these VOCs.
5. Ground water velocities for each PRB were specified as follows:
   - *Source and Middle Walls:* Design groundwater velocity was calculated using the maximum value for hydraulic conductivity measured outside the Boundary (Existing) wall.
   - *Compliance Wall:* The maximum groundwater velocity expected at the Ash Landfill site is expected to be either less than or within the range given (.2-1.6 ft/day)

Wall Location	Design Groundwater Velocity (ft/d)	Design Concentrations for Influent Chlorinated Ethenes			Reactive Iron Composition (%)	Approximate (PRB) Dimensions	
		TCE (µg/L)	c1,2-DCE (µg/L)	VC (µg/L)		Length (ft)	Avg. Dept[5] (ft)
Source[1]	0.43	9,100	1,100	270	100	700	10
Middle[2]	0.43	530	32	16	100	700	8
Compliance[3]	1.2 – 1.6	52	150	4	100	645	7

[1] Design concentrations for the source wall are the maximums concentrations measured in the source area between April 1999 and January 2000 (Well PT-18A, October 1999)

[2] Design concentrations for the middle wall are concentrations measured at well MWT-7 (June 1999), located in 500 feet downgradient of the proposed wall location. The concentrations measured at MWT-7 were used because these values were noticeably larger than the concentrations measured in wells nearest the proposed wall location (i.e. PT-12A, MW-44A, and PT-18A)

[3] Design concentrations for the compliance wall are concentrations measured at well MWT-9 (June 1999). These values are the highest concentrations measured on the downgradient side of the Boundary (Existing) wall

[5] Under the current preliminary design, the trench for PRBs will be filled with 100% iron fillings from bedrock to approximately 1 foot below land surface. Following placement of a geomembrane liner on top of the iron fillings, approximately 1 foot of clean sand will be used to backfill the trench to land surface

Summary of Field-Scale Design:

1. PRB wall thickness, calculated using reported ground water velocities and NYSDEC GA Standards, is expected vary by wall from 1.3 to 3.5 feet for Connelly iron and 1.4 to 6.4 feet for Peerless iron (See ETI Table 6, shown below);

2. Based on a water corrosion rate of between 0.1 and 1.0 mmol/kg Fe/day, the mass of iron in the wall is predicted to last between 49 and 490 years;
3. Based on comparison with site waters and the corresponding performance of PRBs at other sites, cations and anions in the site ground water are not expected to reduce the activity of the wall due to mineral precipitate clogging.
4. Based on the lack of observed biofouling during the bench-scale test for this site, and results from field studies at other sites, biofouling is not expected to adversely affect PRB performance.
5. Based on the observation that DOC concentrations were essentially unchanged during the column-study, the presence of relatively high DOC concentrations in the site ground water is not expected to adversely affect PRB performance.
6. Based on experience with other wall, the proposed PRBs are expected to perform as specified for a minimum of 10 years with no operation and maintenance requirements.

Table 6: Iron Requirements for the Proposed Iron PRBs at the Ash Landfill. (From ETI Report)

PRB location	PRB Parameter [a]	100% Connelly iron			100% Peerless iron		
		Residence time (days)	Required iron thickness[b] (ft)	Total amount of iron[c] (tons)	Residence time (days)	Required iron thickness[b] (ft)	Total amount of iron[c] (tons)
Source wall							
Length (ft)	700	7	3	1,575	7.5	3.2	1,680
Saturated depth (ft)	11						
GW velocity (ft/d)	0.43						
Middle wall							
Length (ft)	700	3	1.3	546	3.2	1.4	588
Saturated depth (ft)	9						
GW velocity (ft/d)	0.43						
Compliance wall							
Length (ft)	645	2.2	2.6 – 3.5	880 – 1,185	4	4.8 – 6.4	1,625 – 2,167
Saturated depth (ft)	8						
GW velocity (ft/d)	1.2 – 1.6						

[a] Provided by Parsons ES

[b] Residence time × groundwater velocity

[c] Iron wall length × saturated depth × wall thickness × iron bulk density (0.075 ton/ft^3)

enviro**metal**
technologies
inc.

February 22, 2001

Michael Duchesneau
Parsons Engineering Science, Inc.
30 Dan Road
Canton, MA 02021

Reference: Proposed PRB Testing at the Ash Landfill – 31317.30

Dear Mike:

Further to our recent communication, we have prepared the attached three-part work plan for evaluating the performance of the PRB at the Ash Landfill. Completion of these activities would be extremely useful in interpretation of existing PRB performance and refining designs for further applications at the site. As described herein, ETI, the University of Waterloo and the University of Toronto are all willing to contribute financially to the project.

We are unsure of the timing of these efforts with respect to further work at the site. The column tests could be started immediately should you wish to pursue them, as could the isotope sampling program. The in-situ reactivity testing is more dependent upon Dr. Gillham's research schedule, but could also be initiated later this spring. Please call us to discuss the proposal at your convenience.

Sincerely,

EnviroMetal Technologies Inc.

Andrzej Przepiora, M.Sc.
Hydrogeologist

John Vogan, M.Sc.
President

cc: Steve White, U.S. Army Corps of Engineers

745 Bridge St. W., Suite 7
Waterloo, Ontario
Canada N2V 2G6
Tel: (519) 746-2204
Fax: (519) 746-2209

enviro**metal** technologies inc.

PROPOSED TESTING TO EVALUATE PERMEABLE REACTIVE BARRIER PERFORMANCE AT THE ASH LANDFILL, SENECA ARMY DEPOT ACTIVITY (SEDA), NEW YORK

Prepared For:

Parsons Engineering Science, Inc.
30 Dan Road
Canton, Massachusetts
USA 02021

Prepared By:

EnviroMetal Technologies Inc.
745 Bridge Street West, Suite 7
Waterloo, Ontario
Canada N2V 2G6

ETI Reference: 31317.30

22 February 2000

1.0 INTRODUCTION

This proposal, prepared for Parsons Engineering Science, Inc. (Parsons), presents a scope of work for testing a granular iron permeable reactive barrier (PRB) at the Ash Landfill site, Seneca Army Depot Activity (SEDA), NY (the site). A three-part testing program is proposed: a bench-scale column tests using iron and groundwater form the site (Section 2.0), an in-situ field test to measure iron reactivity (Section 3.0) and a stable isotope sampling program (Section 4.0). The purpose of this work is to provide data needed to evaluate performance of the iron permeable barrier (PRB) installed at the facility in December 1998, and to provide data that can be used in the design of additional PRBs proposed for the site. These programs involve research groups from the University of Waterloo and the University of Toronto. In addition to the interpretation of data from theses studies, ETI's role will be to coordinate these efforts with Parsons in a timely, efficient manner.

1.1 PRB Performance at Ash Landfill

An iron PRB was installed at the site in December 1998. The PRB, configured as a continuous wall, contains a 1-ft thick zone of a 50% iron, 50% sand mixture with a total length of 640 ft and an average saturated thickness of 8 ft. Treatability testing with site water was not performed prior to PRB installation. The residence time required in the PRB to degrade the VOCs present at the site to the remediation criteria was determined using degradation parameters from previous design studies and applications involving groundwater of similar VOC concentrations and geochemical composition.

After two years of the PRB operation at the site, monitoring data indicates that the trichloroethene (TCE) concentrations within the PRB are below the target value, while the cis 1,2-dichloroethene (cDCE) concentrations detected inside the PRB exceed the cleanup target value. Based on the current data interpretation, the occurrence of cDCE inside the PRB has been attributed to an insufficient residence time in the PRB, sampling artifacts and/or lower than anticipated reactivity of the iron material.

2.0 BENCH-SCALE COLUMN TEST

2.1 Background and Objectives

In December 2000, a batch screening test was undertaken by ETI to determine the relative TCE and cDCE degradation rates of the raw reactive material collected during PRB emplacement (1998) and the in-situ reactive material obtained by coring the existing PRB (2000). The results of the screening test, summarized in the ETI memorandum of 22 January 2001, did not provide a definitive explanation for the VOC concentration trends, especially for cDCE, in the groundwater treated by the PRB. Since the screening test provided only a static evaluation of the process chemistry, ETI proposes that the testing be expanded to include a bench-scale column test under flowing conditions as a continuation of the initial screening test.

The bench-scale column tests establish the site-specific degradation rates of the volatile organic compounds (VOCs) present in the site groundwater and their breakdown products under flowing conditions. Experience has shown that these tests are more appropriate that batch (static) test for simulating field conditions. The tests are performed at the University of Waterloo, Waterloo, Ontario under contract to EnviroMetal Technologies Inc. (ETI).

During the test, VOC concentrations are measured along the column length. Using the flow velocity, the distance along the column is converted to time and the degradation rate constants are calculated for each VOC in the influent solution groundwater, using the first-order kinetic model. The production and subsequent degradation of breakdown products (e.g.; cDCE from TCE) is also measured. The production and degradation of cDCE is of particular relevance to this study.

2.2 Materials

Two types of granular iron materials from the PRB will be tested in individual columns: the 100% iron collected during PRB emplacement in December 1998 and the iron/sand material obtained from the existing PRB in November 2000. The site water collected at the site from well MW-7 in November 2000 will be used as the influent water for both columns. If sample volume permits, we may set up a third column with the Connelly iron source to provide comparative data which would be used to select the iron most suitable for future applications at the site. Due to the relatively long storage time, the collected site groundwater will be spiked with additional laboratory grade TCE and cDCE before it is used in the test.

2.3 Bench-Scale Apparatus

The standard laboratory protocols and measurement methods used to test the site groundwater are designed to provide high quality data at minimal cost. A typical column is constructed of Plexiglas® with a length of 1.6 ft (50 cm) and an internal diameter of 1.5 in (3.8 cm). Due to the limitation in the available volume of the site water, shorter columns with a length of 0.66 ft (20 cm) and an internal diameter of 1.5 in (3.8 cm) will be used in the test. Four sampling ports are positioned along the column length at distances of 0.08, 0.16, 0.33 and 0.50 ft from the inlet end. The column also allows for the collection of samples from the influent and effluent solutions. Each sampling port consists of a nylon Swagelok fitting (1/16 in) tapped into the side of the column, with a syringe needle (16G) secured by the fitting. To prevent column-packing materials from entering the needle, glass wool is placed in the needle. The sampling ports allow samples to be collected along the central axis of the column. Each sample port is fitted with a Luer-Lok™ fitting, such that a glass syringe can be attached to the port to collect a sample. When not in operation the ports are sealed by Luer-Lok™ plugs.

To assure a homogeneous mixture of reactive material while filling the columns, aliquots of iron material are packed vertically in lift sections. Values of bulk density, porosity, and pore volume are determined gravimetrically. All column experiments are performed at room temperature (about 25 °C). Degradation rates determined in the laboratory are later adjusted for field temperature.

Groundwater obtained from the site is supplied to the influent end of the column at a constant flow velocity of 2 ft/day using a laboratory pump. This flow velocity is based on the groundwater velocity proposed by Parsons (Parsons ES, 2000) for the design of additional PRBs at the site.

2.4 Sampling and Analysis

VOC concentrations are monitored at the inlet, outlet and sampling ports of the column (i.e. "a profile" of the column) to determine when steady state has been reached. In these tests, steady state is defined as the time when VOC concentration versus distance profiles do not change significantly between sampling events, typically achieved between 30 to 40 pore volumes. After removing a flush volume from the sampling port needle, 2.0 mL or 3.0 mL samples are collected for analyses for VOCs from each port using a glass on glass syringe and transferred to glass sample bottles and analyzed immediately (no holding time). Eh and pH profiles are measured periodically during the test period. Inorganic parameters (major cations, anions, and alkalinity) are monitored to help predict possible mineral precipitation.

The VOC samples are analyzed on gas chromatographs equipped with either an electron capture or photoionization detectors. Eh is determined using a combination Ag/AgCl reference electrode with a platinum button and a Markson™ Model 90 meter. Inorganic analyses are conducted in a commercial laboratory for cation and anion analyses. Cation analyses are performed using inductively coupled plasma atomic emission spectroscopy, while anion analyses are performed on 60 mL unfiltered samples using ion chromatography and/or colorimetry.

2.5 Cost and Schedule

The testing of two columns will cost $14,000. This is the cost for performing the test at the University of Waterloo. ETI's labour cost in test co-ordination and reporting will be absorbed by the company. At a flow velocity of 2 ft/day, the test should take about 1 month to complete, with a report available about two weeks thereafter.

3.0 IN-SITU DETERMINATION OF VOC DEGRADATION RATES

3.1 Background and Objectives

The degradation rates by granular iron in groundwater environments are typically determined in bench-scale testing with site water, as described in Section 2.0. This type of testing has provided representative degradation parameters for design of numerous efficiently performing PRBs. For the evaluation of performance of existing PRBs, however, an exact duplication of field conditions in the laboratory is often not feasible and therefore an in-situ degradation tests may provide more reliable data.

Given the above, ETI proposes that an in-situ test be included as a part of the iron material evaluation in the existing PRB. Apart from obtaining representative field VOC degradation rates for use in design, the in-situ test will provide additional information as to the factors influencing the observed VOC degradation behaviour in the PRB (i.e., iron material reactivity vs. environmental factors). Results of this test would provide information useful not only at Seneca Army Depot but also to support the use of this PRB evaluation "tool" for other DoD facilities.

3.2 In-Situ Reaction Device

The rates of VOC degradation will be measured using an in-situ remediation monitor (ISM) (Gillham et al., 1990a; Gillham et al., 1990b). The device consists of a pipe with screens that allow water to be pumped into or out of the interior. The device includes a test chamber, an equipment chamber, and two screens. The test chamber isolates a cylindrical (61 cm long and 8.3 cm in diameter) region of the PRB to be tested. The test chamber is open at the bottom and bounded at the top by the main screen. The main screen is used to withdraw groundwater from or pump groundwater into the test chamber. A smaller tube, located in the center of the test chamber and screened at 10 cm below the main screen, is used to collect samples for analyses over the course of the test.

3.3 Test Procedures

The ISM will be installed in the PRB through the center of a hollow-stem auger as described by Gillham et al. (1990a). As the result of this procedure, the test chamber will contain a relatively undisturbed portion of the PRB material (about 2,000 cm^3) at a predetermined depth interval. To conduct the degradation test, groundwater will be pumped from the test chamber and surrounding material through the main screen to a container on the ground surface in a manner that avoids atmospheric contamination. The volume of water collected will be 4 L, which is

about 4 times greater than the pore volume of the PRB material enclosed in the test chamber (1 L). The pumped water will be spiked with representative concentrations of TCE and cDCE as well as bromide used as conservative tracer. The spiked water will be re-injected through the main screen with the intention that a spiked slug is obtained in both the test chamber and in a PRB zone below the test chamber. The smaller diameter tube located inside the test chamber will be used to collect samples for analyses at predetermined times. The samples will be collected twice a day for several days; the sampling period will be specified after initial results from the column test are known. During sampling, the removed volume is replaced by groundwater from the spiked slug below the test chamber and is not diluted by "clean" groundwater. Additional two ISM devices may be installed in the aquifer material on the upgradient and downgradient side of the PRB to evaluate the extent on natural attenuation at the site.

The bromide concentration trend over time will be used as an indicator of a potential dilution of the injection slug by untreated groundwater flowing from the bottom of the chamber. Using the obtained VOC concentration versus time trends, a first-order kinetic model will be employed to determine the in-situ degradation rates.

3.4 Sampling and Analysis

Samples will be collected using a peristaltic pump. The procedure will initially involve removing a stagnant water volume from the sampling tubing, followed by a collection of about 50 mL of water for the VOC and bromide analyses.

VOC concentrations will be determined at the University of Waterloo using methods described in Section 2.3. Bromide concentration will be detected on-site using a bromide selective electrode and a pH meter.

3.4 Test Plan and Cost

This will be the first time that the ISM device has been used to evaluate the performance of an iron PRB. The work will therefore be undertaken as part of the research program of Dr. Robert Gillham of the University of Waterloo. Dr. Gillham will cover all costs of ISM equipment, labour and analyses (the ISM devices themselves are worth about $7,500). We would hope that a hollow stem augering rig could be provided with a Parsons staff member for one to two days. If feasible, n-site Parsons staff could also be called upon to collect a small number of ISM samples, depending on the duration of the test.

The in-situ test can be initiated in May 2001 with data available at the end of June 2001. Since this research is being funded using Dr. Gillham's research monies, the University of Waterloo would require that the test data could be published in a student dissertation and a potential scientific paper. If required, the identity of the site will not be revealed in these publications, which would be provided to Parsons and the DoD for review prior to their submittal.

4.0 STABLE ISOTOPE ANALYSES

4.1 Background and Objectives

Stable isotopic analysis is being evaluated as a quantitative tool for assessing biodegradation and abiotic degradation of chlorinated ethenes. Recent research led by Dr. Barbara Sherwood Lollar's research group at the University of Toronto has shown that for chlorinated hydrocarbons, degradation involves large reproducible kinetic isotope effects, resulting in stable isotope (e.g.; ^{13}C) fractionation in residual compounds. For example, systematic changes in TCE and cDCE exhibit a shift in $\delta^{13}C$ values during abiotic degradation on zero valent iron (Slater et al., in review). Similar shifts are noted during biodegradation (Slater et al., 2001 in press).

Since it is possible that the cDCE observed upgradient from the wall is a product of biodegradation of the TCE plume, the objective of the proposed isotope sampling and analyses program is two-fold: to determine whether the $\delta^{13}C$ values for the cDCE are indicative of the effects of degradation and to determine whether $\delta^{13}C$ values for the cDCE within the wall and/or for cDCE downgradient of the wall exhibit a resolvable difference in $\delta^{13}C$ values with respect to the upgradient wells. Ultimately these results may provide direct evidence whether the cDCE detected in the PRB originated from the groundwater treated by granular iron.

Although we are optimistic that this program will provide useful results, it is prudent to note that this is the first PRB field site where such detailed isotope sampling and analyses would be conducted.

4.1 Sampling and Analysis

Samples will be taken in 9 wells around the iron wall (3 each in north, middle and south transect) and in 4-5 wells upgradient from the wall towards the landfill. To address the potential effect of the sampling method on VOC composition and isotopic signature, the samples will be collected in two ways. One sample will be collected using a minimum purging volume and another sample will be collected using the method utilized by Parsons for PRB monitoring at the site (wells were purged until the field indicator parameters stabilized). For each sample, 6 vials (40-mL each) will be collected.

The collected samples will be initially analyzed for VOCs concentration as described in section 2.3 at the University of Waterloo. The samples with TCE and cDCE concentrations above the minimum concentration for isotope determination (about 50 µg/L) would be sent to the

University of Toronto for compound specific $\delta^{13}C$ analyses. These analyses will be carried out by gas chromatograph/combustion/ isotope ratio spectrometer (GC/C/IRMS).

4.2 Test Plan and Cost

The cost of isotope analyses will by partially covered by ETI and the University of Toronto as part of an ongoing collaborative research program. An additional funding of $6,000 is requested to cover field sampling and the remainder of analytical cots.

The analysis and reporting can be completed within 4 weeks of sample collection. Similar to the University of Waterloo work, the University of Toronto would require that the test data be released in student dissertation(s) and a potential scientific paper. If required, the identity of the site will not be revealed in these publications. Any publication would be submitted to Parsons and the DoD for review prior to their submittal.

5.0 SUMMARY

Table 1 provides a summary of the project time frames and costs requested for the three phases for the work program described herein. We feel these projects, which are benefiting from significant financial support from ETI, the University of Waterloo and the University of Toronto, will greatly assist in interpretation of existing PRB performance at the site, and also provide data and techniques which may have broad applicability at other DoD facilities.

6.0 REFERENCES

Gillham, R.W., Robin, M.J.L. and Ptacek, C.J. 1990a. A Device for In Situ Determination of Geochemical Transport Parameters. 1. Retardation. Ground Water, Vol. 28, No. 5, pp. 666-672.

Gillham, R.W., Starr, R.C. and Miller, D.J. 1990b. A Device for In Situ Determination of Geochemical Transport Parameters. 2. Biochemical Reactions. Ground Water, Vol. 28, No. 6, pp. 858-862.

Parsons ES, 2000. Feasibility Memorandum for Ground Water Remediation Alternatives Using Zero Valence Iron Continuous Reactive Wall at the Ash Landfill. Draft Report, August 2000.

Slater, G.B, Sherwood Lollar, B., Sleep, B.E. and Edwards, E. 2001. Variability in Carbon isotopic fractionation during biodegradation of chlorinated ethenes: implication for field applications. *Environmental Science and Technology (in press).*

Slater, G.B, Sherwood Lollar, B., King, R.A. and O'Hannesin, S. in review. Isotopic fractionation during reductive chlorination of TCE by zero valent iron: influence of surface treatment. *Environmental Science and Technology.*

United States Environmental Protection Agency, 1982. Methods for organic chemical analysis of municipal and industrial wastewater. EPA-600/4-82-057. J.E. Longbottom and J.J. Lichtenberg (eds), Cinncinnati, Ohio, Appendix A.

Table 1: Summary of Proposed Project Costs.

Project	**Duration**	**Funds Requested (US$)**	**Other Financial Contributors**
Bench-scale column test	6 weeks [1]	$14,000	ETI
In-situ reactivity test	1 month [2]	• Provision of hollow stem auger • $2,500 (travel expenses) • 1-2 days for sample collection (Parsons on-site staff)	University of Waterloo ETI
Stable isotope sampling and analyses	1 month [1]	$6,000	University of Toronto ETI

[1] Project could be initiated immediately

[2] Project could be conducted in May – June 2001

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Eastern Remedial Action, Room 242
50 Wolf Road, Albany, New York 12233-7010
Phone: (518) 457-4349 • **FAX:** (518) 457-4198
Website: www.dec.state.ny.us

John P. Cahill
Commissioner

Fax to
Kevin
Mike
Randy
File
Ash LF

February 5, 2001

Mr. Stephen Absolom
Chief, Engineering and Environmental Division
Seneca Army Depot Activity (SEDA)
5786 State Route 96
Romulus, NY 14541-5001

Re: Seneca Army Depot
NYS Inactive Hazardous Waste Disposal Site No. 8-50-006
August 2000 Draft Feasibility Memorandum for Groundwater Remediation Alternatives Using Zero Valent Iron Reactive Wall at the Ash Landfill

Dear Mr. Absolom,

On January 16, 2001, at the January 2001 BCT Meeting, the Army stated that they were not going to revise the above referenced document. Therefore the NYS Department of Environmental Conservation (NYSDEC) and Department of Health (NYSDOH) have no comments at this time.

If you have any questions, please contact me at (518) 457-3976 or by email at ajthorne@gw.dec.state.ny.us.

Sincerely,

Alicia Thorne

Alicia Thorne
Bureau of Eastern Remediation Action
Division of Environmental Remediation

cc: B. Wing, USEPA
J. Vazquez, USEPA
D. Geraghty, NYSDOH
M. Peachey, NYSDEC
R. Scott, NYSDEC

MODE = MEMORY TRANSMISSION START=FEB-12 12:52 END=FEB-12 12:56

FILE NO.= 094

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002	OK	<06>	ES MIKE D	003/003		
003	OK	<07>	COE HEALY	003/003		

-SENECA ENG/ENV -

********** - - ***** - 16078691362- **********

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Eastern Remedial Action, Room 242
50 Wolf Road, Albany, New York 12233-7010
Phone: (518) 457-4349 • **FAX:** (518) 457-4198
Website: www.dec.state.ny.us

John P. Cahill
Commissioner

Fax to
Kevin
Mike
Randy
File
ASHLF

February 5, 2001

Mr. Stephen Absolom
Chief, Engineering and Environmental Division
Seneca Army Depot Activity (SEDA)
5786 State Route 96
Romulus, NY 14541-5001

Re: Seneca Army Depot
NYS Inactive Hazardous Waste Disposal Site No. 8-50-006
August 2000 Draft Feasibility Memorandum for Groundwater Remediation Alternatives Using Zero Valent Iron Reactive Wall at the Ash Landfill

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If you have any questions, please contact me at (518) 457-3976 or by email at aithorne@gw.dec.state.ny.us.

Sincerely,

Alicia Thorne

Alicia Thorne
Bureau of Eastern Remediation Action
Division of Environmental Remediation

cc: B. Wing, USEPA
J. Vazquez, USEPA
D. Geraghty, NYSDOH
M. Peachey, NYSDEC
R. Scott, NYSDEC

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▸ 3

To See Distribution	From S. Absolom
Dept./Agency	Phone # 1607/869-1309
Fax #	Fax # 1607/869-1362

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

REPLY TO
ATTENTION OF

file
ROD
ASH LANDFILL

MCHB-TS-REH (40)

22 SEP 2004

MEMORANDUM FOR Division Engineer, US Army Engineering and Support Center - Huntsville (CEHNC-FS-IS/Mr. Greene), 4820 University Square, Huntsville, AL 35816-1822

SUBJECT: Final Record of Decision, Ash Landfill Including SEADs 3, 6, 8, 14 and 15, Seneca Army Depot Activity, Romulus, New York, July 2004

1. The US Army Center for Health Promotion and Preventive Medicine reviewed the subject document on behalf of the Office of The Surgeon General pursuant to AR 200-1 (Environmental Protection and Enhancement). Thank you for the opportunity to review the document. We concur with the debris removal, installation of a vegetative cover, and use of permeable reactive barriers as protective of human health and the environment.

2. This document was reviewed by Mr. Keith Hoddinott, Environmental Health Risk Assessment Program, DSN 584-5209 or commercial (410) 436-5209.

FOR THE COMMANDER:

DAVID A. REED
Program Manager, Environmental
Health Risk Assessment

CF:
HQDA(DASG-HS-PE)
IMA, NERO (SFIM-NE-PW-ER)
USACE (CENWO-HX-H)
SENECA AD (SDSSE-HE)
USACE (Resident Office/CENAN-PP-E)
USAEC (SFIM-AEC-CD)

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

File
Ash LF

REPLY TO
ATTENTION OF

MCHB-TS-REH (40)

12 MAR 2004

MEMORANDUM FOR Division Engineer, US Army Engineering and Support Center - Huntsville (CEHNC-FS-IS/Mr. Greene), 4820 University Square, Huntsville, AL 35816-1822

SUBJECT: Final Record of Decision (ROD), Ash Landfill (Including Sites SEAD-3, SEAD-6, SEAD-8, SEAD-14 and SEAD-15), Seneca Army Depot Activity, Romulus, New York, March 2004

1. The US Army Center for Health Promotion and Preventive Medicine reviewed the subject document on behalf of the Office of The Surgeon General pursuant to AR 200-1 (Environmental Protection and Enhancement). Thank you for the opportunity to review this document. We concur with the debris removal, capping and use of permeable reactive barriers as protective of human health and the environment. We would also like to note that the ROD text does not include a trigger enacting the contingency plan called for in the document.

2. This document was reviewed by Mr. Keith Hoddinott, Environmental Health Risk Assessment Program, DSN 584-5209 or commercial (410) 436-5209.

FOR THE COMMANDER:

DAVID A. REED
Program Manager, Environmental
Health Risk Assessment

CF:
HQDA(DASG-HS-PE)
USAMEDCOM (MCHO-CL-W)
IMA NERO(SFIM-NE-PW-ER)
USACE (CENWO-HX-H)
SENECA AD (SDSSE-HE)
USACE (Resident Office/CENAN-PP-E)
USAEC (SFIM-AEC-ERO)

DEPARTMENT OF THE ARMY
US ARMY ENVIRONMENTAL CENTER
5179 HOADLEY ROAD
ABERDEEN PROVING GROUND, MD 21010-5401

File
Ash landfill

SFIM-AEC-CDN (200-1F) 29 SEPTEMBER 2003

MEMORANDUM FOR DIRECTOR NATIONAL CAPITAL REGION FIELD OFFICE/MR. JAMES R. DAVIDSON, ARMY MATERIAL COMMAND NCRFO - ROOM 4S18 5001, EISENHOWER AVENUE,
ALEXANDRIA, VA 22333

SUBJECT: Draft Final Record of Decision (ROD) Ash Landfill, Seneca Army Depot, Romulus, NY

1. The US Army Environmental Center has reviewed the subject document. We concur with the subject ROD and the selected remedy of no further action.

2. The Restoration Manager and our point of contact for this review is Mr. Chris Boes at (410) 436-1513.

FOR THE COMMANDER:

2 Encls

RANDALL J. CERAR
CHIEF
CLEANUP DIVISION

CF (wo/encls):
HQDA
(DAIM-ZA/MG LARRY J. LUST), ACSIM, 600 ARMY PENTAGON, WASH DC 20310-0600
(SAIE-ESOH/MR. FATZ), 110 ARMY PENTAGON, WASH DC 20310-0110
(DAIM-BO/COL BAKER), ACSIM, 600 ARMY PENTAGON, WASH DC 20310-0600

CF (w/encls)
(SDSSE-HE), SENECA ARMY DEPOT ACTIVITY, ROMULUS, NY 14541-5001

Name: Susan Offley
Organization: US Army Environmental Center Office of Counsel
Date: 16 September 2003

No	Reference	Comment	Response to Comment
1	General	Since this ROD will use Land Use Control (LUC)(although not the primary remedy) and the Remedial Design is a primary document, a 72-hour review may be required.	Noted
2	Sect 1, pg 1-2 and Sect 11, pg 11-1	The ROD should not classify the 5-year review as a LUC, although they still would be necessary to ensure the integrity of the cover. Therefore, mention of the 5-year reviews should be deleted from the referenced pages.	change made

Name: Jim Daniel Branch Chief Cleanup Division South
Organization: US Army Environmental Center Office of Counsel
Date: 23 September 2003

No	Reference	Comment	Response to Comment
1	Sec 9.2.3, pg 9-12	Last paragraph of subsection. Does discussion of LUCs belong in this section? Is not LUCs part of Alternative MC-2?	LUC is part of subsection
2	Sec 9.2.4, pg 9-13	Second paragraph of subsection. Does discussion of LUCs belong in this section? Is not LUCs part of Alternative MC-2?	Luc is Part of Subsection
3	Sec 11, pg 11-2	Last paragraph of section. Alternative MC-2 seems to provide the same results with lower cost, albeit within a longer time frame.	MC-2 counts Army to 150 years of GW monitoring

Comment Sheet

Name: Chris Boes Restoration Manager
Organization: US Army Environmental Center
Date: 12 September 2003

Document Title: Draft Final Record of Decision – Ash Landfill, Seneca Army Depot

No	Reference	Comment	Response to Comment
1	Sec 1, pg 1-6	The Chief BRAC Division should sign document since total cost between $2M and $6M.	Pg changed
2	Sec 5, pg 5-1	In 5th bullet, suggest changing "attain" to "maintain" since LUC is not the primary remedy for the site but rather an additional measure.	Change Para.
3	Sec 6.1, pg 6-1	In the 1st sentence, suggest replacing "were" with "are" since contaminants are still present at the site.	Changed ~~to~~ are
4	Sec 6.2, pg 6-3	2nd paragraph, 1st sentence. Suggest rewording by removing "Although." While soil excavation removed VOCs in the soil (which is a positive) the use of "although" would suggest that the end of the sentence indicates a negative.	removed ~~two~~ although
5	Sec 7.1, pg 7-3	4th paragraph, 4th sentence, "monitoring wells" should be changed to "farmhouse wells" since previous sentence refers to the farmhouse wells.	Changed wording
6	Sec 7.1, pg 7-4	Last sentence of section, if the land use were to change (especially after transfer) would the Army be responsible to cleanup to residential standards? I'm not sure we would want to commit ourselves to this, especially after the land use has already been determined.	Deleted Sentence
7	Sec 9.2.3, pg 9-12	2nd paragraph, 5th sentence, installing a trench to a depth of 30 feet appears incorrect. Elsewhere in the report, trenches were excavated to about 12 feet.	Changed to 12FT.
8	Figure 2-3	Leader indicating extent of ash landfill appears incorrect by pointing to large area requiring LUCs. Should this leader point to the smaller dashed circle?	Agree leader changed

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5403

File
Ash LF

REPLY TO
ATTENTION OF

MCHB-TS-REH (40)

28 August 2003

MEMORANDUM FOR Division Engineer, US Army Engineering and Support Center – Huntsville, CEHNC-FS-IS/Mr. Greene, 4820 University Square, Huntsville, AL 35816-1822

SUBJECT: Draft Final Record of Decision, Ash Landfill including Sites SEAD-3, SEAD-6, SEAD-8, SEAD-14 and SEAD-15, Seneca Army Depot Activity, Romulus, New York, August 2003

1. The US Army Center for Health Promotion and Preventive Medicine reviewed the subject document on behalf of the Office of The Surgeon General pursuant to AR 200-1 (Environmental Protection and Enhancement). Thank you for the opportunity to review the document. We concur with the debris removal, capping and use of permeable reactive barriers as protective of human health and the environment.

2. Our reviewer and point of contact is Mr. Keith Hoddinott, Environmental Health Risk Assessment Program, DSN 584-5209 or commercial (410) 436-5209.

FOR THE COMMANDER:

Bonnie J. Gaborek

BONNIE J. GABOREK
Acting Program Manager,
Environmental Health Risk Assessment

CF:
HQDA(DASG-HS-PE)
IMA NERO(SFIM-NE-PW-ER)
USACE (CENWO-HX-H)
SENECA AD (SDSSE-HE)
USACE (Resident Office/CENAN-PP-E)
USAEC (SFIM-AEC-ERO)

Fax

Fax To Randy Kevin Todd Chris Boes

Name:	STEPHEN ABSOLOM
Organization:	SENECA ARMY DEPOT
Fax:	607 869 1362
Phone:	607 869 1309
From:	JULIO F. VAZQUEZ
Date:	February 19, 2004
Subject:	Ash Landfill
Pages:	4

Comments: As promised.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

FEB 19 2004

BRAC Environmental Coordinator
Seneca Army Depot Activity
Attn: Stephen Absolom
PO Box 9
5786 State Route 96
Romulus, NY 14541-0009

Re: *Draft Final Ash Landfill Record of Decision (ROD)*
Seneca Army Depot Activity, Romulus, New York

Dear Steve:

Please find our comments below on the subject document dated August 2003.

Section 1.0, page 1-1: The first sentence of the second and third paragraphs needs to include EPA after the word "Army's" as the selecting agency. The Army is not statutorily empowered to select remedies without EPA concurrence.

Section 1.0, page 1-2:
1) On the first paragraph after "Description of the Selected Remedy," there should be a dash between "residually" and "contaminated" within the second sentence.

2) The fourth bullet, please add a capital A before "Contingency, and start "plan" with a capital letter as well. This same correction should also be done on Section 11.0.

Section 1.0, page 1-2, 5th bullet:
(1) We suggest ending the sentence after "Land Use Controls (LUCs) to attain the remedial action objectives,"and include a new subsection titled "Land Use Controls," which would include more clearly specified objectives.

New LUC subsection:

Land Use Controls

The objectives of the land use restrictions are as follows and will also be incorporated into deeds and/or leases for this property:

- Prevent access or use of the groundwater until cleanup levels are met.
- Maintain the integrity of any current or future remedial or monitoring system such as monitoring wells, impermeable reactive barriers.
- Maintain the 12 inch vegetative soil layer to limit ecological contact.
- Prohibit the development and use of property for residential housing, elementary and secondary schools, child care facilities and playgrounds (Do we need this objective?)
- Do we need an objective to prevent unauthorized excavation?

2) *Delete* the 3rd paragraph on p. 1-2, and *substitute*:

"The LUCs will be continued until the concentration of hazardous substances in the soil and the groundwater beneath have been reduced to levels that allow for unlimited exposure and unrestricted use. A LUC Remedial Design will be prepared as the land use component of the Remedial Design. Within 90 days of ROD signature, the Army shall prepare and submit to EPA for review and approval a LUC remedial design that shall contain implementation and maintenance actions, including periodic inspections. The Army shall be responsible for implementing, inspecting, reporting on and enforcing the LUCs described in this ROD in accordance with the approved LUC remedial design. Although the Army may later transfer these procedural responsibilities to another party to by contract, property transfer agreement, or through other means, the Army shall retain ultimate responsibility for remedy integrity."

3) Include a figure showing the boundaries of the LUCs.

4) Note that the above LUC modifications are also applicable to Section 5.0, page 5-1 and Section 11.0, page 11-1.

Section 1.0, page 1-8: Please change the EPA signatory name and title as follows: Mr. George Pavlou, Director, Emergency and Remedial Response Division, U.S. Environmental Protection Agency, Region 2.

Section 11.0, page 11-2, 3rd ¶: Please delete the comma after "Alternative" and after "MC-3a."

A facsimile of this letter will be sent to you today. If you have any questions, please call me at (212) 637-4323.

Sincerely yours,

Julio F. Vazquez, RPM
Federal Facilities Section

cc: J. White, NYSDEC
C. Bethoney, NYSDOH
K. Healy, USACE-HD
T. Heino, Parsons ES
E. Kashdan, GF

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

FEB 19 2004

BRAC Environmental Coordinator
Seneca Army Depot Activity
Attn: Stephen Absolom
PO Box 9
5786 State Route 96
Romulus, NY 14541-0009

Re: *Draft Final Ash Landfill Record of Decision (ROD)*
Seneca Army Depot Activity, Romulus, New York

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Sincerely yours,

Julio F. Vazquez, RPM
Federal Facilities Section

cc: J. White, NYSDEC
C. Bethoney, NYSDOH
K. Healy, USACE-HD
T. Heino, Parsons ES
E. Kashdan, GF

FACSIMILE REQUEST AND COVER SHEET

U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, New York 10007

Todd
Kevin
Ramsey
File
Ash LF

TO: Steve Absolom, George Momberger

OFFICE: Seneca Army Depot, NYSDEC

PHONE: 607-869-1309, 518-402-9622

FAX: 607-869-1362, 518-402-9627

FROM: Julio F. Vazquez

OFFICE: US EPA - Region 2

PHONE: 212-637-4323

FAX: 212-637-4360

DATE: June 26, 2003

SUBJECT: Draft ROD for the Ash Landfill

Number of Pages (including cover sheet): 4

Message:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

JUN 26 2003

BRAC Environmental Coordinator
Seneca Army Depot Activity
Attn: Stephen Absolom
P.O. Box 9
5786 State Route 96
Romulus, NY 14541-0009

Re: *Draft Record of Decision (ROD) for the Ash Landfill (OU-1)*
Seneca Army Depot Activity, Romulus, New York

Dear Mr. Absolom:

This is in reference to the subject document received by EPA on April 8, 2003. Please find our comments below.

GENERAL COMMENTS

1. Based on our last iteration regarding this Operable Unit (OU-01), an agreement was reached between the Army and EPA to re-grade the depression area called the Cooling Pond (SEAD-3). This agreement was mainly due to a gap of sampling data within the depression area. Please add the agreed action mentioned above within the ROD document.

2. There is a lack of substantiation regarding the ecological risk assessment. The conclusion of the Baseline Ecological Risk Assessment (ERA) suggests that the site conditions may pose a slightly elevated ecological risk due to the presence of heavy metals. However, no additional information had been presented within the ROD document to rule out the need for remedial action at this site. The Army made reference to field observation and monitoring data within the RI Report, however no further information has been furnished to substantiate its position.

SPECIFIC COMMENTS:

1. Page 6-1, last ¶: The description of the Debris Piles (SEAD-14) as small surface features within this context is confusing. Please delete the third to last sentence.

2. Page 6-2, 2nd ¶: Quarterly groundwater monitoring in 1996, 1997, and 1998 seems to have had a much lower detection limit (<0.2 µg/L) than the most recent January 2000 sampling effort (>1µg/L). Consequently, the comparison is inconsistent. Please modify your base reference point of sampling results to 1µg/L.

3. Page 6-2, last sentence: EPA has no record of the Bench Scale Treatability Report Enviroметal Technologies, Inc., September 25, 2001). Please furnish a copy to EPA.

4. Page 6-4, last ¶: This paragraph documents the impact to sediment found at the different investigations. However, the reviewer could not find how the documented impact to sediment is or will be addressed. This issue seems to be related to General Comment 2 above.

5. Page 7-1, 1st ¶: Although EPA agreed to the language included at the second to last sentence, there are certain actions needed to be included as part of the agreed language. See General Comment 1 above.

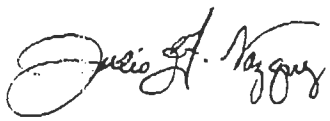
6. Page 8-1, 3rd ¶ and page 9-2, 2nd ¶: Remedial Action Objectives and Remedial Alternatives include mitigation of soil/sediment. Please identify sediments to be remediated.

7. Page 9-7, Section 9.1.5: Please add the re-grade of SEAD-3 for this alternative. See General Comment 1 above.

8. Appendix A & C: These sections were referenced within the document but were missing from the document. Please add the referenced document.

A facsimile of this letter will be sent to you today. If you have any questions, please call me at (212) 637-4323.

Sincerely yours,



Julio F. Vazquez, RPM
Federal Facilities Section

cc: G. Momberger, NYSDEC
C. Bethoney, NYSDOH
T. Heino, Parsons ES
E. Kashdan, GF

MODE = MEMORY TRANSMISSION START=JUN-30 07:55 END=JUN-30 07:59

FILE NO.= 137

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003	OK	<07>	COE HEALY	004/004		

-SENECA ENG/ENV -

********** - - ***** - 16078691362- *********

U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, New York 10007

Todd
Kevin
Ramsey

TO: Steve Absolom, George Momberger

OFFICE: Seneca Army Depot, NYSDEC

PHONE: 607-869-1309, 518-402-9622

FAX: 607-869-1362, 518-402-9627

FROM: Julio F. Vazquez

OFFICE: US EPA - Region 2

PHONE: 212-637-4323

FAX: 212-637-4360

DATE: June 26, 2003

SUBJECT: Draft ROD for the Ash Landfill

Number of Pages (including cover sheet): 4

Message:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

JUN 26 2003

BRAC Environmental Coordinator
Seneca Army Depot Activity
Attn: Stephen Absolom
P.O. Box 9
5786 State Route 96
Romulus, NY 14541-0009

Re: *Draft Record of Decision (ROD) for the Ash Landfill (OU-1)*
Seneca Army Depot Activity, Romulus, New York

Dear Mr. Absolom:

This is in reference to the subject document received by EPA on April 8, 2003. Please find our comments below.

GENERAL COMMENTS

1. Based on our last iteration regarding this Operable Unit (OU-01), an agreement was reached between the Army and EPA to re-grade the depression area called the Cooling Pond (SEAD-3). This agreement was mainly due to a gap of sampling data within the depression area. Please add the agreed action mentioned above within the ROD document.

2. There is a lack of substantiation regarding the ecological risk assessment. The conclusion of the Baseline Ecological Risk Assessment (ERA) suggests that the site conditions may pose a slightly elevated ecological risk due to the presence of heavy metals. However, no additional information had been presented within the ROD document to rule out the need for remedial action at this site. The Army made reference to field observation and monitoring data within the RI Report, however no further information has been furnished to substantiate its position.

SPECIFIC COMMENTS:

1. Page 6-1, last ¶: The description of the Debris Piles (SEAD-14) as small surface features within this context is confusing. Please delete the third to last sentence.

2. Page 6-2, 2nd ¶: Quarterly groundwater monitoring in 1996, 1997, and 1998 seems to have had a much lower detection limit (<0.2 µg/L) than the most recent January 2000 sampling effort (>1µg/L). Consequently, the comparison is inconsistent. Please modify your base reference point of sampling results to 1µg/L.

3. Page 6-2, last sentence: EPA has no record of the Bench Scale Treatability Report Enviremetal Technologies, Inc., September 25, 2001). Please furnish a copy to EPA.

4. Page 6-4, last ¶: This paragraph documents the impact to sediment found at the different investigations. However, the reviewer could not find how the documented impact to sediment is or will be addressed. This issue seems to be related to General Comment 2 above.

5. Page 7-1, 1st ¶: Although EPA agreed to the language included at the second to last sentence, there are certain actions needed to be included as part of the agreed language. See General Comment 1 above.

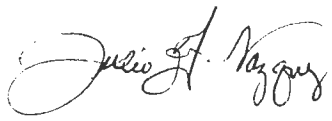
6. Page 8-1, 3rd ¶ and page 9-2, 2nd ¶: Remedial Action Objectives and Remedial Alternatives include mitigation of soil/sediment. Please identify sediments to be remediated.

7. Page 9-7, Section 9.1.5: Please add the re-grade of SEAD-3 for this alternative. See General Comment 1 above.

8. Appendix A & C: These sections were referenced within the document but were missing from the document. Please add the referenced document.

A facsimile of this letter will be sent to you today. If you have any questions, please call me at (212) 637-4323.

Sincerely yours,



Julio F. Vazquez, RPM
Federal Facilities Section

cc: G. Momberger, NYSDEC
C. Bethoney, NYSDOH
T. Heino, Parsons ES
E. Kashdan, GF

Main Identity

From: "Steve Absolom" <absoloms@seneca-hp.army.mil>
To: "Vazquez, Julio " <vazquez.julio@epamail.epa.gov>
Cc: "Greene, Marshall " <Marshall.J.Greene@hnd01.usace.army.mil>; "Healy, Kevin " <Kevin.W.Healy@usace.army.mil>; "Todd Heino" <Todd.Heino@parsons.com>; <gfmomber@gw.dec.state.ny.us>; "Battaglia, Randy " <Randy.W.Battaglia@nan02.usace.army.mil>; "Boes, Christopher D " <Christopher.Boes@aec.apgea.army.mil>; "Adams, Jeff " <Jeff.Adams@parsons.com>
Sent: Tuesday, July 08, 2003 3:42 PM
Subject: Ash Landfill Comments

Julio,
I would like to confirm that with your general comment #2 of your comment letter on the Draft ROD for OU1 Ash landfill dated 26 Jun 03, you are asking to strengthen the write-up on ecological risk assessment in the ROD and that you are not looking to go back to the June 1994 RI and do more eco-risk assessment activity.
Thanks
SM Absolom
SEAD Installation Manager

PARSONS

100 Summer Street • Boston, Massachusetts 02110 • (617) 457-7900 • Fax: (617) 457-7979 • www.parsons.com

April 7, 2003

Commander
U.S. Army Corps of Engineers
Engineering and Support Center, Huntsville
ATTN: CEHNC-FS-IS (Mr. Marshall Greene)
4820 University Square
Huntsville, AL 35816-1822

SUBJECT: **Seneca Army Depot Activity; Draft Record of Decision (ROD) for the Ash Landfill Operable Unit Including Sites (SEAD-3), (SEAD-6), (SEAD-8), (SEAD-14) and (SEAD-15)**

Dear Mr. Greene:

Parsons is pleased to submit the Draft Record of Decision (ROD) for the Ash Landfill Operable Unit. This operable unit includes sites designated as SEAD-3, SEAD-6, SEAD-8, SEAD-14 and SEAD-15 at the Seneca Army Depot Activity (SEDA) located in Romulus, New York.

This work was performed in accordance with the Scope of Work (SOW) for Delivery Order 0010 to Parsons Contract DACA87-92-0022. Parsons appreciates the opportunity to provide you with this ROD. Should you have any questions, please do not hesitate to call me at (617) 457-7905 to discuss them.

Sincerely,

PARSONS

Todd Heino, P.E.
Program Manager

cc: S. Absolom, SMASE-BEC
R. Battaglia, USACE, New York District
K. Hoddinott, USACHPPM
C. Boes, AEC
T. Matthews, OSC

PARSONS

100 Summer Street • Boston, Massachusetts 02110 • (617) 457-7900 • Fax: (617) 457-7979 • www.parsons.com

Send file

April 7, 2003

Mr. Julio Vazquez, Project Manager
USEPA Region II
Emergency & Remedial Response Division
290 Broadway, 18th Floor, E-3
New York, NY 10007-1866

Ms. Alicia Thorne, Senior Engineer
New York State Department of Environmental Conservation (NYSDEC)
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
625 Broadway 11th Floor
Albany, NY 12233-7015

SUBJECT: **Seneca Army Depot Activity; Draft Record of Decision (ROD) for the for the Ash Landfill Operable Unit Including Sites (SEAD-3), (SEAD-6), (SEAD-8), (SEAD-14) and (SEAD-15)**

Dear Mr. Vazquez/Ms. Thorne:

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PARSONS

Todd Heino, P.E.
Program Manager

cc: S. Absolom, SEDA
M. Greene, CEHNC
R. Battaglia, USACE, NY District
K. Hoddinott, USACHPPM
C. Boes, AEC
T. Matthews, OSC
E. Kashdan, Gannett Fleming

Sung file

PARSONS

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New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Eastern Remedial Action, 11th Floor
625 Broadway, Albany, New York 12233-7015
Phone: (518) 402-9623 • **FAX:** (518) 402-9627
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

May 9, 2003

Mr. Stephen Absolom
Chief, Engineering and Environmental Division
Seneca Army Depot Activity (SEDA)
5786 State Route 96
Romulus, NY 14541-5001

Re: Seneca Army Depot Activity
NYS Inactive Hazardous Waste Disposal Site No. 8-50-006
Draft Record of Decision for the Ash Landfill

Dear Mr. Absolom:

The New York State Departments of Environmental Conservation (NYSDEC) and Health (NYSDOH) have reviewed the above referenced document dated April 2002. Comments are as follow:

1. The dates of the public participation activities should be included in the document.

2. Please include a clause compelling the property owner to annually certify to the New York State Department of Environmental Conservation that the deed restriction is in place, and that the use of the property is consistent with that restriction.

3. Were any public comments received during the public comment period for the Ash Landfill Proposed Plan? If so, they should be included along with the Army's responses. If not, then the document should indicate such.

4. Page 1-2: Please spell out ARARS.

5. Page 1-3: Include New York State Department of Health (NYSDOH) with NYSDEC in the State Concurrence statement.

6. Page 1-3, Declaration: Are both remedies stated considered "permanent"? Clarification is needed.

7. Page 1-6, Section 1.0, Declaration: The names of all signatories should be provided.

8. Page 2-1: Paragraph 1 and 2 definitions of the Ash Landfill site (Operable Unit/Ash Landfill) are very confusing. The terms of "site", "operable unit", and the physical landfill itself are used interchangeably for the same areas. Further clarification is needed.

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11. Page 3-1: How was the trash that was burned in the incinerator determined to be "uncontaminated"? Additional information is needed.

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20. Page 6-4: Please check the spelling in the first sentence.

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26. Figure 11-1: This figure did not reproduce well and there is a typographical error in the title.

If you have any questions, please contact me at (518) 402-9623 or by email at ajthorne@gw.dec.state.ny.us

Sincerely,

Alicia Thorne
Remedial Bureau A
Division of Environmental Remediation

ec: J. Vazquez, USEPA
P. Jones, SCIDA
C. Boes, USAEC
T. Matthews, USAOSC
R. Battaglia, USACE
D. Brouwer, USACE
B. Muhly, USAEC
J. Fallo, USACE
T. Enroth, USACE
C. Bethoney, NYSDOH
B. Putzig, NYSDEC Region 8

MODE = MEMORY TRANSMISSION START=MAY-28 09:57 END=MAY-28 10:03

FILE NO.= 012

NO.	COM	ABBR/NTWK	STATION NAME/ TELEPHONE NO.	PAGES	PRG.NO.	PROGRAM NAME
001	OK	<02>	SEDA COE	003/003		
002	OK	<06>	PARSONS TODD	003/003		
003	OK	<07>	COE HEALY	003/003		

-SENECA ENG/ENV -

********** - ***** - 16078691362- **********

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Eastern Remedial Action, 11th Floor
625 Broadway, Albany, New York 12233-7015
Phone: (518) 402-9623 • **FAX:** (518) 402-9627
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▸ 3

To Tod Heeno, Ruth Healy, Seneca ENG | From S. Absolom

Dept./Agency | Phone #

Fax # | Fax # 607/869-1309

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION c 1362

May 9, 2003

Mr. Stephen Absolom
Chief, Engineering and Environmental Division
Seneca Army Depot Activity (SEDA)
5786 State Route 96
Romulus, NY 14541-5001

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Sincerely,

Alicia Thorne
Remedial Bureau A
Division of Environmental Remediation

ec: J. Vazquez, USEPA
P. Jones, SCIDA
C. Boes, USAEC
T. Matthews, USAOSC
R. Battaglia, USACE
D. Brouwer, USACE
B. Muhly, USAEC
J. Fallo, USACE
T. Enroth, USACE
C. Bethoney, NYSDOH
B. Putzig, NYSDEC Region 8

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5403

REPLY TO
ATTENTION OF

MCHB-TS-REH (40)

14 AUG 2002

MEMORANDUM FOR Division Engineer, US Army Engineering and Support Center - Huntsville (CEHNC-FS-IS/Mr. Greene), 4820 University Square, Huntsville, AL 35816-1822

SUBJECT: Pre-Draft Record of Decision, Ash Landfill, Seneca Army Depot Activity, Romulus, New York, July 2002

1. The US Army Center for Health Promotion and Preventive Medicine reviewed the subject document on behalf of the Office of The Surgeon General pursuant to AR 200-1 (Environmental Protection and Enhancement). Thank you for the opportunity to review the document. We concur with the debris removal, capping and use of permeable reactive barriers as protective of human health and the environment.

2. This document was reviewed by Mr. Keith Hoddinott, Environmental Health Risk Assessment Program, DSN 584-5209 or commercial (410) 436-5209.

FOR THE COMMANDER:

DAVID L. DAUGHDRILL
Program Manager, Environmental
Health Risk Assessment

CF:
HQDA(DASG-HS-PE)
USAMEDCOM (MCHO-CL-W)
AMC (AMCIS-A)
USACE (CENWO-HX-H)
SENECA AD (SDSSE-HE)
USACE (Resident Office/CENAN-PP-E)
USAEC (SFIM-AEC-ERO)

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

November 5, 1997

REPLY TO
ATTENTION OF

Engineering and
Environmental Office

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. Marsden Chen
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Chen:

In accordance with Section 18 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA requests an extension for the submission of the Record of Decision (ROD) at the Ash Landfill (ASH). This document is currently due on November 6, 1997.

On October 11, 1997, we received the EPA comments on the Draft Proposed Remedial Action Plan (PRAP) for the ASH. The comments were extensive and will require significant changes in the PRAP. We would like to resolve the issues presented by the EPA on the PRAP before submitting a Draft ROD. Although this is an unusual request, we ask for an additional 60 days to submit the Draft ROD. The new due date would be January 5, 1998.

Also, we asked for additional time to respond to the EPA comments on the SEAD-46 work plan. It is our understanding that NYSDEC intends to comment on that work plan. As such, we did not consider the comment period to be closed yet.

Questions may be directed to Stephen M. Absolom, BRAC Environmental Coordinator, at (607) 869-1309.

Sincerely,

Donald C. Olson
LTC, U.S. Army
Commanding Officer

Enclosure

Copies Furnished:

Michael Duchesneau, Parson Engineering Science, Inc., Prudential Center, 101 Huntington Avenue, Boston, Massachusetts 02199-7697

Commander, U.S. Corps of Engineers, Huntsville Division, ATTN: CEHND-ED-CS (Kevin Healy), P.O. Box 1600, Huntsville, Alabama 35807

Commander, U.S. Army Corps of Engineers, Seneca Army Depot Activity, ATTN: CENAN-PP-E (Randy Battaglia) SEDA Resident Office, Romulus, New York 14541-5001

ATTACHMENT 5
SCHEDULES

The schedule of IRP work completed to date and planned through completion of all restoration work at SEDA is as follows:

RELEVANT MILESTONES (1)(2)

ASH LANDFILL (SEAD-003, 006, 008, 014, and 015) OU1

Draft Work Plan	(04 Dec 90)
Draft RI	(20 Oct 93)
Draft FS	(19 Sep 94)
Draft PRAP	(07 Mar 97)
Draft ROD	(05 Jan 98)

OPEN BURNING GROUNDS (SEAD-023) OU2

Draft Work Plan	(29 Aug 91)
Draft RI	(28 Jan 94)
Draft FS	(09 Mar 94)
Draft PRAP	(04 Jul 96)
Draft ROD	(07 Oct 97)

REMEDIAL INVESTIGATIONS/FEASIBILITY STUDIES (3)(4)
FIRE TRAINING AREAS (SEAD-025, 026) OU3

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(28 Jun 96)
Draft FS Submission	(21 Nov 97)
Draft PRAP	(09 Jan 98)
Draft ROD	(23 May 98)

DEACTIVATION FURNACES (SEAD-016, 017) OU4

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(18 Jan 97)
Draft FS Submission	(29 Nov 97)
Draft PRAP	(08 Jan 98)
Draft ROD	(02 Jul 98)

RAD SITES (SEAD-012, 063) OU5

Draft RI/FS Work Plan	(19 Dec 95)
Draft RI Submission	(22 Nov 97)
Draft FS Submission	(18 Mar 98)
Draft PRAP	(06 Jul 98)
Draft ROD	(27 Jan 99)

SEAD-059, 071 Fill Area/Paint Disposal

Draft RI/FS Work Plan	(30 Jan 96)
Draft RI Submission	(06 Jan 98)
Draft FS Submission	(31 May 98)
Draft PRAP	(19 Sep 98)
Draft ROD	(30 Mar 99)

SEAD-004 Munitions Washout Facility

Draft RI/FS Work Plan	(25 Oct 95)
Draft RI Submission	(06 Mar 98)
Draft FS Submission	(31 Jul 98)
Draft PRAP	(19 Nov 98)
Draft ROD	(30 May 99)

SEAD-011, 64A, 64D Old Construction Debris Landfills (5)

Draft RI/FS Work Plan	(15 Jun 95)
Draft RI Submission	(06 Nov 98)
Draft FS Submission	(31 Mar 99)
Draft PRAP	(19 Jul 99)
Draft ROD	(30 Jan 00)

SEAD-013 IRFNA Disposal Site

Draft RI/FS Work Plan	(14 Nov 95)
Draft RI Submission	(06 Jan 99)
Draft FS Submission	(31 May 99)
Draft PRAP	(19 Sep 99)
Draft ROD	(30 Mar 00)

SEAD-052, 060 Bldg 612 Complex

Draft RI/FS Work Plan	(19 Jan 96)
Draft RI Submission	(06 Mar 99)
Draft FS Submission	(31 Jul 99)
Draft PRAP	(19 Nov 99)
Draft ROD	(30 May 00)

SEAD-045, and 057 Demo Area/EOD (6)

Draft RI/FS Work Plan	(26 Feb 96)

SEAD-046 Small Arms Range (6)

Draft RI/FS Work Plan	(09 May 96)

SEAD-045, 046, and 057 Demo Area/EOD/Small Arms Range (6)

Draft RI/FS Work Plan	(See above)
Draft RI Submission	(06 Nov 99)
Draft FS Submission	(30 Mar 00)
Draft PRAP	(18 Jul 00)
Draft ROD	(29 Jan 01)

SEAD-048 Pitch Blend Storage

Draft RI/FS Work Plan	(19 Dec 95)
Draft RI Submission	(05 Nov 00)
Draft FS Submission	(30 Mar 01)
Draft PRAP	(18 Jul 01)
Draft ROD	(29 Jan 02)

SEAD-066 Pesticide Storage Areas

Draft RI/FS Work Plan	(02 Dec 96)
Draft RI Submission	(05 Jan 01)
Draft FS Submission	(30 May 01)
Draft PRAP	(18 Sep 01)
Draft ROD	(29 Mar 02)

FOOTNOTES:

(1) Draft and Draft-Final submissions are based on the InterAgency Agreement (IAG) stipulation of 45 days for Army preparation and 30 days for regulatory review. Final dates are based upon the IAG stipulation that all documents become final automatically within 30 days of the Draft-Final submission if no comments are received.

(2) Multiple document submittals will be likely considering the amount of work required and the tight schedules for performance. All schedules assume that regulatory reviews will be conducted concurrently, if required, as is assumed in the IAG.

(3) All schedules for RIs to be performed assume that two phases of fieldwork will be required. If Phase II RI fieldwork is unnecessary for SEADs 25 and 26, SEADs 16 and 17, SEAD 4, SEADs 12, 48, and 63; all draft documents for these operable units shall be submitted to the USEPA and NYSDEC earlier than the deadlines in Attachment 5: Facility Master Schedule. The Army shall submit a revised Attachment 5 to the USEPA and NYSDEC to reflect the new deadlines within 30 days of NYSDEC and USEPA indicating that Phase II RI fieldwork would not be needed for the above-mentioned SEADs.

(4) Operable unit designation will be assigned after project has been funded and consistent with definition, Section 2, paragraph 14.

(5) Years will continue to be designated by their last two digits in the year 2000, e.g. "00", "01", "02", etc.

(6) SEAD-045, and 057 (Demo Area/EOD) have been combined with SEAD-046 (Small Arms Range) for Draft RI Submission.

MODE = MEMORY TRANSMISSION START=NOV-06 08:07 END=NOV-06 08:18

FILE NO.= 085

NO.	COM	ABBR/NTWK	STATION NAME/ TELEPHONE NO.	PAGES	PRG.NO.	PROGRAM NAME
001	OK	<02>	SEDA COE	006/006		
002	OK	<04>	EPA CARLA	006/006		
003	OK	<05>	DEC CHEN	006/006		
004	OK	<06>	ES MIKE D	006/006		
005	OK	<07>	COE HEALY	006/006		

-SENECA ENG/ENV -

********** - ***** - 16078691362- **********

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

November 5, 1997

REPLY TO ATTENTION OF

Engineering and
Environmental Office

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▶ 6

To See Distribution From S Absalom

Dept./Agency Phone #

Fax # Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. Marsden Chen
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Chen:

In accordance with Section 18 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA requests an extension for the submission of the Record of Decision (ROD) at the Ash Landfill (ASH). This document is currently due on November 6, 1997.

On October 11, 1997, we received the EPA comments on the Draft Proposed Remedial Action Plan (PRAP) for the ASH. The comments were extensive and will require significant changes in the PRAP. We would like to resolve the issues presented by the EPA on the PRAP before submitting a Draft ROD. Although this is an unusual request, we ask for an additional 60 days to submit the Draft ROD. The new due date would be January 5, 1998.

Also, we asked for additional time to respond to the EPA comments on the SEAD-46 work plan. It is our understanding that NYSDEC intends to comment on that work plan. As such, we did not consider the comment period to be closed yet.

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

REPLY TO
ATTENTION OF

January 13, 2000

Engineering and
Environmental Division

Mr. Julio Vazquez
U.S. Environmental Protection Agency
Emergency and Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. James A. Quinn
NYS Department of Environmental Conservation
Division of Hazardous Waste Remediation
Bureau of Eastern Remedial Action
50 Wolfe Road, Room 208
Albany, New York 12233-7010

Dear Mr. Vazquez/Mr. Quinn:

On July 26, 1999, we forwarded a letter proposing a resolution of the remaining issues pertaining to the Ash Landfill site. To date we have not had a response to that letter. Subsequently, the EPA OSWER Directive No. 9285.7-28P, Issuance of Final Guidance: Ecological Risk Assessment and Risk Management Principles for Superfund Sites has been issued and is believed to be relevant and should help guide the decisions being made at the Ash Landfill site. Further, I believe that implementation of this directive has installation wide impacts for a number of sites on Seneca Army Depot.

It is our intention to finalize the Ash Landfill Proposed Remedial Action Plan and Record of Decision by April 1, 2000. This time frame will not jeopardize the funding available for the Remedial Action at this site. The time frame will also allow us to be in a position to implement the Remedial Action later in the summer. There are also a number of operable units that are in the Remedial Investigation stage. A mutual understanding of how risk management decisions are expected to be made under this new directive is essential to help bring these RI reports to completion.

I would like to propose a meeting in mid-January to discuss the implementation of the OSWER directive and the concept of establishing a parcel wide strategy for the entire Conservation/Recreation land use parcel. This meeting should address the assessment end points of the ecological risk assessment, establishing valued ecological resources, levels of

organizations to be considered, and when the measurement of exposure concentration versus endpoint effects will be used in the risk management decisions made. A meaningful discussion and mutual agreement of the ecological risk management decison process will greatly enhance and accelerate the overall process and allow us to get to the Record of Decision quicker.

Mr. Stephen M. Absolom will contact you to discuss a mutually agreeable meeting time and location. Should you have any questions, please feel free to contact Mr. Absolom at (607) 869-1309.

Sincerely yours,

Brian K. Frank
LTC, U.S. Army
Commanding Officer

PARSONS ENGINEERING SCIENCE, INC.

Prudential Center • Boston, Massachusetts 02199-7697 • (617) 859-2000 • Fax: (617) 859-2043

April 15, 1997

Ms. Dorothy Richards
CEHNC-PM-EO
U.S. Army Corps of Engineers
4820 University Square
Huntsville, AL 35816

SUBJECT: Submittal of the Pre-Draft Record of Decision (ROD) for the Ash Landfill Site

Dear Ms. Richards:

Parsons Engineering Science (Parsons ES) is pleased to submit the Pre-Draft Record of Decision (ROD) for the Ash Landfill Site at the Seneca Army Depot Activity located in Romulus, New York. This work was performed in accordance with the Scope of Work (SOW) for Delivery Order 0010 to the Parsons ES Contract DACA87-92-D0022. We would greatly appreciate comments on the document prior to May 5 so that they may be reflected in the Draft ROD for the Ash Landfill Site, which is due to the regulators May 21, 1997.

Parsons ES appreciates the opportunity to provide you with document. Should you have any questions, please do not hesitate to call me at (617) 859-2492.

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.

Elyn Schacht for

Michael Duchesneau, P.E.
Project Manager

cc: Mr. Randall Battaglia, CENAN
Mr. Keith Hoddinott, USACHPPM (Prov.)
Mr. Jeff Waugh, USAEC
Mr. Don Williams, CEMRD
Mr. Stephen Absolom, SEDA
Mr. Randall Nida, HQUSAIOC

PARSONS ENGINEERING SCIENCE, INC. • 30 DAN ROAD • CANTON, MA 02021-2809

FACSIMILE COVER SHEET

File

ASH 2F

ROD

To: Stephen Absolom
Company: Seneca Army Depot Activity
Phone: (607) 869-1281
Fax: (607) 869-1362

From: Michael Duchesneau
Company: Parsons Engineering Science
Phone: (781) 401-2492
Fax: (781) 401-2043
Job No.: 55057

Date: April 29, 1998
Pages including this cover page:

Comments: Steve,

This is the hard copy of the quarterly data that we have received for metals. They look good. I'l lhave the data validated and review further. I think that this will end the discussion. Call with any comments or questions.
Regards
Mike D.

U.S. EPA - CLP

PT-18 (1.05 NTU)

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AL135

Lab Name: ITS_ENVIRONMENTAL Contract: 98011

Lab Code: INCHVT Case No.: 98011 SAS No.: SDG No.: 68755

Matrix (soil/water): WATER Lab Sample ID: 355007

Level (low/med): LOW Date Received: 03/31/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	31.2	B		P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.0	U		P
7440-39-3	Barium	39.6	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	161000			P
7440-47-3	Chromium	2.4	B		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	8.3	B		P
7439-89-6	Iron	186			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	21900			P
7439-96-5	Manganese	7.7	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	4120	B		P
7782-49-2	Selenium	3.1	U	N*	P
7440-22-4	Silver	2.6	U		P
7440-23-5	Sodium	20300			P
7440-28-0	Thallium	6.7	U	N	P
7440-62-2	Vanadium	5.2	U		P
7440-66-6	Zinc	741			P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

PT-21A (4.0 NTU)

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AL133

Lab Name: ITS_ENVIRONMENTAL Contract: 98011

Lab Code: INCHVT Case No.: 98011 SAS No.: SDG No.: 68755

Matrix (soil/water): WATER Lab Sample ID: 355002

Level (low/med): LOW Date Received: 03/31/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	131	B		P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.0	U		P
7440-39-3	Barium	65.1	B		P
7440-41-7	Beryllium	0.31	B		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	176000			P
7440-47-3	Chromium	7.8	B		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	7.7	B		P
7439-89-6	Iron	582			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	39900			P
7439-96-5	Manganese	317			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	12600			P
7782-49-2	Selenium	3.1	U	N*	P
7440-22-4	Silver	3.2	B		P
7440-23-5	Sodium	39500			P
7440-28-0	Thallium	7.0	B	N	P
7440-62-2	Vanadium	5.2	U		P
7440-66-6	Zinc	9.5	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

PT-26 (14.0 NTU)

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AL137

Lab Name: ITS_ENVIRONMENTAL_____ Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 68675_

Matrix (soil/water): WATER Lab Sample ID: 354881

Level (low/med): LOW__ Date Received: 03/27/98

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	452			P
7440-36-0	Antimony	11.6	B		P
7440-38-2	Arsenic	6.7	B		P
7440-39-3	Barium	80.7	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	110000			P
7440-47-3	Chromium	9.9	B		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	9.2	B		P
7439-89-6	Iron	786			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	42500			P
7439-96-5	Manganese	5.8	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	1960	B		P
7782-49-2	Selenium	4.1	B		P
7440-22-4	Silver	5.6	B		P
7440-23-5	Sodium	28200			P
7440-28-0	Thallium	7.5	B		P
7440-62-2	Vanadium	8.1	B		P
7440-66-6	Zinc	4.8	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

MW-29 (5.5 NTU)

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
AL139

Lab Name: ITS_ENVIRONMENTAL Contract: 98011

Lab Code: INCHVT Case No.: 98011 SAS No.: SDG No.: 68755

Matrix (soil/water): WATER Lab Sample ID: 355013

Level (low/med): LOW Date Received: 03/31/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	362			P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.0	U		P
7440-39-3	Barium	52.2	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	138000			P
7440-47-3	Chromium	2.0	U		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	3.4	U		P
7439-89-6	Iron	378			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	16800			P
7439-96-5	Manganese	10.6	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	802	B		P
7782-49-2	Selenium	3.1	U	N*	P
7440-22-4	Silver	2.6	U		P
7440-23-5	Sodium	16600			P
7440-28-0	Thallium	6.7	U	N	P
7440-62-2	Vanadium	5.2	U		P
7440-66-6	Zinc	5.8	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

MW-29 DUP (5.5 NTU)

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AL160

Lab Name: ITS_ENVIRONMENTAL_____ Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 68755_

Matrix (soil/water): WATER Lab Sample ID: 355015

Level (low/med): LOW__ Date Received: 03/31/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	224			P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.0	U		P
7440-39-3	Barium	53.3	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	147000			P
7440-47-3	Chromium	4.1	B		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	5.6	B		P
7439-89-6	Iron	363			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	18400			P
7439-96-5	Manganese	2.1	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	871	B		P
7782-49-2	Selenium	3.1	U	N*	P
7440-22-4	Silver	2.6	U		P
7440-23-5	Sodium	19600			P
7440-28-0	Thallium	6.7	U	N	P
7440-62-2	Vanadium	5.2	U		P
7440-66-6	Zinc	1.9	U		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

U.S. EPA - CLP

MW-29 Rinsate

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AL161

Lab Name: ITS_ENVIRONMENTAL Contract: 98011

Lab Code: INCHVT Case No.: 98011 SAS No.: SDG No.: 68755

Matrix (soil/water): WATER Lab Sample ID: 355006

Level (low/med): LOW Date Received: 03/31/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	52.1	B		P
7440-36-0	Antimony	14.6	B		P
7440-38-2	Arsenic	7.3	B		P
7440-39-3	Barium	7.6	U		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	1.2	B		P
7440-70-2	Calcium	190	U		P
7440-47-3	Chromium	4.1	B		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	6.6	B		P
7439-89-6	Iron	84.4	B		P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	197	U		P
7439-96-5	Manganese	1.4	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	4.5	B		P
7440-09-7	Potassium	239	B		P
7782-49-2	Selenium	3.1	U	N*	P
7440-22-4	Silver	6.5	B		P
7440-23-5	Sodium	1920	B		P
7440-28-0	Thallium	6.7	U	N	P
7440-62-2	Vanadium	6.6	B		P
7440-66-6	Zinc	42.6			P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

MW-43 (2.15 NTU)

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
AL144

Lab Name: ITS_ENVIRONMENTAL_____ Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 68675_

Matrix (soil/water): WATER Lab Sample ID: 354934

Level (low/med): LOW__ Date Received: 03/28/98

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	47.7	B		P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.0	U		P
7440-39-3	Barium	28.5	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	98500			P
7440-47-3	Chromium	2.0	U		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	3.4	U		P
7439-89-6	Iron	115			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	9310			P
7439-96-5	Manganese	2.6	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	393	B		P
7782-49-2	Selenium	3.4	B		P
7440-22-4	Silver	2.6	U		P
7440-23-5	Sodium	9430			P
7440-28-0	Thallium	5.7	U		P
7440-62-2	Vanadium	5.2	U		P
7440-66-6	Zinc	2.6	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

MW-44A (3.99 NTU)

1

EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

AL145

Lab Name: ITS_ENVIRONMENTAL Contract: 98011

Lab Code: INCHVT Case No.: 98011 SAS No.: SDG No.: 68755

Matrix (soil/water): WATER Lab Sample ID: 355011

Level (low/med): LOW Date Received: 03/31/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	51.8	B		P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.8	B		P
7440-39-3	Barium	58.8	B		P
7440-41-7	Beryllium	0.37	B		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	449000			P
7440-47-3	Chromium	11.5			P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	11.3	B		P
7439-89-6	Iron	462			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	104000			P
7439-96-5	Manganese	491			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	32800			P
7782-49-2	Selenium	4.9	B	N*	P
7440-22-4	Silver	3.6	B		P
7440-23-5	Sodium	89200			P
7440-28-0	Thallium	6.7	U	N	P
7440-62-2	Vanadium	7.6	B		P
7440-66-6	Zinc	7.2	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

MW-45 (0.99 NTU)

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
AL146

Lab Name: ITS_ENVIRONMENTAL_____ Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 68675_

Matrix (soil/water): WATER Lab Sample ID: 354979

Level (low/med): LOW__ Date Received: 03/31/98

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	81.2	B		P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.0	U		P
7440-39-3	Barium	42.9	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	104000			P
7440-47-3	Chromium	2.0	U		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	3.4	U		P
7439-89-6	Iron	166			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	12300			P
7439-96-5	Manganese	0.80	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	721	B		P
7782-49-2	Selenium	3.1	U		P
7440-22-4	Silver	2.6	U		P
7440-23-5	Sodium	10400			P
7440-28-0	Thallium	5.7	U		P
7440-62-2	Vanadium	5.2	U		P
7440-66-6	Zinc	6.1	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

MW-46 (3.80 NTU)

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AL147

Lab Name: ITS_ENVIRONMENTAL Contract: 98011

Lab Code: INCHVT Case No.: 98011 SAS No.: SDG No.: 68755

Matrix (soil/water): WATER Lab Sample ID: 355009

Level (low/med): LOW Date Received: 03/31/98

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	104	B		P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.0	U		P
7440-39-3	Barium	57.0	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	155000			P
7440-47-3	Chromium	3.3	B		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	4.7	B		P
7439-89-6	Iron	284			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	19000			P
7439-96-5	Manganese	23.2			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	1000	B		P
7782-49-2	Selenium	3.1	U	N*	P
7440-22-4	Silver	2.6	U		P
7440-23-5	Sodium	13800			P
7440-28-0	Thallium	6.7	U	N	P
7440-62-2	Vanadium	5.2	U		P
7440-66-6	Zinc	4.6	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

MW-47 (7.99 NTU)

1

EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

AL148

Lab Name: ITS_ENVIRONMENTAL_____ Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 68675_

Matrix (soil/water): WATER Lab Sample ID: 354883

Level (low/med): LOW__ Date Received: 03/27/98

% Solids: __0.0

~~Concentration Units (ug/L or mg/kg dry weight): UG/L~~

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	244			P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.0	U		P
7440-39-3	Barium	38.4	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	101000			P
7440-47-3	Chromium	5.2	B		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	6.8	B		P
7439-89-6	Iron	527			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	11600			P
7439-96-5	Manganese	14.7	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	940	B		P
7782-49-2	Selenium	5.4			P
7440-22-4	Silver	3.1	B		P
7440-23-5	Sodium	12800			P
7440-28-0	Thallium	5.7	U		P
7440-62-2	Vanadium	5.5	B		P
7440-66-6	Zinc	4.2	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

MW-48 (4.0 NTU)

1

EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

AL149

Lab Name: ITS_ENVIRONMENTAL_____ Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 68675_

Matrix (soil/water): WATER Lab Sample ID: 354981

Level (low/med): LOW__ Date Received: 03/31/98

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	113	B		P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.0	U		P
7440-39-3	Barium	27.2	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	80000			P
7440-47-3	Chromium	2.0	U		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	3.4	U		P
7439-89-6	Iron	205			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	10000			P
7439-96-5	Manganese	0.80	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	1120	B		P
7782-49-2	Selenium	3.1	U		P
7440-22-4	Silver	2.6	U		P
7440-23-5	Sodium	7680			P
7440-28-0	Thallium	5.7	U		P
7440-62-2	Vanadium	5.2	U		P
7440-66-6	Zinc	1.9	U		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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U.S. EPA - CLP

MW-52D (400 NTU)

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EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

AL157

Lab Name: ITS_ENVIRONMENTAL_____ Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 68675_

Matrix (soil/water): WATER Lab Sample ID: 354930

Level (low/med): LOW__ Date Received: 03/28/98

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13400			P
7440-36-0	Antimony	13.6	B		P
7440-38-2	Arsenic	6.6	B		P
7440-39-3	Barium	176	B		P
7440-41-7	Beryllium	0.78	B		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	12600			P
7440-47-3	Chromium	13.0			P
7440-48-4	Cobalt	5.2	B		P
7440-50-8	Copper	10.3	B		P
7439-89-6	Iron	9880			P
7439-92-1	Lead	6.1			P
7439-95-4	Magnesium	5450			P
7439-96-5	Manganese	130			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	13.3	B		P
7440-09-7	Potassium	4010	B		P
7782-49-2	Selenium	3.1	U		P
7440-22-4	Silver	3.8	B		P
7440-23-5	Sodium	101000			P
7440-28-0	Thallium	5.7	U		P
7440-62-2	Vanadium	16.1	B		P
7440-66-6	Zinc	29.0			P
_____	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLOUDY Texture: _____

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

Comments:

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U.S. EPA - CLP

MW-53 (5.0 NTU)

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AL150

Lab Name: ITS_ENVIRONMENTAL_____ Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 68675_

Matrix (soil/water): WATER Lab Sample ID: 354933

Level (low/med): LOW__ Date Received: 03/28/98

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	101	B		P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.0	U		P
7440-39-3	Barium	50.8	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	131000			P
7440-47-3	Chromium	3.1	B		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	4.4	B		P
7439-89-6	Iron	248			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	17000			P
7439-96-5	Manganese	0.80	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.7	B		P
7440-09-7	Potassium	1110	B		P
7782-49-2	Selenium	3.1	U		P
7440-22-4	Silver	2.6	U		P
7440-23-5	Sodium	22300			P
7440-28-0	Thallium	5.7	U		P
7440-62-2	Vanadium	5.2	U		P
7440-66-6	Zinc	2.1	B		P
_____	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

MW-56 (17.0 NTU)

1

EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

AL151

Lab Name: ITS_ENVIRONMENTAL_____ Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 68675_

Matrix (soil/water): WATER Lab Sample ID: 354925

Level (low/med): LOW__ Date Received: 03/28/98

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	794			P
7440-36-0	Antimony	10.7	U		P
7440-38-2	Arsenic	5.0	U		P
7440-39-3	Barium	38.9	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	102000			P
7440-47-3	Chromium	6.5	B		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	6.1	B		P
7439-89-6	Iron	1100			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	12300			P
7439-96-5	Manganese	14.3	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	U		P
7440-09-7	Potassium	1050	B		P
7782-49-2	Selenium	3.1	U		P
7440-22-4	Silver	2.6	U		P
7440-23-5	Sodium	12900			P
7440-28-0	Thallium	5.7	U		P
7440-62-2	Vanadium	6.8	B		P
7440-66-6	Zinc	6.8	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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U.S. EPA - CLP

MW-57D (17.5 NTU)

1

EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

AL143

Lab Name: ITS_ENVIRONMENTAL_____ Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 68675_

Matrix (soil/water): WATER Lab Sample ID: 354924

Level (low/med): LOW__ Date Received: 03/28/98

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	698			P
7440-36-0	Antimony	17.9	B		P
7440-38-2	Arsenic	6.6	B		P
7440-39-3	Barium	59.1	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	2540	B		P
7440-47-3	Chromium	5.3	B		P
7440-48-4	Cobalt	3.7	U		P
7440-50-8	Copper	6.5	B		P
7439-89-6	Iron	799			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	670	B		P
7439-96-5	Manganese	14.5	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	4.8	B		P
7440-09-7	Potassium	1550	B		P
7782-49-2	Selenium	3.1	U		P
7440-22-4	Silver	6.0	B		P
7440-23-5	Sodium	137000			P
7440-28-0	Thallium	6.1	B		P
7440-62-2	Vanadium	8.6	B		P
7440-66-6	Zinc	5.9	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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U.S. EPA - CLP

MW-58D (254 NTU)

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AL152

Lab Name: ITS_ENVIRONMENTAL_____ Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 68675_

Matrix (soil/water): WATER Lab Sample ID: 354926

Level (low/med): LOW__ Date Received: 03/28/98

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3800			P
7440-36-0	Antimony	13.2	B		P
7440-38-2	Arsenic	6.9	B		P
7440-39-3	Barium	74.2	B		P
7440-41-7	Beryllium	0.33	B		P
7440-43-9	Cadmium	0.70	U		P
7440-70-2	Calcium	6250			P
7440-47-3	Chromium	8.5	B		P
7440-48-4	Cobalt	4.4	B		P
7440-50-8	Copper	6.6	B		P
7439-89-6	Iron	5300			P
7439-92-1	Lead	2.6	U		P
7439-95-4	Magnesium	2040	B		P
7439-96-5	Manganese	83.1			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	9.6	B		P
7440-09-7	Potassium	2030	B		P
7782-49-2	Selenium	3.1	U		P
7440-22-4	Silver	4.5	B		P
7440-23-5	Sodium	126000			P
7440-28-0	Thallium	5.7	U		P
7440-62-2	Vanadium	10.3	B		P
7440-66-6	Zinc	16.9	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLOUDY Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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File

5 ~~2~~

ASH LF ROD

SEDA ASH LANDFILL FEASIBILITY STUDY
PRELIMINARY COST ESTIMATE
Alternative: SC-3 Modified

Description: Excavation and Consolidation of Debris Piles at NCFL
Excavation and Consolidation of Ash Landfill at NCFL
Cover NCFL

Project Duration: 2 months

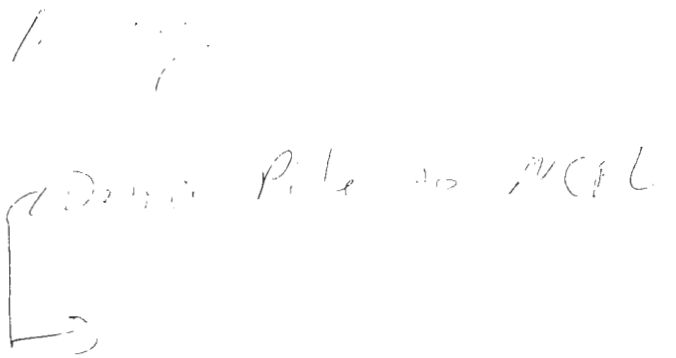
	Cost Description	Capital Cost	Annual Cost
General Costs:		**$31,762**	**$0**
1	~~Mobilization/Demobilization~~	~~$20,000~~	
2	Site Preparation/General Site Construction	$11,762	
Removal of Debris Piles:		**$17,648**	**$0**
3	Haul Roads (500 feet)	$3,755	
4	Excavation & Consolidation (770 CY)	$3,850	
5	Loading (assume density of 1.5 ton/CY)	$1,502	
6	Backfill and Revegetate	$8,541	
Removal of Ash Landfill:		**$223,804**	**$0**
7	Excavation & Consolidation (12400 CY)	$65,776	
8	Disposal (assume density of 1.5 ton/CY)	$24,180	
9	Backfill and Revegetate	$133,848	
Cover NCFL:		**$87,805**	**$19,949**
10	Vegetative Liner (145,900SF+10%x0.75FT)	$66,871	$7,905
11	Revegetation (145,900+10%SF)	$7,030	
12	GW Monitoring Wells (4 sampled biannually)	$13,904	$12,044
	Subtotal	$361,019	$19,949
	~~Contingency (20%)~~	~~$72,204~~	~~$3,990~~
	Engineering/Oversight (20%)	$72,204	$3,990
	Total	$505,426	$27,928
	Uniform Series Present Worth Factor: (P/A, i,n)		12.41
	Present Worth, O&M, Cost: (P/A,i,n)x Annual Cost		$346,561
	Interest (i) =	7%	
	Years of Operation	30 years	
	Total Present Worth Cost	**$851,987**	

SEDA ASH LANDFILL FEASIBILITY STUDY
PRELIMINARY COST ESTIMATE
Alternative: SC-5 Modified

Description: Excavation and Off-Site Disposal of Debris Piles
Excavation and Off-Site Disposal of Ash Landfill
Cover NCFL

Project Duration: 2 months

	Cost Description	Capital Cost	Annual Cost
General Costs:		**$31,762**	**$0**
1	Mobilization/Demobilization	$20,000	
2	Site Preparation/General Site Construction	$11,762	
Removal of Debris Piles:		**$65,943**	**$0**
3	Haul Roads (500 feet)	$3,755	
4	Excavation & Consolidation (770 CY)	$4,084	
5	Disposal (assume density of 1.5 ton/CY)	$49,563	
6	Backfill and Revegetate	$8,541	
Removal of Ash Landfill:		**$991,997**	**$0**
7	Excavation & Consolidation (12400 CY)	$65,776	
8	Disposal (assume density of 1.5 ton/CY)	$792,373	
9	Backfill and Revegetate	$133,848	
Cover NCFL:		**$106,580**	**$19,911**
10	General Fill for Final Grade (Add 25% volume of NCFL)	$25,500	$7,867
11	Vegetative Liner (145,900 SFx0.75FT)	$60,792	
12	Revegetation (145,900SF)	$6,384	
13	GW Monitoring Wells (4 sampled biannually)	$13,904	$12,044
	Subtotal	$1,196,281	$19,911
	Contingency (20%)	$239,256	$3,982
	Engineering/Oversight (20%)	$239,256	$3,982
	Total	$1,674,794	$27,876
	Uniform Series Present Worth Factor: (P/A, i,n)		12.41
	Present Worth, O&M, Cost: (P/A,i,n)x Annual Cost		$345,915
	Interest (i) =	7%	
	Years of Operation	30 years	
	Total Present Worth Cost	**$2,020,708**	



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SEDA ASH LANDFILL FEASIBILITY STUDY
PRELIMINARY COST ESTIMATES
Alternative: MC-3a
Funnel and Gate/Iron Filings

Description: Three funnel and gate systems consisting of a Source trench, which is located nearest the source area, a Middle trench, which is located approx. 250' downgradient of the source trench, and a Toe trench, which is located at the toe of the plume.

Option 1: Prevent any off-site Migration — Install one trench (800 ft x 2 ft x 15 ft) at the toe of the plume.
Option 2: Eliminate the Source plus Option 1 — Install two trenches, the Source (900 ft x 2ft x 15 ft) and the toe trenches.
Option 3: Reduce Treatment time — Install three trenches, the third (700 ft x 2 ft x 15 ft) between the Source and the Toe.

	Unit Operation	Option 1: One Trench Capital Cost	Option 1: One Trench Annual O&M Cost	Option 2: Two Trenches Capital Cost	Option 2: Two Trenches Annual O&M Cost	Option 3: Three Trenches Capital Cost	Option 3: Three Trenches Annual O&M Cost
1	Mobilization/Demobilization (Vendor Quote)	$45,000		$45,000		$45,000	
2	Trenching for Toe trench	$12,000		$12,000		$12,000	
3	Trenching for Source trench			$13,500		$13,500	
4	Trenching for Middle trench					$10,500	
5	Provide sand backfill to site (900 CY @ $15/CY)	$13,500		$27,000		$40,500	
6	Backfill sand and compact (900 CY @ $4/CY)	$3,600		$7,200		$10,800	
7	Regrade and seed on top of trench (1600 sf @ $.05/sf)	$80		$160		$240	
8	Iron filings - Toe trench gates (Replace in 10 yrs)(2)	$50,000	$5,000	$50,000	$5,000	$50,000	$5,000
9	Iron filings - Source trench gates			$50,000	$5,000	$50,000	$5,000
10	Iron filings - Middle trench gates					$50,000	$5,000
11	Mix iron with sand and place in the gate	$8,600		$17,200		$25,800	
12	Grout seal for Toe trench with HDPE sheet piling	$4,000		$4,000		$4,000	
13	Grout seal for Source trench with HDPE sheet piling			$4,500		$4,500	
14	Grout seal for Middle trench HDPE sheet piling					$3,500	
15	HDPE Sheet piling for Toe trench ($7/sf x 12,000)	$84,000		$84,000		$84,000	
16	HDPE Sheet piling for Source trench($7/sf x 13,500)			$94,500		$94,500	
17	HDPE Sheet piling for Middle trench($7/sf x 10,500)					$73,500	
18	Gates (4 - 40' x15'x $25/sf): for Toe (Vendor Quote)	$60,000		$60,000		$60,000	
19	Gates (4x40'x5'x15'):for Source trench (installed)			$60,000		$60,000	
20	Gates (4x40'x5'x15'): for Middle trench (installed)					$60,000	
21	Groundwater monitoring (3)	$22,294	$15,556	$44,588	$31,112	$66,882	$46,668
	Subtotal	$303,074	$20,556	$573,647	$41,112	$819,221	$61,668
	Contingency (20%)	$60,615	$4,111	$114,729	$8,222	$163,844	$12,334
	Engineering/Oversight (20%)	$60,615	$4,111	$114,729	$8,222	$163,844	$12,334
	EnviroMetal Tech. License fee (15% of Capital Cost)	$45,461		$86,047		$122,883	
	Total	$469,764	$28,778	$889,153	$57,557	$1,269,793	$86,335
	Uniform Series Present Worth Factor : (P/A,i,n)		12.409		10.594		7.024
	Present Worth, O&M, Cost: (P/A,i,n) x Annual Cost		$357,112		$609,757		$606,381
	Interest (i) =	7%		7%		7%	
	Years of Operation (n) =	30 years		20 years		10 years	
	Total present worth cost	$826,876		$1,498,910		$1,876,174	

(1) Each trench includes 4 zero valence iron gates to provide treatment and reduce the hydraulic head build-up upgradient of the funnel and gate trench.
(2) Volume of iron (1,350cf) provides minimum of 1day residence time as per Enviroetal.
(3) Includes installation and development of 7 MWs (Capital Costs) and sampling for 7 MWs for VOAs only, biannually (O&M Costs) for each trench.

SEDA ASH LANDFILL FEASIBILITY STUDY
PRELIMINARY COST ESTIMATE
Alternative: SC-5A

Description: Excavation and Off-Site Disposal of Debris Piles
Cover Ash Landfill
Cover NCFL

Project Duration: 2 months

	Cost Description	Capital Cost	Annual Cost
General Costs:		**$31,762**	**$0**
1	Mobilization/Demobilization	$20,000	
2	Site Preparation/General Site Construction	$11,762	
Removal of Debris Piles:		**$65,943**	**$0**
3	Haul Roads (500 feet)	$3,755	
4	Excavation & Consolidation (770 CY)	$4,084	
5	Disposal (assume density of 1.5 ton/CY)	$49,563	
6	Backfill and Revegetate	$8,541	
Cover Ash Landfill:		**$52,299**	**$7,867**
7	General Fill for Final Grade	$0	
8	Vegetative Liner (83,400SFx0.75SF)	$34,750	$7,867
9	Revegetation (83,400SF=1.92 Acre)	$3,645	
10	GW Monitoring Wells (4 sampled biannually)	$13,904	included in Item 14
Cover NCFL:		**$106,580**	**$23,423**
11	General Fill for Final Grade (Add 25% volume of NCFL)	$25,500	
12	Vegetative Liner (145,900 SFx0.75FT)	$60,792	$7,867
13	Revegetation (145,900SF)	$6,384	
14	GW Monitoring Wells (4 sampled biannually) (a)	$13,904	$15,556
	Subtotal	$256,583	$31,291
	Contingency (20%)	$51,317	$6,258
	Engineering/Oversight (20%)	$51,317	$6,258
	Total	$359,216	$43,807
	Uniform Series Present Worth Factor: (P/A, i,n)		12.41
	Present Worth, O&M, Cost: (P/A,i,n)x Annual Cost		$543,606
	Interest (i) =	7%	
	Years of Operation	30 years	
	Total Present Worth Cost	**$902,822**	

(a) - Annual cost is to sample 8 wells (4 at the Ash Landfill and 4 at the NCFL) biannually.

MODE = MEMORY TRANSMISSION START=JUL-09 10:00 END=JUL-09 10:02

FILE NO.= 044

NO.	COM	ABBR/NTWK	STATION NAME/ TELEPHONE NO.	PAGES	PRG.NO.	PROGRAM NAME
001	OK	&	664106711548	005/005		

-SENECA ENG/ENV -

********** - - ***** - 16078691362- *********

PARSONS ENGINEERING SCIENCE, INC.
30 Dan Road • Canton, Massachusetts 02021-2809 • (781) 401-3200 • Fax: (781) 401-2575

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL # of pages ▶ 5
To John Buck From S. Absolom
Dept./Agency AEC Phone # 607 869-1309
Fax # 410 671-1548 Fax #
NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

June 30, 1998

Mr. Steve Absolom
SIOSE-BEC
BRAC Environmental Coordinator
Seneca Army Depot Activity (SEDA)
Building 123
Romulus, NY 14541

SUBJECT: Preliminary Cost Estimates for SEDA Ash Landfill Feasibility Study

Dear Mr. Absolom:

Attached are four preliminary cost estimates for remedial alternatives for the SEDA Ash Landfill Feasibility Study. The four alternatives include:

- ~~MC-3A (installation of 1, 2, or 3 funnel and gate trenches);~~
- SC-3 Modified (excavation and relocation of Debris Piles and Ash Landfill to the NCFL and protective cover on the NCFL);
- SC-5 Modified (excavation and off-site disposal of the Debris Piles and Ash Landfill and protective cover on the NCFL); and
- SC-5A (excavation and off-site disposal of the Debris Piles and protective covers on the Ash Landfill and NCFL).

Please review the costs for these alternatives at your convenience. If you have any questions or comments, please do not hesitate to call me at 781-401-2492.

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.

Jacqueline Jarvis/for
Michael Duchesneau, P.E.
Project Manager

PARSONS ENGINEERING SCIENCE, INC.

30 Dan Road • Canton, Massachusetts 02021-2809 • (781) 401-3200 • Fax: (781) 401-2575

June 30, 1998

Mr. Steve Absolom
SIOSE-BEC
BRAC Environmental Coordinator
Seneca Army Depot Activity (SEDA)
Building 123
Romulus, NY 14541

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- SC-3 Modified (excavation and relocation of Debris Piles and Ash Landfill to the NCFL and protective cover on the NCFL);
- SC-5 Modified (excavation and off-site disposal of the Debris Piles and Ash Landfill and protective cover on the NCFL); and
- SC-5A (excavation and off-site disposal of the Debris Piles and protective covers on the Ash Landfill and NCFL).

Please review the costs for these alternatives at your convenience. If you have any questions or comments, please do not hesitate to call me at 781-401-2492.

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.

Jacqueline Travers/for
Michael Duchesneau, P.E.
Project Manager

MODE = MEMORY TRANSMISSION START=JUL-09 09:57 END=JUL-09 09:59

FILE NO.= 042

NO.	COM	ABBR/NTWK	STATION NAME/ TELEPHONE NO.	PAGES	PRG.NO.	PROGRAM NAME
001	OK	☎	664106711548	004/004		

-SENECA ENG/ENV -

********** - ***** - 16078691362- **********

PARSONS ENGINEERING SCIENCE, INC.
30 Dan Road • Canton, Massachusetts 02021-2809 • (781) 401-3200 • Fax: (781) 401-2575

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▶ 5

To John Buck	From S. Absolom
Dept./Agency AEC	Phone # 607 869-1304
Fax # 410 671-1548	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

June 30, 1998

Mr. Steve Absolom
SIOSE-BEC
BRAC Environmental Coordinator
Seneca Army Depot Activity (SEDA)
Building 123
Romulus, NY 14541

SUBJECT: Preliminary Cost Estimates for SEDA Ash Landfill Feasibility Study

Dear Mr. Absolom:

Attached are four preliminary cost estimates for remedial alternatives for the SEDA Ash Landfill Feasibility Study. The four alternatives include:

- MC-3A (installation of 1, 2, or 3 funnel and gate trenches);
- SC-3 Modified (excavation and relocation of Debris Piles and Ash Landfill to the NCFL and protective cover on the NCFL);
- SC-5 Modified (excavation and off-site disposal of the Debris Piles and Ash Landfill and protective cover on the NCFL); and
- SC-5A (excavation and off-site disposal of the Debris Piles and protective covers on the Ash Landfill and NCFL).

Please review the costs for these alternatives at your convenience. If you have any questions or comments, please do not hesitate to call me at 781-401-2492.

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.

Jacqueline Travers/for
Michael Duchesneau, P.E.
Project Manager

PARSONS

April 22, 1998

Engineering and
Environmental Office

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. James A. Quinn
NYS Department of Environmental Conservation
Division of Hazardous Waste Remediation
Bureau of Eastern Remedial Action
50 Wolf Road, Room 237
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Quinn:

In accordance with Section 18 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA requests extension for submission of the Draft Record of Decision (ROD) for the Ash Landfill, SEAD-003, 006, 008, 014, and 015.

Request a 30-day extension for submission of the Draft ROD until 30 May 1998. The extension allows for your initial review of the Draft Final PRAP that is due on 30 April 1998 and after the peer review efforts.

Smg
ENG/ENV

D/FM

The attachment 5 schedule for the operable unit would now be:

Draft Work Plan	04 Dec 90
Draft RI	20 Oct 93
Draft FS	19 Sep 94
Draft PRAP	30 Apr 98
Draft ROD	30 May 98

Questions may be directed to Stephen M. Absolom, BRAC Environmental Coordinator, at (607) 869-1309.

Sincerely,

Donald C. Olson
LTC, U.S. Army
Commanding Officer

Copies Furnished:

Michael Duchesneau, Parson Engineering Science, Inc.,
Prudential Center, 30 Dan Road, Canton, Massachusetts
02021-2809

Commander, U.S. Corps of Engineers, Huntsville
Division, ATTN: CEHND-ED-CS (Kevin Healy), P.O.
Box 1600, Huntsville, Alabama 35807

Commander, U.S. Army Corps of Engineers, Seneca Army
Depot Activity, ATTN: CENAN-PP-E (Randy Battaglia)
SEDA Resident Office, Romulus, New York 14541-5001

DEPARTMENT OF THE ARMY
SENECA army DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

November 5, 1997

REPLY TO
ATTENTION OF

Engineering and
Environmental Office

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. Marsden Chen
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Chen:

In accordance with Section 18 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA requests an extension for the submission of the Record of Decision (ROD) at the Ash Landfill (ASH). This document is currently due on November 6, 1997.

On October 11, 1997, we received the EPA comments on the Draft Proposed Remedial Action Plan (PRAP) for the ASH. The comments were extensive and will require significant changes in the PRAP. We would like to resolve the issues presented by the EPA on the PRAP before submitting a Draft ROD. Although this is an unusual request, we ask for an additional 60 days to submit the Draft ROD. The new due date would be January 5, 1998.

Also, we asked for additional time to respond to the EPA comments on the SEAD-46 work plan. It is our understanding that NYSDEC intends to comment on that work plan. As such, we did not consider the comment period to be closed yet.

FOOTNOTES:

(1) Draft and Draft-Final submissions are based on the InterAgency Agreement (IAG) stipulation of 45 days for Army preparation and 30 days for regulatory review. Final dates are based upon the IAG stipulation that all documents become final automatically within 30 days of the Draft-Final submission if no comments are received.

(2) Multiple document submittals will be likely considering the amount of work required and the tight schedules for performance. All schedules assume that regulatory reviews will be conducted concurrently, if required, as is assumed in the IAG.

(3) All schedules for RIs to be performed assume that two phases of fieldwork will be required. If Phase II RI fieldwork is unnecessary for SEADs 25 and 26, SEADs 16 and 17, SEAD 4, SEADs 12, 48, and 63; all draft documents for these operable units shall be submitted to the USEPA and NYSDEC earlier than the deadlines in Attachment 5: Facility Master Schedule. The Army shall submit a revised Attachment 5 to the USEPA and NYSDEC to reflect the new deadlines within 30 days of NYSDEC and USEPA indicating that Phase II RI fieldwork would not be needed for the above-mentioned SEADs.

(4) Operable unit designation will be assigned after project has been funded and consistent with definition, Section 2, paragraph 14.

(5) Years will continue to be designated by their last two digits in the year 2000, e.g. "00", "01", "02", etc.

(6) SEAD-045, and 057 (Demo Area/EOD) have been combined with SEAD-046 (Small Arms Range) for Draft RI Submission.

1 cy

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

July 31, 1997

REPLY TO
ATTENTION OF

Engineering and
Environmental Office

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
~~Emergency & Remedial Response Division~~
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. Marsden Chen
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Chen:

In accordance with Section 18 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA requests extensions for the submission of the response to comments for the Open Burning Grounds ~~(OBG) Feasibility Study (FS), initial submission of the~~ Draft Record of Decision (ROD) at the OBG, and initial submission of the Draft ROD at the Ash Landfill (ASH).

Pending agreement on the language for the Proposed Remedial Action Plan at the OBG, we would like to extend the initial submission of the Draft ROD to August 15, 1997. Also, the response to comments for the FS will be provided no later than August 15.

Pending review of comments on the PRAP at the ASH, we request an additional 30 days to prepare the Draft ROD for submission. Currently, the document is due August 8, 1997. The revised due date would be September 7, 1997.

The updated Schedule 5 changes the due date for the Records of Decision at the OBG and ASH, as well as the Fire Training Areas referenced in the EPA correspondence

dated July 25, 1997. Questions may be directed to Stephen M. Absolom, BRAC Environmental Coordinator, at (607) 869-1309.

Sincerely,

Donald C. Olson
LTC, U.S. Army
Commanding Officer

Copies Furnished:

Michael Duchesneau, Parsons Engineering Science, Inc., Prudential Center, 101 Huntington Avenue, Boston, Massachusetts 02199-7697

Commander, U.S. Army Corps of Engineers, Huntsville Division, ATTN: CEHND-ED-CS (Kevin Healy), P.O. Box 1600, Huntsville, Alabama 35807

Commander, U.S. Army Corps of Engineers, Seneca Army Depot Activity, ATTN: CENAN-PP-E (Randy Battaglia), SEDA Resident Office, Romulus, New York 14541-5001

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

September 5, 1997

REPLY TO
ATTENTION OF

Engineering and
Engineering Office

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. Marsden Chen
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Chen:

In accordance with Section 18 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA requests an extension for the submission of the Draft Record of Decision (ROD) for the Ash Landfill (ASH). This document is currently due September 7, 1997.

No comments have been received for the Draft Proposed Remedial Action Plan (PRAP) for this site. We realize that peer review comments on this document were voluminous. We would prefer to prepare the Draft ROD for the site once we have received the comments on the PRAP and have an opportunity to review the document anew. Request initial submission of the Draft ROD for the ASH to October 7, 1997.

Questions may be directed to Stephen M. Absolom, BRAC Environmental Coordinator, at (607) 869-1309.

Sincerely,

for Donald C. Olson
LTC, U.S. Army
Commanding Officer

Copies Furnished:

Michael Duchesneau, Parson Engineering Science, Inc., Prudential Center, 101 Huntington Avenue, Boston, Massachusetts 02199-7697

Commander, U.S. Corps of Engineers, Huntsville Division, ATTN: CEHND-ED-CS (Kevin Healy), P.O. Box 1600, Huntsville, Alabama 35807

Commander, U.S. Army Corps of Engineers, Seneca Army Depot Activity, ATTN: CENAN-PP-E (Randy Battaglia) SEDA Resident Office, Romulus, New York 14541-5001

ATTACHMENT 5
SCHEDULES

The schedule of IRP work completed to date and planned through completion of all restoration work at SEDA is as follows:

RELEVANT MILESTONES (1)(2)

ASH LANDFILL (SEAD-003, 006, 008, 014, and 015) OU1

Draft Work Plan	(04 Dec 90)
Draft RI	(20 Oct 93)
Draft FS	(19 Sep 94)
Draft PRAP	(07 Mar 97)
Draft ROD	(07 Oct 97)

OPEN BURNING GROUNDS (SEAD-23) OU2

Draft Work Plan	(29 Aug 91)
Draft RI	(28 Jan 94)
Draft FS	(09 Mar 94)
Draft PRAP	(04 Jul 96)
Draft ROD	(29 Aug 97)

REMEDIAL INVESTIGATIONS/FEASIBILITY STUDIES (3)(4)
FIRE TRAINING AREAS (SEAD-025, 026) OU3

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(28 Jun 96)
Draft FS Submission	(22 Sep 97)
Draft PRAP	(09 Jan 98)
Draft ROD	(23 May 98)

DEACTIVATION FURNACES (SEAD-016, 017) OU4

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(18 Jan 97)
Draft FS Submission	(30 Sep 97)
Draft PRAP	(08 Jan 98)
Draft ROD	(02 Jul 98)

SEAD-052, 060 Bldg 612 Complex

Draft RI/FS Work Plan	(19 Jan 96)
Draft RI Submission	(06 Mar 99)
Draft FS Submission	(31 Jul 99)
Draft PRAP	(19 Nov 99)
Draft ROD	(30 May 00)

SEAD-045, and 057 Demo Area/EOD (6)

Draft RI/FS Work Plan	(26 Feb 96)

SEAD-046 Small Arms Range (6)

Draft RI/FS Work Plan	(09 May 96)

SEAD-045, 046, and 057 Demo Area/EOD/Small Arms Range (6)

Draft RI/FS Work Plan	(See above)
Draft RI Submission	(06 Nov 99)
Draft FS Submission	(30 Mar 00)
Draft PRAP	(18 Jul 00)
Draft ROD	(29 Jan 01)

SEAD-048 Pitch Blend Storage

Draft RI/FS Work Plan	(19 Dec 95)
Draft RI Submission	(05 Nov 00)
Draft FS Submission	(30 Mar 01)
Draft PRAP	(18 Jul 01)
Draft ROD	(29 Jan 02)

SEAD-066 Pesticide Storage Areas

Draft RI/FS Work Plan	(02 Dec 96)
Draft RI Submission	(05 Jan 01)
Draft FS Submission	(30 May 01)
Draft PRAP	(18 Sep 01)
Draft ROD	(29 Mar 02)

COMMUNITY RELATION PLAN (Oct 92)

FOOTNOTES:

(1) Draft and Draft-Final submissions are based on the InterAgency Agreement (IAG) stipulation of 45 days for Army preparation and 30 days for regulatory review. Final dates are based upon the IAG stipulation that all documents become final automatically within 30 days of the Draft-Final submission if no comments are received.

(2) Multiple document submittals will be likely considering the amount of work required and the tight schedules for performance. All schedules assume that regulatory reviews will be conducted concurrently, if required, as is assumed in the IAG.

(3) All schedules for RIs to be performed assume that two phases of fieldwork will be required. If Phase II RI fieldwork is unnecessary for SEADs 25 and 26, SEADs 16 and 17, SEAD 4, SEADs 12, 48, and 63; all draft documents for these operable units shall be submitted to the USEPA and NYSDEC earlier than the deadlines in Attachment 5: Facility Master Schedule. The Army shall submit a revised Attachment 5 to the USEPA and NYSDEC to reflect the new deadlines within 30 days of NYSDEC and USEPA indicating that Phase II RI fieldwork would not be needed for the above-mentioned SEADs.

(4) Operable unit designation will be assigned after project has been funded and consistent with definition, Section 2, paragraph 14.

(5) Years will continue to be designated by their last two digits in the year 2000, e.g. "00", "01", "02", etc.

(6) SEAD-045, and 057 (Demo Area/EOD) have been combined with SEAD-046 (Small Arms Range) for Draft RI Submission.

MODE = MEMORY TRANSMISSION START=SEP-05 15:44 END=SEP-05 16:00

FILE NO.= 084

NO.	COM	ABBR/NTWK	STATION NAME/ TELEPHONE NO.	PAGES	PRG.NO.	PROGRAM NAME
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002	OK	<04>	EPA CARLA	008/008		
003	OK	<05>	DEC CHEN	008/008		
004	OK	<06>	ES MIKE D	008/008		
005	OK	<07>	COE HEALY	008/008		

-SENECA ENG/ENV -

********** - - ***** - 16078691362- **********

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

September 5, 1997

REPLY TO ATTENTION OF

Engineering and
Engineering Office

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. Marsden Chen
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Chen:

In accordance with Section 18 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA requests an extension for the submission of the Draft Record of Decision (ROD) for the Ash Landfill (ASH). This document is currently due September 7, 1997.

No comments have been received for the Draft Proposed Remedial Action Plan (PRAP) for this site. We realize that peer review comments on this document were voluminous. We would prefer to prepare the Draft ROD for the site once we have received the comments on the PRAP and have an opportunity to review the document anew. Request initial submission of the Draft ROD for the ASH to October 7, 1997.

Questions may be directed to Stephen M. Absolom, BRAC Environmental Coordinator, at (607) 869-1309.

Sincerely,

for Donald E. Olson
LTC, U.S. Army
Commanding Officer

October 31, 1997

Engineering and
Environmental Office

Mr. Marsden Chen
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Mr. Chen:

As requested in your letter dated September 23, 1997, attached are the proposed schedules for the Records of Decisions at the Open Burning Grounds and Ash Landfill. These dates are contingent upon Regulator timely review of the document.

Please note that the dates identified are IAW the Federal Facilities Agreement Attachment 7 schedule. The Ash Landfill timeline is contingent upon resolving the extensive number of changes requested to the PRAP by the EPA.

Should you have any questions or recommendations to this proposed schedule, please contact Mr. Stephen Absolom, (607) 869-1309.

Enclosure

signed M. Wardle
Donald C. Olson
LTC, U.S. Army
Commanding Officer

Eng/Env
DIM

Copies Furnished:

Mrs. Carla Struble, P.E., U.S. Environmental Protection Agency
Emergency & Remedial Response Division, 290 Broadway
18th Floor, E-3, New York, New York 10007-1866

Mr. Dan Geraghty, New York State Department of Health Bureau of
Environmental Exposure Investigation, 2 University Place,
Room 205, Albany, New York 12203

Mr. Michael Duchesneau, Parsons Engineering Science,
Inc., Prudential Center, 101 Huntington Avenue,
Boston, Massachusetts 02199-7697

Commander, U.S. Army Corps of Engineers, Huntsville Division,
ATTN: CEHDN-ED-CS (Kevin Healy), P.O. Box 1600,
Huntsville, AL 35807

Commander, U.S. Army Corps of Engineers, Seneca Army Depot
Activity, ATTN: CENAN-PP-E, SEDA Resident Office, Romulus,
New York 14541-5001

Commander, U.S. Army Industrial Operations Command,
ATTN: AMSIO-EQE (Ed Agy), Rock Island, IL 61299-6000

Commander, U.S. Army Environmental Center,
ATTN: SFIM-AEC-IRP (Jeff Waugh), Aberdeen Proving Ground, MD
21010-5410

PROPOSED RECORD OF DECISIONS SCHEDULES

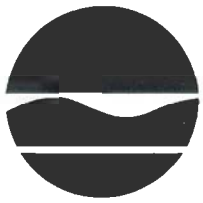
Open Burning Grounds

Issue PRAP 30 Day Public Comment	10 Nov 97
Close Public Comment Period	10 Dec 97
Draft ROD Submitted	17 Oct 97
Comments Received	17 Nov 97
Final ROD Submitted	9 Jan 98
Final ROD Signed	8 Feb 98

Ash Landfill

Receive Comment on DRAFT PRAP	17 Oct 97
Submit Draft Final PRAP	16 Nov 97
Open Public Comment	16 Dec 97
Close Public Comment	15 Jan 97
Submit Draft ROD	14 Feb 98
Comments Received from Regulators	16 Mar 98
Draft Final ROD Submitted	15 Apr 98
Final ROD	15 May 98

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7010



John P. Cahill
Commissioner

September 23, 1997

Mr. Stephen Absolom
Chief, Engineering and Environmental Division
Seneca Army Depot Activity (SEADA)
5786 State Route 96
Romulus, NY 14541-5001

Dear Mr. Absolom:

Re: Seneca Army Depot Activity ID No. 850006
Potential RODS

We have discussed the possibilities for completing the records of decision for the OB Ground, Ash Landfill and possibly two other sites at your depot before March 31, 1998. Because of the required review by many levels of management within each of our organizations, a schedule for deliverables might be a suitable prompt to ensure our meeting the March deadline.

I am attaching a schedule which was initiated by the Griffiss AFB and for the same deadline. This is being offered as a model, and it would certainly be helpful if you would arrange and commit to a similar timetable.

Please contact me at (518) 457-3976 if you need the State's input.

Sincerely,

Marsden Chen

Marsden Chen
Bureau of Eastern Remedial Action
Division of Environmental Remediation

c: C. Struble, USEPA-Region II

SEAD 922

GAFB

SUBJECT: Schedules for Proposed Plans

Date: 18 Sep 97

PROPOSED PLANS for 6 RI Sites

Receive Final DEC/EPA Comments	22 Sep 97
Revise/Resubmit Final Proposed Plans (possible meeting at mid-point)	24 Oct 97
Approval Complete by DEC/EPA	07 Nov 97
Advertise Public Comment Period (By FPM)	10 Nov 97
Public Comment Period Complete	12 Dec 97
Submit Responsiveness Summary/Draft RODS	12 Jan 98

– Public Meeting to be held during Public Comment Period - date TBD

– Distribution of Approved Proposed Plans to be made at beginning of public comment period

– Draft of Advertisement to be submitted to regulators with final proposed plans

MODE = MEMORY TRANSMISSION START=SEP-25 16:25 END=SEP-25 16:29

FILE NO.= 011

NO.	COM	ABBR/NTWK	STATION NAME/ TELEPHONE NO.	PAGES	PRG.NO.	PROGRAM NAME
001	OK	<01>	CDR'S OFC	002/002		

-SENECA ENG/ENV -

********** - - ***** - 16078691362- *********

SUBJECT: Schedules for Proposed Plans

Date: 18 Sep 97

PROPOSED PLANS for 6 RI Sites

Receive Final DEC/EPA Comments	22 Sep 97
Revise/Resubmit Final Proposed Plans (possible meeting at mid-point)	24 Oct 97
Approval Complete by DEC/EPA	07 Nov 97
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Submit Responsiveness Summary/Draft RODS	12 Jan 98

– Public Meeting to be held during Public Comment Period - date TBD
– Distribution of Approved Proposed Plans to be made at beginning of public comment period
– Draft of Advertisement to be submitted to regulators with final proposed plans

Joanne -

In order for me to Respond to this I need to see what the most recent Schedule 5 updated.

Thanks

S McAbsolom

ATTACHMENT 5
SCHEDULES

The schedule of IRP work completed to date and planned through completion of all restoration work at SEDA is as follows:

RELEVANT MILESTONES (1)(2)

ASH LANDFILL (SEAD-003, 006, 008, 014, and 015) OU1

Draft Work Plan	(04 Dec 90)
Draft RI	(20 Oct 93)
Draft FS	(19 Sep 94)
Draft PRAP	(07 Mar 97)
Draft ROD	(07 Oct 97)

OPEN BURNING GROUNDS (SEAD-23) OU2

Draft Work Plan	(29 Aug 91)
Draft RI	(28 Jan 94)
Draft FS	(09 Mar 94)
Draft PRAP	(04 Jul 96)
Draft ROD	(17 Oct 97)

REMEDIAL INVESTIGATIONS/FEASIBILITY STUDIES (3)(4)
FIRE TRAINING AREAS (SEAD-025, 026) OU3

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(28 Jun 96)
Draft FS Submission	(22 Oct 97)
Draft PRAP	(09 Jan 98)
Draft ROD	(23 May 98)

DEACTIVATION FURNACES (SEAD-016, 017) OU4

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(18 Jan 97)
Draft FS Submission	(30 Sep 97)
Draft PRAP	(08 Jan 98)
Draft ROD	(02 Jul 98)

RAD SITES (SEAD-012, 063) OU5

Draft RI/FS Work Plan	(19 Dec 95)
Draft RI Submission	(23 Oct 97)
Draft FS Submission	(18 Mar 98)
Draft PRAP	(06 Jul 98)
Draft ROD	(27 Jan 99)

SEAD-059, 071 Fill Area/Paint Disposal

Draft RI/FS Work Plan	(30 Jan 96)
Draft RI Submission	(06 Jan 98)
Draft FS Submission	(31 May 98)
Draft PRAP	(19 Sep 98)
Draft ROD	(30 Mar 99)

SEAD-004 Munitions Washout Facility

Draft RI/FS Work Plan	(25 Oct 95)
Draft RI Submission	(06 Mar 98)
Draft FS Submission	(31 Jul 98)
Draft PRAP	(19 Nov 98)
Draft ROD	(30 May 99)

SEAD-011, 064A, 064D Old Construction Debris Landfills (5)

Draft RI/FS Work Plan	(15 Jun 95)
Draft RI Submission	(06 Nov 98)
Draft FS Submission	(31 Mar 99)
Draft PRAP	(19 Jul 99)
Draft ROD	(30 Jan 00)

SEAD-013 IRFNA Disposal Site

Draft RI/FS Work Plan	(14 Nov 95)
Draft RI Submission	(06 Jan 99)
Draft FS Submission	(31 May 99)
Draft PRAP	(19 Sep 99)
Draft ROD	(30 Mar 00)

FOOTNOTES:

(1) Draft and Draft-Final submissions are based on the InterAgency Agreement (IAG) stipulation of 45 days for Army preparation and 30 days for regulatory review. Final dates are based upon the IAG stipulation that all documents become final automatically within 30 days of the Draft-Final submission if no comments are received.

(2) Multiple document submittals will be likely considering the amount of work required and the tight schedules for performance. All schedules assume that regulatory reviews will be conducted concurrently, if required, as is assumed in the IAG.

(3) All schedules for RIs to be performed assume that two phases of fieldwork will be required. If Phase II RI fieldwork is unnecessary for SEADs 25 and 26, SEADs 16 and 17, SEAD 4, SEADs 12, 48, and 63; all draft documents for these operable units shall be submitted to the USEPA and NYSDEC earlier than the deadlines in Attachment 5: Facility Master Schedule. The Army shall submit a revised Attachment 5 to the USEPA and NYSDEC to reflect the new deadlines within 30 days of NYSDEC and USEPA indicating that Phase II RI fieldwork would not be needed for the above-mentioned SEADs.

(4) Operable unit designation will be assigned after project has been funded and consistent with definition, Section 2, paragraph 14.

(5) Years will continue to be designated by their last two digits in the year 2000, e.g. "00", "01", "02", etc.

(6) SEAD-045, and 057 (Demo Area/EOD) have been combined with SEAD-046 (Small Arms Range) for Draft RI Submission.

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

June 19, 1997

REPLY TO
ATTENTION OF

Engineering and
Environmental Office

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. Marsden Chen
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Chen:

In accordance with Section 18 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA requests an extension for the submission of the Draft Record of Decision (ROD) for the Ash Landfill. This document is currently due on June 20, 1997.

Since we have not received comments for the Draft Proposed Remedial Action Plan (PRAP), we would like an additional extension to submit the Draft ROD. EPA has requested an extension to June 24, 1997, to comment on the Ash Landfill Draft PRAP. Without the benefit of these comments, it would futile to draft a ROD for the site. Request an additional 45 days from June 24, 1997, to respond to comments on the PRAP and issue a Draft ROD. This new submission date would be August 8, 1997.

Questions may be directed to Stephen M. Absolom, BRAC Environmental Coordinator, at (607) 869-1309.

Sincerely,

for Stephen W. Brooks
LTC, U.S. Army
Commanding Officer

Copies Furnished:

Michael Duchesneau, Parsons Engineering Science, Inc., Prudential Center, 101 Huntington Avenue, Boston, Massachusetts 02199-7697

Commander, U.S. Army Corps of Engineers, Huntsville Division, ATTN: CEHND-ED-CS (Kevin Healy), P.O. Box 1600, Huntsville, Alabama 35807

Commander, U.S. Army Corps of Engineers, Seneca Army Depot Activity, ATTN: CENAN-PP-E (Randy Battaglia), SEDA Resident Office, Romulus, New York 14541-5001

ATTACHMENT 5
SCHEDULES

The schedule of IRP work completed to date and planned through completion of all restoration work at SEDA is as follows:

RELEVANT MILESTONES (1)(2)

ASH LANDFILL (SEAD-003, 006, 008, 014, and 015) OV1

Draft Work Plan	(04 Dec 90)
Draft RI	(20 Oct 93)
Draft FS	(19 Sep 94)
Draft PRAP	(07 Mar 97)
Draft ROD	(08 Aug 97)

OPEN BURNING GROUNDS (SEAD-23) OV2

Draft Work Plan	(29 Aug 91)
Draft RI	(28 Jan 94)
Draft FS	(09 Mar 94)
Draft PRAP	(04 Jul 96)
Draft ROD	(16 Jul 97)

REMEDIAL INVESTIGATIONS/FEASIBILITY STUDIES (3)(4) OV3

SEAD-025, 026 Fire Training Areas

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(28 Jun 96)
Draft FS Submission	(23 Jun 97)
Draft PRAP	(04 Sep 97)
Draft ROD	(18 Mar 98)

SEAD-016, 017 Deactivation Furnaces

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(18 Jan 97)
Draft FS Submission	(30 Sep 97)
Draft PRAP	(08 Jan 98)
Draft ROD	(02 Jul 98)

SEAD-012, 063 RAD Sites

Draft RI/FS Work Plan	(19 Dec 95)
Draft RI Submission	(23 Oct 97)*
Draft FS Submission	(07 Dec 97)
Draft PRAP	(21 May 98)
Draft ROD	(02 Nov 98)

*Pending Approval of Revised Proposed Schedule 5, dtd 6/03/97

Dtd 6/19/97

SEAD-059, 071 Fill Area/Paint Disposal

Draft RI/FS Work Plan	(30 Jan 96)
Draft RI Submission	(25 Jan 98)
Draft FS Submission	(08 Aug 98)
Draft PRAP	(20 Jan 99)
Draft ROD	(04 Jul 99)

SEAD-004 Munitions Washout Facility

Draft RI/FS Work Plan	(25 Oct 95)
Draft RI Submission	(06 Mar 98)*
Draft FS Submission	(08 Oct 97)
~~Draft PRAP~~	~~(22 Mar 98)~~
Draft ROD	(03 Sep 98)

*Pending Approval of Revised Proposed Schedule 5, dtd 6/03/97

SEAD-011, 064 Old Construction Debris Landfills

Draft RI/FS Work Plan	(15 Jun 95)
Draft RI Submission	(06 Mar 98)*
Draft FS Submission	(06 Feb 98)
Draft PRAP	(21 Jul 98)
Draft ROD	(02 Jan 99)

*Pending Approval of Revised Proposed Schedule 5, dtd 6/03/97

SEAD-013 IRFNA Disposal Site

Draft RI/FS Work Plan	(14 Nov 95)
Draft RI Submission	(06 Jan 99)*
Draft FS Submission	~~(08 Apr 98)~~
Draft PRAP	(20 Sep 98)
Draft ROD	(04 Mar 99)

*Pending Approval of Revised Proposed Schedule 5, dtd 6/03/97

SEAD-052, 060 608/612/609 Spill

Draft RI/FS Work Plan	(19 Jan 96)
Draft RI Submission	(25 Nov 97)
Draft FS Submission	(08 Jun 98)
Draft PRAP	(20 Nov 98)
Draft ROD	(04 May 99)

SEAD-045, and 057 Demo Area/EOD (5)

Draft RI/FS Work Plan	(26 Feb 96)

SEAD-046 Small Arms Range (5)

Draft RI/FS Work Plan	(09 May 96)

SEAD-045, 046, and 057 Demo Area/EOD/Small Arms Range (5)

Draft RI/FS Work Plan	(See above)
Draft RI Submission	(28 Mar 98)
Draft FS Submission	(09 Oct 98)
Draft PRAP	(23 Mar 99)
Draft ROD	(04 Sep 99)

SEAD-048 Pitch Blend Storage

Draft Work Plan	(19 Dec 95)
Draft RI Submission	(27 Mar 99)
Draft FS Submission	(28 Oct 99)
Draft PRAP	(27 Mar 2000)
Draft ROD	(03 Sep 2000)

SEAD-066 Pesticide Storage Areas

Draft RI/FS Work Plan	(02 Dec 96)
Draft RI Submission	(05 Nov 2000)
Draft FS Submission	(30 Mar 2001)
Draft PRAP	(18 Jul 2001)
Draft ROD	(29 Jan 2002)

COMMUNITY RELATION PLAN (Oct 92)

FOOTNOTES:

(1) Draft and Draft-Final submissions are based on the InterAgency Agreement (IAG) stipulation of 45 days for Army preparation and 30 days for regulatory review. Final dates are based upon the IAG stipulation that all documents become final automatically within 30 days of the Draft-Final submission if no comments are received.

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(3) All schedules for RIs to be performed assume that two phases of fieldwork will be required. If Phase II RI fieldwork is unnecessary for SEADs 25 and 26, SEADs 16 and 17, SEAD 4, SEADs 12, 48, and 63; all draft documents for these operable

units shall be submitted to the USEPA and NYSDEC earlier than the deadlines in Attachment 5: Facility Master Schedule. The Army shall submit a revised Attachment 5 to the USEPA and NYSDEC to reflect the new deadlines within 30 days of NYSDEC and USEPA indicating that Phase II RI fieldwork would not be needed for the above-mentioned SEADs.

(4) Operable unit designation will be assigned after project has been funded and consistent with definition, Section 2, paragraph 14.

(5) SEAD-045, and 057 (Demo Area/EOD) have been combined with SEAD-046 (Small Arms Range) for Draft RI Submission.

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO ATTENTION OF

MCHB-DC-EHR (40)

4 JUN 1997

MEMORANDUM FOR Division Engineer, U.S. Army Engineering and Support Center - Huntsville, ATTN: CEHND-ED-PM (Ms. Richards), P.O. Box 1600, Huntsville, AL 35807-4301

SUBJECT: Pre-Draft Record of Decision, Ash Landfill, Seneca Army Depot, Romulus, New York, April 1997

1. The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) reviewed the subject document on behalf of the Office of The Surgeon General. Thank you for the opportunity to review this document. We concur with the planned cleanup levels of this site as protective of human health and the environment. Comments and recommendations are enclosed for your consideration.

2. This document was reviewed by: Ms. Jennifer Ferguson, Health Effects Research Program; Mr. Loren Phillips, Surface Water and Wastewater Supply Program; Ms. Mary Grez, Ground Water and Solid Waste Program; Dr. Coleen Weese, Occupational and Environmental Medicine Program; and Mr. Keith Hoddinott, Health Risk Assessment and Risk Communication Program. Our point of contact is Mr. Hoddinott, he can be reached at DSN 584-5209 or commercial (410) 671-5209.

FOR THE COMMANDER:

Dennis E. Druck

Encl

DENNIS E. DRUCK
Acting Program Manager, Environmental Health
Risk Assessment and Risk Communication

CF:
HQDA(DASG-HS-PE) (wo/encl)
CDR, USAMEDCOM, ATTN: MCHO-CL-W (w/encl)
CDR, AMC, ATTN: AMCEN-A/Pete Cunanan (w/encl)
CDR, CEMRD, ATTN: CEMRD-ED-EH (w/encl)
CDR, USAEC, ATTN: SFIM-AEC-RPO (w/encl)
CDR, SENECA AD, ATTN: SDSSE-HE (w/encl)
CDR, USACE, SEDA Resident Office, ATTN: CENAN-PP-E (w/encl)

Readiness thru Health

Comments And Recommendations
U.S. Army Center for Health Promotion and Preventive Medicine
Pre-Draft Record of Decision, Ash Landfill, Seneca Army Depot, Romulus, New York,
April 1997

1. Page 6-2, Section 6.2, M. Grez
   Impacts to Ground Water
   Comment: A quarterly ground-water monitoring program has been conducted at the site since 1987. Are there any recognizable trends in levels of VOCs detected in ground water at the site? The summary describes the maximum detected concentrations of compounds, but does not indicate whether levels of VOCs are increasing, decreasing, or remaining the same in the wells. This information is important when comparing alternatives.
   Recommendation: Briefly describe applicable trends over time with respect to levels of VOCs in the wells.

2. Page 5-1 and 6-2, Section 5.0 and 6.1, M. Grez
   Comment: Change this paragraph to indicate where a number, indicating gallons of ground water pumped from the aquifer during the removal action, was to be placed. The marker, "how many", was not replaced, and it remains in both sections in lieu of the actual number.
   Recommendation: Replace the marker with the actual number for the amount of ground water removed from the aquifer.

3. Figure 7-2, C. Weese
   Exposure Pathway Summary
   Comment: Although it is discussed in the test that the land-reuse plans were not yet established at the time of the BRA, there is currently no reasonable chance of an on-site future resident. Figure 7-2 shows a completed pathway for this receptor to groundwater.
   Recommendation: Remove this from the figure.

4. Page 7-10, Section 7-2, C. Weese
   Human Health Risks
   Comment: The discussion of the BRA and the exposure scenarios used does not mention that some of these scenarios are no longer under consideration for the site. The reviewer does not consider them "potential risks to human health" in the sense that they are compatible with the future use plans.
   Recommendation: Modify the text (and Table 7-1) to discuss that the future on-site residential scenario is no longer reasonable.

5. Page 7-11, Section 7-2, C. Weese
   Human Health Risks
   Comment: Under the "results" heading, the third line should read "several compounds including the PAH compounds, xylene and toluene....."
   Recommendation: Xylene and toluene are not PAH compounds, thus, the comma is needed.

Encl

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

April 15, 1997

REPLY TO
ATTENTION OF

Engineering and
Environmental Office

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. Kamal Gupta
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Gupta:

In accordance with Section 18 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA requests an extension for the submission of the Draft Record of Decision (ROD) for the Ash Landfill. This document is due April 21, 1997.

Pending receipt of your comments on the Draft Proposed Remedial Action Plan (PRAP), we will be sending a pre-draft ROD to the Army contingent for review. We would like a 30-day extension to allow time for Army comments on the pre-draft ROD before issuing the draft document. The due date for the document would be May 21, 1997.

Questions may be directed to Stephen M. Absolom, BRAC Environmental Coordinator, at (607) 869-1309.

Sincerely,

Stephen W. Brooks
LTC, U.S. Army
Commanding Officer

Enclosure

Copies Furnished:

Michael Duchesneau, Parsons Engineering Science, Inc., Prudential Center, 101 Huntington Avenue, Boston, Massachusetts 02199-7697

Commander, U.S. Army Corps of Engineers, Huntsville Division, ATTN: CEHND-ED-CS (Kevin Healy), P.O. Box 1600, Huntsville, Alabama 35807

Commander, U.S. Army Corps of Engineers, Seneca Army Depot Activity, ATTN: CENAN-PP-E (Randy Battaglia), SEDA Resident Office, Romulus, New York 14541-5001

ATTACHMENT 5
SCHEDULES

The schedule of IRP work completed to date and planned through completion of all restoration work at SEDA is as follows:

RELEVANT MILESTONES (1)(2)

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Draft RI	(20 Oct 93)
Draft FS	(19 Sep 94)
Draft PRAP	(07 Mar 97)
Draft ROD	(21 May 97)

OPEN BURNING GROUNDS (SEAD-23) OV2

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Draft FS	(09 Mar 94)
Draft PRAP	(04 Jul 96)
Draft ROD	(03 May 97)

REMEDIAL INVESTIGATIONS/FEASIBILITY STUDIES (3)(4) OV3

SEAD-025, 026 Fire Training Areas

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(28 Jun 96)
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Draft ROD	(18 Mar 98)

SEAD-016, 017 Deactivation Furnaces

Draft RI/FS Work Plan	(29 Mar 95)
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Draft PRAP	(14 Nov 97)
Draft ROD	(28 Apr 98)

SEAD-012, 063 RAD Sites

Draft RI/FS Work Plan	(19 Dec 95)
Draft RI Submission	(26 May 97)
Draft FS Submission	(07 Dec 97)
Draft PRAP	(21 May 98)
Draft ROD	(02 Nov 98)

Dtd 4/15/97

SEAD-059, 071 Fill Area/Paint Disposal

Draft RI/FS Work Plan	(30 Jan 96)
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SEAD-004 Munitions Washout Facility

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Draft FS Submission	(08 Oct 97)
Draft PRAP	(22 Mar 98)
Draft ROD	(03 Sep 98)

*Pending Approval of Proposed Schedule 5, dtd 1/27/97

SEAD-011, 064 Old Construction Debris Landfills

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Draft FS Submission	(06 Feb 98)
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Draft FS Submission	(08 Apr 98)
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Draft ROD	(04 Mar 99)

*Pending Approval of Proposed Schedule 5, dtd 1/27/97

SEAD-052, 060 608/612/609 Spill

Draft RI/FS Work Plan	(19 Jan 96)
Draft RI Submission	(25 Nov 97)
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Draft ROD	(04 May 99)

SEAD-045, and 057 Demo Area/EOD (5)

Draft RI/FS Work Plan	(26 Feb 96)

SEAD-046 Small Arms Range (5)

Draft RI/FS Work Plan	(09 May 96)

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Draft RI/FS Work Plan	(See above)
Draft RI Submission	(28 Mar 98)
Draft FS Submission	(09 Oct 98)
Draft PRAP	(23 Mar 99)
Draft ROD	(04 Sep 99)

SEAD-048 Pitch Blend Storage

Draft Work Plan	(19 Dec 95)
Draft RI Submission	(27 Mar 99)
Draft FS Submission	(28 Oct 99)
Draft PRAP	(27 Mar 2000)
Draft ROD	(03 Sep 2000)

SEAD-066 Pesticide Storage Areas

Draft RI/FS Work Plan	(02 Dec 96)
Draft RI Submission	(05 Nov 2000)
Draft FS Submission	(30 Mar 2001)
Draft PRAP	(18 Jul 2001)
Draft ROD	(29 Jan 2002)

COMMUNITY RELATION PLAN (Oct 92)

FOOTNOTES:

(1) Draft and Draft-Final submissions are based on the InterAgency Agreement (IAG) stipulation of 45 days for Army preparation and 30 days for regulatory review. Final dates are based upon the IAG stipulation that all documents become final automatically within 30 days of the Draft-Final submission if no comments are received.

(2) Multiple document submittals will be likely considering the amount of work required and the tight schedules for performance. All schedules assume that regulatory reviews will be conducted concurrently, if required, as is assumed in the IAG.

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units shall be submitted to the USEPA and NYSDEC earlier than the deadlines in Attachment 5: Facility Master Schedule. The Army shall submit a revised Attachment 5 to the USEPA and NYSDEC to reflect the new deadlines within 30 days of NYSDEC and USEPA indicating that Phase II RI fieldwork would not be needed for the above-mentioned SEADs.

(4) Operable unit designation will be assigned after project has been funded and consistent with definition, Section 2, paragraph 14.

(5) SEAD-045, and 057 (Demo Area/EOD) have been combined with SEAD-046 (Small Arms Range) for Draft RI Submission.

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

March 5, 1997

REPLY TO
ATTENTION OF
Engineering and
Environmental Office

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. Kamal Gupta
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Gupta:

In accordance with Section 18 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA requests an extension for the submission of the Draft Record of Decision (ROD) for the Ash Landfill (ASH). This document is due on March 7, 1997.

The Draft Proposed Remedial Action Plan (PRAP) will be submitted as scheduled on March 7, 1997. We would like the benefit of your comments on the PRAP prior to submission of the Draft ROD at this site. The Army requests an additional 45 days to allow time for you to review and comment on the PRAP before issuing a Draft ROD. This document will be submitted on April 21, 1997.

Questions may be directed to Stephen M. Absolom, BRAC Environmental Coordinator, at (607) 869-1309.

Sincerely,

Stephen W. Brooks
LTC, U.S. Army
Commanding Officer

Enclosure

Copies Furnished:

Michael Duchesneau, Parsons Engineering Science, Inc., Prudential Center, 101 Huntington Avenue, Boston, Massachusetts 02199-7697

Commander, U.S. Army Corps of Engineers, Huntsville Division, ATTN: CEHND-ED-CS (Kevin Healy), P.O. Box 1600, Huntsville, Alabama 35807

Commander, U.S. Army Corps of Engineers, Seneca Army Depot Activity, ATTN: CENAN-PP-E (Randy Battaglia), SEDA Resident Office, Romulus, New York 14541-5001

ATTACHMENT 5
SCHEDULES

The schedule of IRP work completed to date and planned through completion of all restoration work at SEDA is as follows:

RELEVANT MILESTONES (1)(2)

ASH LANDFILL (SEAD-003, 006, 008, 014, and 015) OV1

Draft Work Plan	(04 Dec 90)
Draft RI	(20 Oct 93)
Draft FS	(19 Sep 94)
Draft PRAP	(07 Mar 97)
Draft ROD	(21 Apr 97)

OPEN BURNING GROUNDS (SEAD-23) OV2

Draft Work Plan	(29 Aug 91)
Draft RI	(28 Jan 94)
Draft FS	(09 Mar 94)
Draft PRAP	(04 Jul 96)
Draft ROD	(03 Apr 97)

REMEDIAL INVESTIGATIONS/FEASIBILITY STUDIES (3)(4) OV3

SEAD-025, 026 Fire Training Areas

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(28 Jun 96)
Draft FS Submission	(23 Mar 97)
Draft PRAP	(22 Apr 97)
Draft ROD	(30 Aug 97)

SEAD-016, 017 Deactivation Furnaces

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(18 Jan 97)
Draft FS Submission	(02 Jun 97)
Draft PRAP	(14 Nov 97)
Draft ROD	(28 Apr 98)

SEAD-012, 063 RAD Sites

Draft RI/FS Work Plan	(19 Dec 95)
Draft RI Submission	(26 May 97)
Draft FS Submission	(07 Dec 97)
Draft PRAP	(21 May 98)
Draft ROD	(02 Nov 98)

Dtd 03/05/97

SEAD-059, 071 Fill Area/Paint Disposal

Draft RI/FS Work Plan	(30 Jan 96)
Draft RI Submission	(25 Jan 98)
Draft FS Submission	(08 Aug 98)
Draft PRAP	(20 Jan 99)
Draft ROD	(04 Jul 99)

SEAD-004 Munitions Washout Facility

Draft RI/FS Work Plan	(25 Oct 95)
Draft RI Submission	(27 Mar 97)
Draft FS Submission	(08 Oct 97)
Draft PRAP	(22 Mar 98)
Draft ROD	(03 Sep 98)

SEAD-011, 064 Old Construction Debris Landfills

Draft RI/FS Work Plan	(15 Jun 95)
Draft RI Submission	(26 Jul 97)
Draft FS Submission	(06 Feb 98)
Draft PRAP	(21 Jul 98)
Draft ROD	(02 Jan 99)

SEAD-013 IRFNA Disposal Site

Draft RI/FS Work Plan	(14 Nov 95)
Draft RI Submission	(29 Mar 97)
Draft FS Submission	(08 Apr 98)
Draft PRAP	(20 Sep 98)
Draft ROD	(04 Mar 99)

SEAD-052, 060 608/612/609 Spill

Draft RI/FS Work Plan	(19 Jan 96)
Draft RI Submission	(25 Nov 97)
Draft FS Submission	(08 Jun 98)
Draft PRAP	(20 Nov 98)
Draft ROD	(04 May 99)

SEAD-045, and 057 Demo Area/EOD (5)

Draft RI/FS Work Plan	(26 Feb 96)

Dtd 03/05/97

SEAD-046 Small Arms Range (5)

Draft RI/FS Work Plan	(09 May 96)

SEAD-045, 046, and 057 Demo Area/EOD/Small Arms Range (5)

Draft RI/FS Work Plan	(See above)
Draft RI Submission	(28 Mar 98)
Draft FS Submission	(09 Oct 98)
Draft PRAP	(23 Mar 99)
Draft ROD	(04 Sep 99)

SEAD-048 Pitch Blend Storage

Draft Work Plan	(19 Dec 95)
Draft RI Submission	(27 Mar 99)
Draft FS Submission	(28 Oct 99)
Draft PRAP	(27 Mar 2000)
Draft ROD	(03 Sep 2000)

COMMUNITY RELATION PLAN (Oct 92)

FOOTNOTES:

(1) Draft and Draft-Final submissions are based on the InterAgency Agreement (IAG) stipulation of 45 days for Army preparation and 30 days for regulatory review. Final dates are based upon the IAG stipulation that all documents become final automatically within 30 days of the Draft-Final submission if no comments are received.

(2) Multiple document submittals will be likely considering the amount of work required and the tight schedules for performance. All schedules assume that regulatory reviews will be conducted concurrently, if required, as is assumed in the IAG.

(3) All schedules for RIs to be performed assume that two phases of fieldwork will be required. If Phase II RI fieldwork is unnecessary for SEADs 25 and 26, SEADs 16 and 17, SEAD 4, SEADs 12, 48, and 63; all draft documents for these operable units shall be submitted to the USEPA and NYSDEC earlier than the deadlines in Attachment 5: Facility Master Schedule. The Army shall submit a revised Attachment 5 to the USEPA and NYSDEC to

reflect the new deadlines within 30 days of NYSDEC and USEPA indicating that Phase II RI fieldwork would not be needed for the above-mentioned SEADs.

(4) Operable unit designation will be assigned after project has been funded and consistent with definition, Section 2, paragraph 14.

(5) SEAD-045, and 057 (Demo Area/EOD) have been combined with SEAD-046 (Small Arms Range) for Draft RI Submission.

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

February 5, 1997

REPLY TO
ATTENTION OF

Engineering and
Environmental Office

Ms. Carla Struble, P.E.
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. Kamal Gupta
NYS Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Gupta:

In accordance with Section 18 of the Federal Facility Agreement (FFA) for Seneca Army Depot Activity (SEDA), SEDA requests an extension for the submission of the Draft Proposed Remedial Action Plan (PRAP) and Record of Decision (ROD) for the Ash Landfill (ASH). These documents are due on February 5, 1997.

The Army has not completed its technical and legal review of the pre-draft document for the PRAP. Based on the discussions at the January BRAC Cleanup Team meeting, we are reevaluating the preferred alternative because of the relatively slight cost difference between Options 2 and 3/3a. We request a 15-day extension for submission of this document to February 20, 1997.

For the Draft ROD, we would expect to receive comments and have some informal discussions regarding the selected preferred alternative at this Site. As you know, we would like to have the opportunity to address any comments that we solicited from the Restoration Advisory Board (RAB) at their January meeting. Request a 30-day extension for submission of the Draft ROD to March 7, 1997.

reflect the new deadlines within 30 days of NYSDEC and USEPA indicating that Phase II RI fieldwork would not be needed for the above-mentioned SEADs.

(4) Operable unit designation will be assigned after project has been funded and consistent with definition, Section 2, paragraph 14.

(5) SEAD-045, and 057 (Demo Area/EOD) have been combined with SEAD-046 (Small Arms Range) for Draft RI Submission.