U.S. ARMY ENGINEER DIVISION
HUNTSVILLE, ALABAMA

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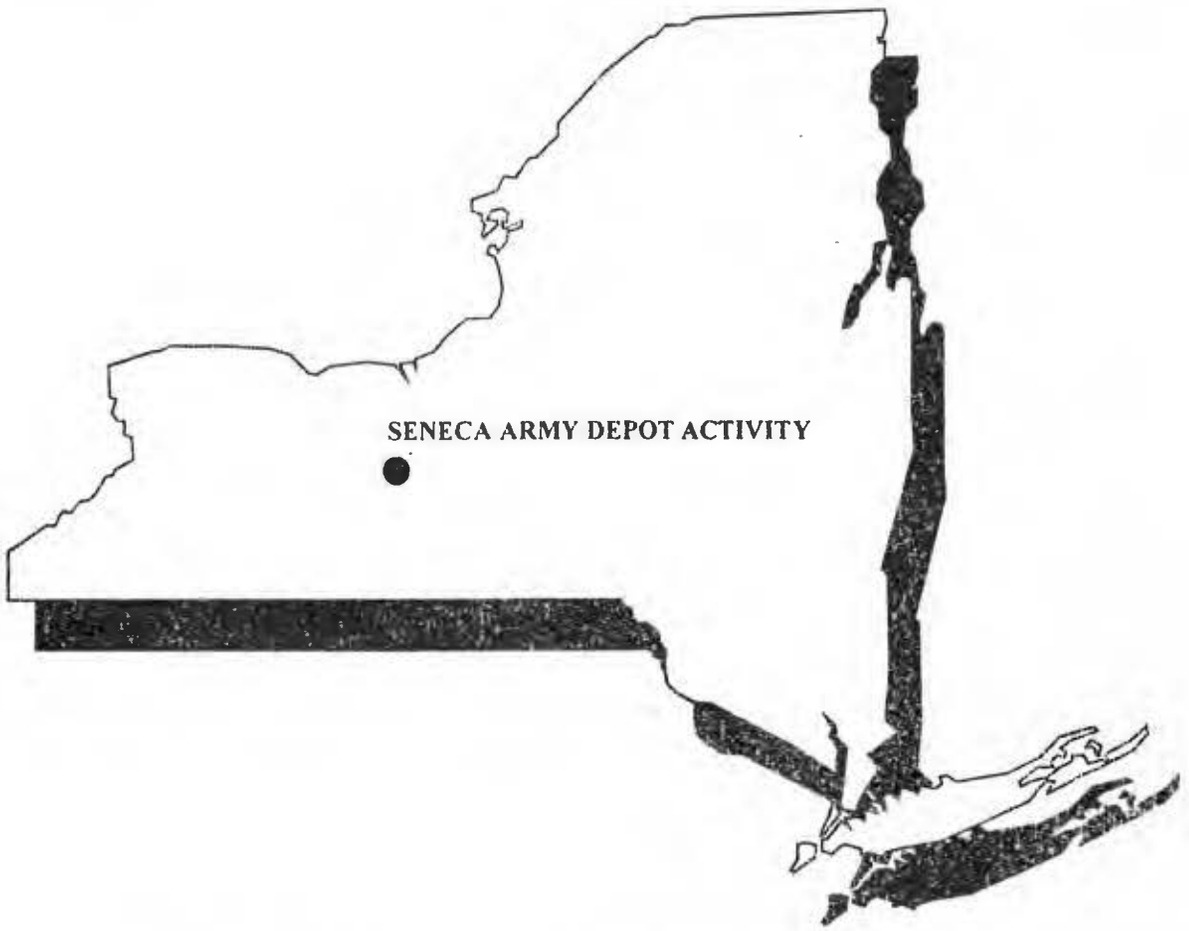

DRAFT FINAL - APPENDIX

SUPERFUND PROPOSED PLAN FOR
The ABANDONED DEACTIVATION FURNACE (SEAD-16) and the ACTIVE DEACTIVATION FURNACE (SEAD-17)

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

CONTRACT NO. DACA87-95-D-0031
DELIVERY ORDER 003

JUNE 2002

DRAFT FINAL PROPOSED PLAN
FOR
THE ABANDONED DEACTIVATION FURNACE (SEAD 16)
AND THE ACTIVE DEACTIVATION FURNACE (SEAD 17)

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

APPENDIX

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June 2002

LIST OF APPENDICES

APPENDIX A: ANALYSIS OF ALTERNATIVE 4P: OFF-SITE DISPOSAL

According to the Seneca Army Depot Local Redevelopment Authority, and as documented in the Reuse Plan and Implementation Strategy (October, 1997), the intended future use of SEAD-16/17 is industrial. However, the future unrestricted use scenario has been considered in order to comply with New York State regulations to establish a goal for site remediation to "restore the site to pre-disposal conditions, to the extent feasible and authorized by law" and in accordance with Army guidance, which states that alternatives consistent with property use without restriction should be considered to compare life-cycle institutional control costs with more conservative clean-up alternatives (DAIM-BO, "Army Guidance for Using Institutional Controls in the CERCLA Process"). Following the detailed analysis, the top ranking alternative, Alternative 4, was modified to formulate a pre-disposal alternative, which is described and evaluated against all nine criteria below.

Definition of Alternative 4P

Description

Alternative 4P addresses future unrestricted use of SEAD-16 and SEAD-17, which would restore the sites to pre-disposal condition, even though the intended future use of the sites is industrial. Restoring the site to pre-disposal condition is in accordance with 6 NYCRR 375-1.10, which establishes a goal for site remediation to "restore the site to pre-disposal conditions, to the extent feasible and authorized by law". As a result, in order to be protective of human health under a residential scenario, the cleanup goals for soil have been revised to 400 mg/kg for lead and other metals (antimony, copper, mercury, thallium, and zinc) detected must meet TAGMs. This alternative would be implemented in exactly the same manner as Alternative 4, except that the excavation volume would increase. This alternative would include excavating surface, subsurface, and ditch soils with lead concentrations greater than 400 mg/kg and with metal concentrations that exceed their respective TAGM value, and disposing the excavated material in an off-site landfill. Excavated soils would be stockpiled and tested prior to being transported off-site for disposal. Excavated soils and ditch soils that exceed the TCLP limits will be stabilized prior to disposal.

Excavated areas would be backfilled to restore the area to original conditions. Common fill and topsoil would be placed and vegetative growth would be established. The intent of this alternative is to remove the waste from the site to prevent contact with receptors and migration to surface water and groundwater. Each step involved in this alternative will be described briefly in this section. A detailed analysis of how this option meets the selected criteria and a budgetary cost estimate are provided below.

Surface and subsurface soils with lead concentrations greater than 400 mg/kg and metal concentrations that exceed their respective TAGM value will be excavated. Railroad tracks and ties at SEAD-16 in the delineated area will not be disrupted. At both SEAD-16 and SEAD-17, all surface soil samples, except the downwind samples, would be excavated, as shown on **Figures 2-4** and **2-8**, respectively, of the FS Report. The soil would be removed to a depth of 12 inches below ground surface, resulting in an in situ volume as presented in Section 2 for Case 4. In addition, most subsurface soil samples at SEAD-16 and SEAD-17 would be excavated. It is estimated that the vertical limit would extend approximately 3 feet, and the combined volume of subsurface soils to be excavated at both sites would be approximately 839 CY. In addition, lead and other metals were detected above their cleanup goals (under this alternative) in the drainage ditches. Consequently, drainage ditch soils around Building S-311 and S-367 at SEAD-16 and SEAD-17, respectively, would be removed to an approximate depth of 12 inches. In total, the volume to be excavated at SEAD-16 and SEAD-17 would be approximately 7,298 CY and 6,687 CY, respectively.

The excavation can be accomplished with standard construction equipment, such as a front end loaders, bulldozers, and backhoes. The excavated soil and ditch soil (refer to Section 6.3 of the FS) would be loaded into trucks and transported to an on-site stockpile area. The soil would be placed in separate piles and samples would be obtained for TCLP testing. Based on the results, soil that passes the TCLP test would be transported and disposed of as a solid waste in an off-site Subtitle D Landfill. The soil that fails the TCLP would be transported, stabilized, and then disposed of in an off-site landfill. Based on conversations with stabilization contractors (refer to detail cost estimate, Appendix E in the FS) it is expected that off-site treatment may be more cost effective than on-site treatment. Therefore, for screening purposes presented later in this section and for conservative cost comparison purposes, this alternative assumes all excavated soil is transported off-site for both treatment and disposal.

Stabilized soil is not considered a characteristic RCRA hazardous waste but considered a solid waste, subject to RCRA Subtitle D and New York State solid waste regulations. In New York, all sanitary landfills are authorized to accept industrial wastes, and therefore would be able to accept the stabilized soil. The landfills cannot accept hazardous waste, and require extensive testing to assure that the waste is not a hazardous waste. The actual testing requirements vary between landfills, and the exact requirements for this remedial action will be specified once a landfill is selected. Several landfills have been identified for disposal, as discussed in Section 6.4.1.1 of the FS.

Upon completion of excavation, cleanup verification would be performed on the excavated areas. A cleanup verification work plan will be developed as part of the final design. Excavation would continue further in those areas where lead concentrations or other metals concentrations in soil and ditch soil are greater than the cleanup goals. Sample location and frequency would be determined as part of the cleanup verification work plan.

Excavated areas would be backfilled to restore the area to original conditions and to provide proper storm water control. Common fill and topsoil would be placed and vegetative growth would be established. Semi-annual groundwater monitoring and annual ditch soil sampling would be necessary.

Process Flow and Site Layout

Figure 6-1 in the FS presents a process flow diagram that is applicable to Alternative 4P. Soil is excavated, stockpiled, and tested for TCLP as described above. Soils meeting the TCLP criteria would be transported and disposed of at an off-site landfill. Soils exceeding the TCLP criteria require stabilization. If the material is stabilized off-site, the soil would be transported off-site, stabilized, and disposed of in an appropriate landfill. If on-site stabilization is used, soils would be transported to a temporary facility, such as a pug mill, and mixed with the selected additive(s). The stabilized soil can be either discharged directly into trucks for transport to a landfill or to a stockpile area for TCLP testing. TCLP testing would be performed on the stabilized material at a rate required by the landfill accepting the waste.

This alternative requires an area sufficient for the pug mill (if on-site stabilization is used) and stockpiles. It is estimated that the pug mill and stockpile area would be located adjacent to Unnamed Road between SEAD-16 and -17, as shown on **Figure 6-2** in the FS. This would provide a central location for the dump trucks to transport the excavated soil to the stockpile area.

If treatment is conducted off-site, trucks would be loaded directly from the stockpiles, after receiving the TCLP test results. A small staging area and equipment decontamination area will be set up as necessary.

Overall Protection of Human Health and the Environment

An evaluation of the overall protectiveness of human health and the environment includes the assessment of short- and long-term protectiveness of human health and the environment. The following discussion will show how this alternative meets these criteria.

Short-Term Protectiveness

This alternative will be evaluated with respect to the effect on human health and the environment during the implementation of the remedial action. Three items are included in an assessment of the short-term protectiveness of Alternative 4P. The first issue is protection of the community during the remedial action. If off-site treatment is performed, hazardous material would be transported off-site. Precautionary measures must be taken to assure that the trucks are not overloaded and properly covered with a tarp to ensure that no material is released. If on-site

treatment is performed, hazardous material would not be transported off-site. All waste, which is disposed in the off-site landfill, will no longer be considered hazardous waste.

There is also a minor threat from dust released during the excavation. The site is located away from the SEDA boundary, so the likelihood of any hazardous dust migrating off-site is negligible. As discussed in Sections 6 and 7 of the RI report as well as in Section 2 of the FS, fugitive dust migration (in soil) is not a major migration pathway. Fugitive dust is further minimized by the makeup of the soil to be excavated, which is primarily shale fill, a material that has a fairly large particle size, and is less subject to dust formation.

The short-term protectiveness to site workers is also considered. The major routes of exposure during remediation are direct contact with the excavated soil and inhalation of particulate. Exposure can be minimized through the use of site access controls and proper protective equipment for site workers, such as dust masks and Tyvek protective clothing. Air monitoring may be used to determine if there is a significant threat from the inhalation of particulate. Dust generation at the excavation can be minimized by using water or other dust control chemicals. If on-site treatment is used, precautionary measures should be taken to minimize dust generation. It should also be noted that all the site workers are required to meet all the OSHA training and medical monitoring requirements.

Another part of the short-term protectiveness criterion is assessing the environmental impacts during the remedial action. Impacts to the site will result from excavation, stockpiling, and truck traffic. Because SEAD-16 and -17 is located in an active portion of SEDA, these activities would not be substantially different from the current activities. In addition, since the hazardous material is primarily in the soil, there is little or no risk of a spill or release during the remedial action.

Long-Term Protectiveness

The remedial action is designed such that the remaining soils and ditch soils have a lead concentration below the proposed cleanup goal of 400 mg/kg, and metals concentrations that comply with TAGMs. The excavated soil and ditch soil would be excavated and transported off-site for disposal and no treatment residuals would be left on the site. There would no longer be soil and ditch soil on site that poses an unacceptable threat to human health.

Overall Protection of Human Health and the Environment Conclusion

Alternative 4P would protect human health and the environment. The alternative protects against ingestion of and direct contact with surface soils and ditch soils having concentrations of lead above 400 mg/kg or other metals (antimony, copper, mercury, thallium, and zinc) at concentrations greater than TAGMs. The ditch soils with concentrations of lead above 400 mg/kg or concentrations of other metals greater than their TAGM values would be removed, which

would meet the RAO for ditch soil and prevent contamination downgradient in Kendaia Creek. In addition, after the removal action, the site would be suitable for unrestricted use and would be restored to pre-disposal conditions.

The results of the baseline risk assessment show that conditions at SEAD-16 and -17 require a remedial action (see Section 2 of the FS). The remedial action will reduce risk from soil and ditch soil as well as building material and debris to acceptable levels. Therefore, this alternative meets the RAOs by reducing risk, thus protecting human health.

ARAR Compliance

Similar as Alternative 2 (Section 6.4.3 of the FS), Alternative 4P does not preclude compliance with ARARs.

Long-Term Effectiveness and Permanence

The assessment of the long-term effectiveness can be divided into two categories, an assessment of the magnitude of the residual risk, and an evaluation of the adequacy and reliability of the controls used for the waste residuals and untreated soil.

As discussed in Section 6.5.2 of the FS, Alternative 4P would protect human health and the environment in the long-term. Upon completion of the remedial action, no residual soil or ditch soil would remain on site. The long-term management of the excavated material would be the responsibility of the selected off-site landfill. For this reason, it is important to select a reputable landfill to assure that the landfill is operated in accordance with State and Federal requirements. Although the excavated areas at the site would be backfilled and graded to promote storm water run-off and minimize erosion, maintenance activities would not be required upon the establishment of vegetative growth.

Once the excavated soil and ditch soil are removed from the site, the remedial action would be considered permanent. There would no longer be soil and ditch soil on site that poses an unacceptable threat to human health for any receptors. Stabilized material would be designed to be resistant to leaching, weathering, and wet-dry cycles, which would indicate that the treatment would be permanent.

Long term land use controls would not be required for these sites, since Alternative 4P would allow for unrestricted land use at both SEAD-16 and SEAD-17.

Reduction in Toxicity, Mobility, and Volume

Alternative 4P would be effective in reducing the toxicity and mobility of the hazardous constituents present in the soil and ditch soil at the site. The material and debris from SEAD-16 buildings would be removed as well as the soil and ditch soil exceeding the proposed cleanup levels. In addition, the decrease in toxicity and mobility can be assessed two ways. First, the TCLP test provides an assessment of the toxicity and mobility of the hazardous constituents in the soil. The larger the leaching fraction, the greater the mobility and the greater the toxicity. Since some of the excavated soil and ditch soil must be treated in order to meet the TCLP criteria prior to disposal, the treated material would no longer be hazardous and would exhibit lower toxicity and mobility than the untreated waste.

In addition, by treating the soil that contains the highest concentrations of hazardous constituents, the overall site risk would be reduced to acceptable levels. By stabilizing the soil and ditch soil and then transferring to a landfill, the mobility of the hazardous constituents would be effectively eliminated. A properly managed landfill does not allow for uncontrolled releases from the landfill.

The stabilized soil would have a larger volume than the untreated soil, but the stabilized soil would no longer be a hazardous waste.

Short-Term Effectiveness

As discussed in Section 6.5.2.1 of the FS, exposure to the community, the site workers and the environment can be minimized through the appropriate use of site access controls, dust controls, proper protective equipment for site workers, and monitoring system.

It is estimated that Alternative 4P can be completed in a short time period. If stabilization is conducted off-site, then it is estimated that the alternative may take approximately two to three months to complete, depending on the weather and turnaround time on the TCLP test results. This duration includes one week of mobilization, one week of building remediation, two to four weeks of excavation, three weeks to backfill and hydroseed, three weeks to test and dispose the material offsite, and one week to demobilization. The alternative would be an earthmoving operation, with little mobilization and specialty equipment.

If on-site stabilization is conducted, developing and implementing the treatability study, selecting the vendor, and obtaining the appropriate samples may take three to five months. Once the treatability testing is completed and a vendor is selected, it is estimated that the alternative may take approximately three months to complete. In addition to the items mentioned above, some permitting may be required for stabilization and a specialty contractor would be required. Also, the alternative is dependant on the time needed for the stabilized material to cure.

Implementability

A discussion of implementability can be divided into three sections, technical feasibility, administrative feasibility, and availability of services and materials. Technical feasibility describes items such as construction and operation, technology reliability, and monitoring considerations. Administrative feasibility addresses issues such as permitting, interaction with NYSDEC and EPA, and community relations. Availability of services and materials describes the ease of obtaining vendors and equipment, and the availability of offsite disposal capacity.

Technical Feasibility

Alternative 4P is technically feasible to complete. It involves routine earth moving work, including excavation, stockpiling, transportation, and backfilling, and the remediation areas have been initially delineated. It is possible that some minor weather delays may be encountered, but most of the soil to be removed is located within 12 inches of the ground surface and would not be adversely affected by wet weather.

The excavated material that fails the TCLP criteria would require stabilization. Stabilization is a technology that has been frequently used to treat similar soils, and it is not anticipated that problems would be encountered during construction. If on-site stabilization is used, a treatment study would be necessary to establish the optimal additive and dosage and a specialty contractor would perform the work, most likely using a pug mill. The additives would be properly monitored to assure proper dosage. The stabilized material would be tested to assure that it meets the TCLP criteria. If off-site treatment is conducted, most of the TSD facilities in the region have accepted similar wastes for a number of years. These facilities are capable of treating and disposing of the site soils.

Another aspect of technical feasibility is the ease with which additional work may be conducted. At this time, it is anticipated that this remedial action will preclude the necessity of any additional remedial efforts at SEAD-16 and -17. However, if additional work is required in the future, this remedial action should not interfere in any way. Once the remedial action is complete, the site will be vegetated and will essentially remain as it is now.

Administrative Feasibility

Alternative 4P is administratively feasibility to complete. If off-site treatment is performed, the landfills that may be used are fully permitted for disposal and stabilization, if necessary. There would be some transport of hazardous waste, and proper manifests would be required. All of the contractors used for excavation and hauling would be experienced in preparing manifests.

If on-site treatment is performed, a temporary treatment facility (pug mill) would be used and no hazardous waste transportation would be required, which simplifies the manifest requirements. Construction permits would be necessary for the construction activities. Since the wastes would be sent to a permitted disposal facility, no disposal permits would be necessary.

Coordination with the various regulatory agencies is also important. As previously described, the Army has coordinated the entire remedial program with both EPA and NYSDEC, and would consider input from both these agencies in the final remedy selection. It is anticipated that any issues arising with the regulatory agencies would be addressed prior to remedy selection.

Availability of Services and Materials

Alternative 4P relies primarily on standard construction equipment that is readily available in the Romulus area. The equipment includes backhoes, bulldozers, front-end loaders, scrapers, and standard size dump trucks. Backfill material, such as common fill and topsoil, is readily available in the Romulus area. If on-site stabilization is performed, a pug mill would most likely be used.

Several landfills have been identified that are capable of accepting the soil and ditch soil for disposal, as discussed in Section 6.4.1.1 of the FS.

Cost

Capital Costs

Capital costs were estimated to remediate the soil with lead concentration exceeding 400 mg/kg or the other tested metal concentrations exceeding the TAGM values. The detailed cost estimate and a description of the assumptions used are presented in Appendix E of the FS. The total capital costs (project cost) for the specified concentration level is estimated to be $7,305,090, as presented in Table 6-2 of the FS.

O & M Costs

Annual monitoring costs associated with Alternative 4P include costs for semi-annual groundwater sampling and annual ditch soil monitoring. The annual monitoring cost is estimated to be $40,440. There is no annual O & M costs associated with this alternative. In accordance with the Federal Facility Agreement CERCLA SECTION 120, Docket Number: II-CERCLA-FFA-00202, the remedial action (including monitoring program) will be reviewed after five years. At this time, modification may be implemented to the remediation program (including monitoring program), if appropriate.

Present Worth Costs

The present worth cost (total evaluated price) to remediate the site to lead concentrations in soil with lead concentration exceeding 400 mg/kg or the other tested metal concentrations exceeding the TAGM values is estimated to be $8,004,378.

Conclusion

An unrestricted use alternative was considered for the highest ranking alternative, Alternative 4, in order to weigh the advantages of restoring the sites to pre-disposal condition versus the cost this would incur. Alternative 4P, which has a present worth value approximately $5 million more than Alternative 4, would not be selected as the preferred alternative due to the significant cost increase compared to its industrial use counterpart. Since human health risk for the intended future use, industrial, is acceptable under Alternative 4, the additional health risk reductions achieved by the unrestricted use alternative, Alternative 4P, does not warrant an additional $5 million.

Response to Comments From New York State Department of Environmental Conservation

Subject: Draft Proposed Remedial Action Plan (PRAP) for SEAD-16 and 17
Seneca Army Depot
Romulus, New York

Comments Dated: November 13, 2001

Date of Comment Response: May 14, 2002

General Comments:

It is not clear if the proposed remedy will leave the site for unrestricted use or not. The Proposed Plan should be specific in defining all the components of a proposed remedy. This includes institutional controls. If the Army is intending on leaving residual contamination above acceptable levels for unrestricted use, institutional controls will be necessary to prevent unacceptable human exposures. This Proposed Plan must include the definition and description of the specific institutional controls envisioned. The geographic extent and the specific restrictions (i.e., residential, childcare facility, etc.) of the institutional controls must be included in the Proposed Plan and the subsequent Record of Decision. In addition, institutional controls should be compared to the evaluation criteria just as any other component of a remedial alternative. At least one unrestricted use alternative should be brought forth into the detailed analysis of alternatives to present a full comparison of the advantages and disadvantages of a range of alternatives, from unrestricted use to a restricted use scenario that requires institutional controls and long-term monitoring. The comparative analysis of institutional controls, including cost, implementability, and administrative feasibility needs to be addressed in this Proposed Plan.

Since groundwater contamination is not addressed by this remedy, some type of institutional control limiting groundwater usage must be included in addition to the proposed long-term groundwater monitoring.

The State requests the following spatial amendments be made to excavation areas for Alternative 4 (Off- Site disposal):

1. SEAD 16: The present spatial configuration of the excavation area does not include surface soil areas containing elevated levels of carcinogenic PAHs (up to 1,159 mg/kg). The inclusion of the following soil sampling areas in the final excavation are is requested: SS 16-1; SS 16-31; SS16-35; and SB16-4.

2. SEAD 17: As stated on page 8 of the draft Proposed Plan for concentrations of metals in soil, "...results indicate that metal concentrations of 18 mg/kg, 359 mg/kg, 539 mg/kg, 2.69 mg/kg

> for antimony, copper, zinc, mercury and thallium respectively, will not pose unacceptable risks for the future industrial use scenario...Therefore, the delineated area for lead cleanup...has been examined to include areas with concentrations exceeding the above-mentioned levels for the future industrial use scenario." These values were calculated based upon the maximum metal concentrations that would be protective of a day-care/residential child in an industrial and residential use scenario. However, when comparing the metals concentration pattern to the proposed delineated area to be excavated, the delineated area does not include all areas which metal concentrations exceed the above values. The soil sample from area SS17-10 contains 52 mg/kg antimony and 546 mg/kg copper and therefore must be included in the area of excavation.

This draft lacks data tables identifying contaminants of concern, corresponding concentrations, proposed cleanup standards and concentrations of contaminants proposed to be left on-site. This information need to be clearly presented in the revised Proposed Plan.

Response: Several changes have been made to the document in response to this comment. Data tables identifying the contaminants of concern and their concentrations and cleanup goals have been added to the report. In addition, the elements of the remedy have been more clearly outlined in the "Preferred Alternative" section. Figures 2 and 3 have been added to show the areas of remediation for the remedial action at both sites. Responses to additional points made above follow:

Future Use

The remedial action objectives for SEADs-16 and 17 were based upon the intended future land use, which is industrial use for both sites. Residential land use was only considered to compare the cost of remediating the sites for this land use versus the cost to implement restricted use on the sites. The goal of the remedial action is to prevent ingestion of and dermal contact with soils and ditch soils with lead concentrations above 1,250 mg/kg, which is based on the future industrial use scenario. The text has been revised to clearly state that the proposed remedy is for future industrial land use. The elements of the remedy have been more clearly outlined in the *Preferred Alternative* section.

Institutional Controls

Text explaining the use of institutional controls has been added to the sections entitled *Summary of Remedial Alternatives* and *Preferred Alternative*. The use of institutional controls may include access control, land use restrictions, and the restriction of groundwater use. The land use controls are intended to prevent the use of groundwater as drinking water as long as the concentrations in the water are greater than GA or MCL standards. The report considers clean up for industrial use and makes reference to the future use of the property being industrial, which, by definition, will

necessitate the imposition of a land use restriction. Institutional controls will be part of the overall remedial strategy to restrict exposure to those activities involving industrial use. Upon land transfer, language will be included in the deed that would require the continued use and maintenance of the land use controls.

Institutional controls have been addressed in the cost estimates for all alternatives to cover semi-annual groundwater monitoring.

Detailed Analysis

The evaluation of an unrestricted land use alternative under the Alternative 4, Off-Site Disposal, has been conducted and will be added to the PRAP as Appendix A. For unrestricted land use, lead concentrations of 400 mg/kg + TAGM have been evaluated. The 400 mg/kg level of lead in soil is the EPA recommended level for residential use.

Groundwater

Groundwater use restrictions will be required until the groundwater monitoring shows that the concentrations of contaminants of concern have decreased to below the GA or MCL criteria. This statement has been added to the text in the institutional controls discussion.

Groundwater is not considered to be a media of concern because the results of the risk assessment showed no risk to future receptors. In addition, four of the metals that were detected at concentrations exceeding the groundwater criteria were also detected in background groundwater samples.

Amendments to Excavation Areas

Additional locations for removal will only be incorporated to the extent that the railroad tracks are not disrupted. The area between the northwest corner of Building S-311 and the railroad tracks has been added as an area of hotspot removal. This area includes the soil sampling locations SS16-1 and SB16-4. The soil sampling locations, SS16-35 and SS16-31, will be removed as hotspots at locations adjacent to the railroad tracks. The areas will be excavated to a depth of 12 inches and backfilled with clean soil. No confirmatory sampling will be conducted.

The area around soil sampling location SS17-10 has been added as a hot spot removal location. The area will be excavated to a depth of 12 inches and backfilled with clean soil. No confirmatory sampling will be conducted.

Specific Comments:

Comment 1: Please remove "Superfund" from the title. The Army is a responsible party as defined in Section 107 of CERCLA therefore the term "Superfund" is not applicable to this site.

Response: Agreed. The title has been revised.

Comment 2: Page 1, Purpose of Proposed Plan: In the third sentence, please remove the phrase "with support from" and replace it with more appropriate wording such as "in cooperation with." The USEPA and NYSDEC entered into the Federal Facilities Agreement as equal entities therefore the regulatory agencies are not "support" agencies as otherwise indicated.

Response: Agreed. The text has been revised.

Comment 3: Page 2, Site Background: The last sentence of the third paragraph states that "access to the site is restricted because the site is located in the ammunition storage area." It is the Department's understanding that there is no ammunition being stored on-site. If that is the case, then the Army should denote that the site is located in the "former" ammunition storage area.

Response 3: Agreed. The word "former" has been added to the text.

Comment 4: Page 5, Additional Information on SEAD-25 and SEAD-26 Human Health Risk Assessment: The statement "the decision to perform a remedial action will be based upon the intended land use scenario" should be removed from the text. The decision to perform a remedial action should be based upon a remedial investigation/feasibility study that includes a detailed analysis of remedial alternatives, not simply on the basis of the intended land use scenario.

Response: This comment does not apply to the SEAD-16 and 17 PRAP, but the SEAD-25 and 26 PRAP. The referenced statement is not found in the SEAD-16 and 17 PRAP.

Comment 5: Page 7, Remedial Action Objectives: The statement that "the selection of lead as a cleanup goal is a result of discussion between the Army, USEPA, and NYSDEC," is inappropriate, incorrect and should be removed from the text. Please refer to the general comments section of the NYSDEC's February 21, 2001 letter which states that "the FS does not clearly demonstrate if or how using a cleanup goal for lead will affect the other contaminants. The level of contaminants to be remediated or left untreated onsite should be evaluated and discussed for each alternative to provide a better perspective during the comparative analysis for each cleanup goal. Without such a discussion

it is difficult to support the Army's conclusion that the remedies evaluated are protective of human health."

Response 5: Acknowledged. The phrase has been removed from the text.

Lead was used as the indicator compound for determining the volume of soil to be remediated because lead was the most widespread metal of concern in soil. Four levels of protection for lead have been considered. These levels include 1250 mg/kg, 1000 mg/kg, 400 mg/kg, and 400 mg/kg + TAGM. In addition to lead, cleanup goals were calculated for antimony, copper, mercury thallium, and zinc for the industrial and residential scenarios. These cleanup goals were included in the four clean-up scenarios.

Results of the calculation indicate that metal concentrations of 18 mg/kg, 359 mg/kg, 539 mg/kg, 2.69 mg/kg, and 3.59 mg/kg for antimony, copper, zinc, mercury, and thallium, respectively, will not pose unacceptable risks for the future industrial use scenario. Therefore, the areas of soil to be remediated for lead cleanup concentrations of 1,250 and 1,000 mg/kg also include areas with concentrations exceeding the above-mentioned levels for the future industrial use scenario.

Results of the calculation indicate that metal concentrations of 12.8 mg/kg, 256 mg/kg, 385 mg/kg, 1.92 mg/kg, and 2.56 mg/kg for antimony, copper, zinc, mercury, and thallium, respectively, will not pose unacceptable risks for the future residential use scenario. Therefore, the areas of soil to be remediated for a lead cleanup concentration of 400 mg/kg also include areas with concentrations exceeding the above-mentioned levels for the future residential use scenario.

A discussion on residual contamination has been added to the text under the *Long-Term Effectiveness and Permanence* section under Evaluation of Alternatives. The goal of the remedial action is to have no residual contamination in soils above the clean up goals developed for the future industrial use scenario (lead concentration of 1250 mg/kg). The limits of excavation were established with the aim of achieving this objective. A table has been added to the PRAP presenting the clean up goals for soil for the future industrial use scenario.

After remediation is completed at SEAD-16, the maximum concentrations of antimony, copper, lead, mercury, and thallium, are expected to be below the calculated concentrations determined to be protective of human health under an industrial scenario. Although the maximum concentration of zinc exceeds the clean up goal, the EPC for zinc is below the clean up goal.

After remediation is completed at SEAD-17, the maximum concentrations of lead and the five metals, antimony, copper, mercury, thallium, and zinc, are expected to be below the calculated concentrations determined to be protective of human health under an industrial scenario.

Comment 6: Page 8, Soil with Lead Concentration Exceeding 1250 mg/kg: It states that the cleanup goal of 1250 mg/kg of lead "is likely to be result in residual levels of lead at the site that are protective of all receptors in a residential scenario." However, other metals "such as arsenic and cadmium, exceeded the EPCs outside the proposed lead cleanup areas." The draft needs to clarify that lead is not the only contaminant of concern at this site and discuss the post-remedial action levels remaining on-site of other contaminants under various alternatives.

Response 6: As stated in the response to Comment 5, lead was used as the indicator compound for determining the volume of soil to be remediated because lead was the most widespread metal of concern in the soil. However, cleanup goals were also calculated for antimony, copper, mercury, thallium, and zinc. The areas of remediation were established based on the values derived for the future industrial use scenario. This information was already provided in the section titled *Remedial Action Objectives*. A sentence has been added to that section stating that cleanup goals were also derived for the five metals.

The goal of each remedial action alternative is to have no residual contamination in soils above the clean up goals developed for the future industrial use scenario. As presented in the response to Comment 5, the cleanup goal is 1250 mg/kg for lead and the cleanup goal is 18 mg/kg, 359 mg/kg, 539 mg/kg, 2.69 mg/kg, and 3.59 mg/kg for antimony, copper, zinc, mercury, and thallium, respectively. The text of the PRAP states that the alternatives were developed based on the proposed cleanup level of 1250 mg/kg for lead.

Tables A-1 and **A-2,** which present the post-remediation EPCs and maximum concentrations of antimony, copper, mercury, thallium, and zinc at each site, will be added to the PRAP as Tables 7 and 8. After the remediation is complete, the EPC values of these metals are expected to be below the calculated concentrations determined to be protective of human health under an industrial scenario. The post-remedial EPCs for arsenic and cadmium were also calculated for SEAD-17. The EPC for arsenic is less than the TAGM and the EPC for cadmium slightly exceeds the TAGM value.

After remediation is completed at SEAD-16, the maximum concentrations of antimony, copper, lead, mercury, and thallium, are expected to be below the calculated concentrations determined to be protective of human health under an industrial scenario. Although the maximum concentration of zinc exceeds the clean up goal, the EPC for zinc is less than the clean up goal.

After remediation is completed at SEAD-17, the maximum concentrations of lead and the five metals, antimony, copper, mercury, thallium, and zinc, are expected to be less than the calculated concentrations determined to be protective of human health under an industrial scenario.

After remediation at SEAD-16, the only expected exceedance of TAGMs for arsenic or cadmium is one hit of arsenic at a concentration of 9.9 mg/kg, which only slightly the TAGM value of 8.2 mg/kg.

The post-remedial concentrations of arsenic and cadmium were considered at SEAD-17. After remediation, only one detection of arsenic, 8.9 mg/kg, slightly exceeds the TAGM value of 8.2 mg/kg. For cadmium, there are expected to be eight exceedences of the TAGM, but seven of these detections are less than twice of the TAGM value. The maximum concentration of cadmium is expected to be 5.6 mg/kg. However, the post-remediation EPC for cadmium is expected to be 2.45 mg/kg, which only slightly exceeds the TAGM value.

The information discussed above has been added to the text in the *Long-Term Effectiveness and Permanence* section under *Evaluation of Alternatives*. It should be noted that only the intended future land use, industrial use, will be considered in the PRAP; consequently, discussion of analysis relating to a residential scenario has been removed from the document.

Comment 7: Page 8, with Lead Concentration Exceeding 1250 mg/kg: The statement "and the future land use of the site is intended to be industrial, therefore, in general, the proposed soil cleanup goal of 1250 mg/kg will be protective of the environment," needs to be clarified. Is it the Army's contention that the soil cleanup objective is protective of the environment in an industrial setting only? Also, on page 2-12 of the FS it states that "a post remediation ecological risk assessment will be conducted to ensure the remediation plan is protective of the environment." However, the Proposed Plan does not address this.

Response 7: It is the Army's intent to clean up soil to be protective of the environment in an industrial setting. After completion of the remedial action at both sites, a Completion Report that will demonstrate that the remedial action is protective of human health and the environment, will be submitted. A post remediation ecological risk assessment will not be conducted. A statement that describes the submittal of a Completion Report has been added to the referenced paragraph.

Comment 8: Page 8, Soil with Lead Concentration Exceeding 400 mg/kg: The draft states that to comply with NYS regulations to "restore the site to pre-disposal conditions, to the extent feasible and authorized by law" the Army calculated the "costs associated with the remediation of lead to pre-disposal (or residential) conditions." As stated by the NYSDEC numerous times over the years, at least one unrestricted use alternative should be brought forth into the detailed analysis of alternatives. A simple cost comparison is not sufficient to present a full comparison of the advantages and disadvantages of a range of alternatives, from unrestricted use to a restricted use scenario that requires institutional controls and long-term monitoring.

The statement that "the decision to accept the residential use scenario clean-up goal would be considered if the cost comparison showed that the cost to achieve lower cleanup level was affordable, in the opinion of the Department of Defense" is not satisfactory.

Response 8: Acknowledged. The evaluation of unrestricted land use under Alternative 4, Off-Site Disposal, will be evaluated against the nine criteria and will be submitted as Appendix A to the PRAP. For unrestricted land use, lead concentrations of 400 mg/kg + TAGM will be the cleanup goals. The 400 mg/kg level of lead in soil is the EPA recommended level for residential use.

Comment 9: Page 9, Alternative 2- On-site Containment: It states that "regrading of the site and installation of institutional controls... will be required" for Alternative 2, however there is no mention of institutional controls in the detailed analysis of alternatives. See General Comments above. The draft also states "(T)his alternative may also limit the future land use." Does this imply that the land use will have to be restricted? The Proposed Plan should clarify this.

Response 9: As stated above, a discussion of institutional controls has been added to the description of the remedial alternatives. The PRAP considers clean up for the future industrial use scenario, which will necessitate the imposition of a land use restriction.

Comment 10: Page 12, Alternative 2: On-site Containment: The draft states that "Alternative 2 will leave contaminated soil in place" and "it may restrict future use of the land," however there is no discussion of institutional controls. The Proposed Plan needs to be clear on whether the site will need to be restricted or not. See General Comments and Specific Comment #10 above.

Response 10: As stated in the response to the General Comment, the use of institutional controls including access control, land use restrictions, and the restriction of groundwater use, has been added to the section titled *Summary of Remedial Alternatives*. The report considers clean up for industrial use and makes reference to the future use of the property being industrial, which, by definition, will necessitate the imposition of a land use restriction. Institutional controls will be part of the overall remedial strategy to restrict exposure to those activities involving industrial use. Upon land transfer, language will be included in the deed that would require the continued use and maintenance of the land use controls.

Comment 11: Page 13, Alternative 4: Off-site Disposal: The statement that "the remediation areas have already been initially delineated" needs to be clarified. As stated in the NYSDEC's February 21, 2001 letter to the Army concerning the FS, it is our opinion that "the estimate of quantities to be remediated cannot justifiably be made when the remediation limit is largely undefined." The Army's July 31, 2001 response to comments stated that "(A)dditional sampling has been planned as part of a

pre-design sampling program to further delineate the areas." The Army needs to add language to the Proposed Plan explaining the extent and purpose of this pre-design sampling.

Response 11: Agreed. An additional sampling program will be conducted as part of a pre-design sampling program to define the perimeter of the area of excavation. This sampling program has been added to the bulleted items in the *Preferred Alternative* section.

Comment 12: Page 16. Compliance With ARARs: The draft states that "exceedance of ARARs will not be expected in the future, even without any action, according to modeling results presented in FS." However, there is no discussion or presentation in the FS regarding modeling results and future groundwater conditions.

Response 12: Agreed. The text has been revised to indicate that the Fate and Transport model, which was originally run for the RI Report, was rerun for the FS Report. A discussion of the model and the results are presented in Section 1.4 (Fate and Transport) of the FS Report. The fate and transport model consisted of a conceptual site model, water balance calculation, and the VLEACH model. A detailed discussion of the numerical models and their applications and assumptions is presented in the RI Report.

The fate and transport model was rerun for the FS Report using site specific information. The results suggested that the metals in the on-site soil tend to strongly bind to soil instead of partitioning into the water. For SEAD-16, the results of the model indicate that groundwater concentrations of copper, arsenic, mercury, and cadmium will not increase or exceed the respective groundwater standard in 100,000 years.

For SEAD-17, the results of the model indicate that groundwater concentrations of lead, copper, antimony, zinc, silver, and cadmium will not exceed the respective groundwater standard for 100,000 years.

Comment 13: Page 18. State Acceptance: After the phrase "State comments received on" please insert the following: "the RI report, FS report and."

Response: Agreed. The text has been revised.

TABLE A-1
SEAD-16 RESIDUAL CONTAMINATION
Proposed Remedial Action Plan for SEAD-16/17
Seneca Army Depot

	Max Concentration to be Protective of Human Health [1] (mg/kg)	EPCs [2] (mg/kg)	Max Hit (mg/kg)	TAGM 4046 (mg/kg)
	Industrial Use Day Care Child	Post Remediation	Post Remediation	
Antimony	18.0	4.78	17.1	5.9
Copper	359	69.8	204	33
Mercury	2.69	0.350	1.2	0.1
Thallium	3.59	0.920	1.8	0.7
Zinc	539	133	1270	110

Notes:

1. The maximum concentrations to be protective of human health under an industrial use scenario were calculated in Table 2-3 in the Final FS, February 2001.
2. The EPC values were determined by selecting the lower value of either the max concentration or the calculated 95% UCL of the mean for the surface soil samples that were not located in the area included in the proposed remedial action.

TABLE A-2
SEAD-17 RESIDUAL CONTAMINATION
Proposed Remedial Action Plan for SEAD-16/17
Seneca Army Depot

	Max Concentration to be Protective of Human Health [1] (mg/kg)	EPCs [2] (mg/kg)	Max Hit (mg/kg)	TAGM 4046 (mg/kg)
	Industrial Use Day Care Child	Post Remediation	Post Remediation	
Antimony	18.0	5.00	5.0	5.9
Arsenic	NA	5.90	8.9	8.2
Cadmium	NA	2.5	5.6	2.3
Copper	359	83.4	182	33
Mercury	2.69	0.150	1.00	0.1
Thallium	3.59	0.686	1.50	0.7
Zinc	539	230	488	110

Notes:

1. The maximum concentrations to be protective of human health under an industrial use scenario were calculated in Table 2-3 in the Final FS, February 2001.
2. The EPC values were determined by selecting the lower value of either the max concentration or the calculated 95% UCL of the mean for the surface soil samples that were not located in the area included in the proposed remedial action.

NA - Not Applicable: values were not determined for this constituent.

Response to Comments From United States Environmental Protection Agency

Subject: Draft Proposed Remedial Action Plan (PRAP) for SEAD-16 and 17
Seneca Army Depot
Romulus, New York

Comments Dated: March 7, 2002

Date of Comment Response: May 14, 2002

General Comments:

Comment 1: Page 1: Purpose of Proposed Plan, 1st Column, ¶1
Clarify the meaning of the word "Active" within the name of SEAD-17 in light of the closure status of Seneca, which is not an active facility anymore. Also, clarify the role of the Corps versus the Army (i.e., who is responsible to sign and implement the Record of Decision [ROD]).

Response 1: Agreed. A discussion has been added to the Site Background section on page 2 stating that the SEAD-17 furnace has been inactive since 1989 due to RCRA permitting issues. The existing deactivation furnace at SEAD-17 had been in the process of being permitted as a hazardous waste incinerator, under the provisions of RCRA, but the RCRA permit was withdrawn by the Army when the Depot was listed for base closure in 1995.

The Army is responsible for signing and implementing the Record of Decision. Reference to the U.S.Army Corps of Engineers (USACOE) has been removed from the document.

Comment 2: Page 1: Purpose of Proposed Plan, 2nd Column, Last ¶
Please provide an electronic mail address to receive comments via the internet.

Response 2: Disagree. The Army requests that all comments be formally submitted to the Army in writing.

Comment 3: Page 2: Site Background, 1st Column, ¶2 & 3
Provide a describe how each of these two sites were used (i.e., what kind of deactivation occurred, processes, etc.).

Response 3: Agreed. Text has been added describing the process of deactivation of small arms munitions at the sites.

Comment 4: Page 2: Site Background, 1st Column, ¶4
NPL means National Priorities List, not National Priority List as usually spelled out by the Army.

Response 4: Agreed. The text has been revised.

Comment 5: Remedial Investigation Summary, 2nd Column
Please provide the State's approval date for the Final Closure Report for the Underground Storage Tanks Removal of 1994. In addition, please indicate if the four referenced documents are available to the public as part of the Site's Administrative Record.

Response 5: The tanks were unregistered. During the removal of the tanks, there was no evidence of leaks. The report was not submitted to NYSDEC.

The four referenced documents are available to the public and are located at the Seneca Army Depot Activity. This information has been added to the first paragraph of the referenced section.

Comment 6: Page 3: Groundwater for SEAD-16
This section indicate that the source of inorganics exceedances is not likely to be SEAD-16. However, nothing is said of what is being done to determine any other possible sources or to determine if it is due to natural occurrence.

Response: Agreed. The text is misleading. The concentrations of aluminum, manganese, iron, and sodium in the site groundwater are similar to concentrations found in groundwater from background locations and are most likely naturally occurring. The sentence has been reworded to the following: "The site mean concentrations for aluminum, manganese, iron, and sodium are not statistically different from their background concentrations."

Comment 7: Page 3 & 4: SEAD-16 & 17
Please provide concentration values, ranges and maximums, for all the investigated media.

Response: Agreed. Tables have been added to the report.

Comment 8: Page 4: SEAD-17, Groundwater
This section only list MCLs as the criteria for contaminants evaluation in this media. Please include NYSDEC AWQS Class GA criteria and its respective evaluation.

Response: Agreed. The text has been revised.

Comment 9: Page 5 & 6: Summary of Site Risk, Human Health Risk Assessment

The reviewer found no discussion of the future land reuse expected for these sites. Is there any potential for future residential redevelopment? Furthermore, if future land use was only evaluated for industrial scenario, Institutional Controls (ICs) and 5-Year Reviews are required.

Response: Agreed. Text has been added to the section titled *Remedial Action Objectives* designating the future land use as industrial. A discussion of Institutional Controls has been added to the section titled *Summary of Remedial Alternatives*. A discussion of the 5-Year Review has been added to the *Preferred Alternative* section.

Comment 10: Page 7: Remedial Action Objectives, 2nd Column, ¶1
Remedial action objectives need further discussion, especially the groundwater component seems to have been omitted from the document.

Response: Agreed. A discussion of the remedial action objectives for groundwater, soil in the ditches, and building debris has been added to the PRAP.

Groundwater is not considered to be a media of concern because the results of the risk assessment showed no risk to future receptors. In addition, four of the metals that were detected at concentrations exceeding the groundwater criteria were also detected in background groundwater samples.

Comment 11: Page 7: Remedial Action Objectives, 2nd Column, last ¶
The word "residential" should be stricken out of this sentence.

Response : Agreed. The wording is incorrect. However, this sentence as well as related text discussing residual risk for the future residential use scenario have been removed from the document.

Comment 12: Page 8: 1st Column, ¶2, 2nd sentence
There seems to be confusion between exposure scenarios and receptor groups. Please clarify which scenario and receptor group were used to estimate the levels of inorganics proposed to be removed.

Response 12: Acknowledged. Two sets of maximum metals concentrations were calculated. One set was for the future industrial use scenario with the daycare child as the receptor. The second set was for the residential scenario using the child as the receptor. The discussion of the residential use scenario has been removed from the referenced paragraph, which describes the calculated clean up goals for the industrial scenario.

Comment 13: Page 8: 1st Column, ¶3, 2nd sentence

NYSDEC TAGM values are human health-based values, unsuitable to assess environmental conditions for ecological purposes. Please provide accepted ecological-based criteria as presented in the FS.

Response 13: Agreed. The paragraph has been revised to state that site background concentrations were also used to calculate ecological hazard quotients.

Comment 14: Page 9: Summary of Remedial Alternatives, 1st Column, after ¶1
Discussion of groundwater impact and remediation (i.e., treatment, monitoring. restrictions, etc.) are lacking throughout the entire document, specially under this section and the Evaluation of Alternatives section. In additional, institutional controls (ICs) and 5-year reviews are required for each of the alternatives presented within this document.

Clarify the type of treatment meant by "off-site treatment" throughout this section.

Response 14: Acknowledged. A discussion on the remedial action objective for groundwater has been added to the section titled *Remedial Action Objectives*. Groundwater is not considered to be a media of concern because the results of the risk assessment showed no risk to future receptors. In addition, four of the metals that were detected at concentrations exceeding the groundwater criteria were also detected in the background groundwater samples. The groundwater will be monitored on a semi-annual basis at both sites and institutional controls may be used to restrict usage of groundwater for drinking.

As stated in the Response to Comment 9, a discussion on institutional controls has been added to the PRAP. A discussion of the 5-year review requirement has been added to the *Preferred Alternative* section.

Off-site treatment may include soil stabilization, which involves mixing an additive such as cement, quick lime, flyash, pozzolans, or a proprietary agent with the soil. This information has been added to the text.

Comment 15: Figure 3
The copy submitted is not readable.

Response: The figure has been revised to be more readable.

Response to Comments From U.S. Army Corps of Engineers

Subject: Draft Proposed Remedial Action Plan (PRAP) for SEAD-16 and 17
Seneca Army Depot
Romulus, New York

Comments Dated: December 26, 2001

Date of Comment Response: April 7, 2002

Comments from Jim Peterson, Cost Engineering:

Comment 1: Please identify source of applicable cost information. Cost back up should be furnished in order to perform a review.

Response 1: The cost back up is provided in the Final Feasibility Study Report for SEAD-16 and 17 (Revised July 2001). A footnote has been added to Table 3, Detail Cost Estimates.

Comments from Sandy Frye, Compliance:

Comment 1: ARAR Issues ? The brief discussion on Compliance with ARARs on page 16 needs to be more specific. For example, stating the CWA is an ARAR is far too broad of a statement to make regarding ARARs for this project. The CWA covers a myriad of areas of compliance. In this document, the specific requirements of the CWA the contractor/Corps feels are germane need to listed. Are CWA requirements regulating storm water discharge at construction sites exceeding 1 acre in size the actual ARARs? Are substantive portions of the CWA pertaining to point source discharges applicable or relevant and appropriate? Or, is the contractor referring to AWQC standards? Past experience has shown that poorly identified ARARs in the ROD can come back to haunt a facility in the future. It is strongly recommended that the specific sections of the CWA the contractor feels are ARARs should be identified and any numeric standards listed. If this identification cannot be done, then perhaps the CWA is not an ARAR after all. ARARs should have been specifically identified in the FS. If not, it is unclear how the alternatives could have been adequately evaluated and a remedial action recommendation made. The ARAR evaluation required for the FS should be presented here in the Proposed Plan.

EPCRA is not an ARAR for this project. EPCRA contains no substantive requirements that would apply to any of the hazardous substances found on the site. It is an entirely administrative regulation and has no requirements that would be applicable or relevant and appropriate for this project. It should be deleted as an ARAR. [Note: EPCRA is not legally enforceable at any Federal facility. Compliance with EPCRA at Federal facilities is mandated by EO 13148 and not law. Because it is

not a legally enforceable standard, it does not meet the definition of an ARAR and should not be listed as such.]

NEPA is not an ARAR. CERCLA constitutes the functional equivalent of NEPA and therefore NEPA is not required at sites undergoing CERCLA response actions. DoD Instruction 4715.9, Enclosure 2, paragraph E.1.1.5 specifically states that the procedural requirements for preparation of documentation to meet the statutory requirements for remediation and/or restoration projects undertaken under CERCLA are substantially the same as prescribed under NEPA. It also states that components are not required to prepare separate NEPA documents for CERCLA actions. NEPA should be deleted as an ARAR.

Response 1: A revised list of ARARs has been added to the PRAP as Appendix A. The revised list refers to Section 404 of the Clean Water Act (CWA) as a Potential Federal Location-Specific ARAR. In addition, the NPDES Permitting Requirements for Discharge of Treatment System Effluent; Effluent Guidelines for Organic Chemicals, Plastics, and Synthetic Fibers; and Discharge to POTW are referenced as sections of the CWA that are Potential Federal Action-Specific ARARs. The EPCRA has been removed from the ARAR list.

Comment 2: Page 6 of the Proposed Plan indicates that there was no unacceptable risk posed at SEAD 17 except to a future child care center child. As this is NOT a reasonably foreseeable use for SEAD 17, it is totally unclear as to why valuable and increasingly rare DOD restoration dollars would be spent to remediate the site. In order to avoid giving the appearance of ?we don?t know what we are doing? it would be prudent to include the real driving force behind the decision to remediate the site. If political pressure is being applied or EPA and/or the State will not accept any other alternative, it should be stated clearly in the document. This will ensure that this information will be available for any future evaluations/assessments that might be done at the site regarding the logic used in the selection of the remedy.

Response 2: Evaluation of the day care child in the human health risk assessment was requested by the EPA based on the fact that other day care centers had been present at SEDA. The human health risk assessment indicates that indoor dust, soil, and groundwater at SEAD-16 present a risk to the future industrial worker, future day care child, and future day care center worker. In addition, the human health risk assessment indicates that ingestion of on-site soil presents a risk to the future day care child at SEAD-17.

Maximum soil concentrations of antimony, copper, mercury, thallium, and zinc were calculated for the two most conservative receptors, a day care child in an industrial scenario and a residential child.

For the future industrial use scenario, most locations with concentrations of metals exceeding the calculated clean up goals are co-located with the areas having lead exceedances of 1250 mg/kg.

The Army proposed a cleanup level for lead of 1250 mg/kg, which was derived from an EPA publication that suggested a range of lead cleanup levels (750 ppm to 1750 ppm) which may result in an acceptable residual risk under an industrial scenario. This concentration is protective of receptors in an industrial future use scenario, but not for a day care center child. Although a day care scenario was evaluated in the human health risk assessment, it is not the Army's intent to use the property for a day care center. Deed restrictions will be placed on both sites restricting day care centers.

Comments from Laura L. Tate, Chemical Engineer:

Comment 1: EPA 540-F-98-054 Presumptive Remedy for Metals-in-Soil Sites
"The presumptive remedy for principal threat metals-in-soil waste that is targeted for treatment is: Reclamation/Recovery (when feasible) –
....Immobilization - ....

The presumptive remedy for low-level threat metals-in-soil waste that is not targeted for treatment is: Containment - ..." Neither containment nor immobilization was adequately considered in this FS/PP.

Response 1: Alternative 2 is the on-site containment alternative. Alternative 4, Off-Site Disposal, includes stabilization of soils with metal concentrations exceeding the TCLP criteria. Both alternatives underwent detailed analysis with respect to overall protection of human health and the environment; ARAR compliance; long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. Refer to the Final Feasibility Study Report for details of the analysis and description of alternatives.

Comment 2: Evaluation of excavation and off-site disposal vs the presumptive remedies is contained in the appendices to the aforementioned document. Soil washing is ranked sufficiently above off-site disposal to justify a more detailed comparison.

Response 2: Soil washing was one of the alternatives that underwent detailed analysis, however, because soil washing was determined to be the most expensive option, it was not selected as the preferred option.