451-15

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233 -7010

Thomas C. Jorling
Commissioner

FEB 2 1 1991

Rec'd 25 Feb 91

Mr. Randall Battaglia
Environmental Coordinator
Department of the Army
Seneca Army Depot
Romulus, NY 14541

Dear Mr. Battaglia:

Re: Seneca Army Depot Site NY ID No. 850006
RI/FS Scoping Document for Open Burning/
Open Detonation Grounds (OB/OD)

The New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) have reviewed the above document and provide the following comments:

1. The entire report has identified explosives with their acronyms or abbreviations. It would be easier for the readers if these compounds are included in the list of acronyms and abbreviations and their complete chemical names be given.

2. Table 3. For explosives, detection limits are not available (NA), however it is observed that 46 samples are listed as exceeding detection limits. This apparent anomaly should be explained.

3. Tables 3 thru 5. These tables use ND in their notation yet ND is undefined. Presumably it means not detected, however, it should be defined especially in light of the anomaly above. BDL is defined as below detection limit. Are BDL and ND the same?

4. Section 3.1.3.1 - The Groundwater Summary and Conclusions: This summary should acknowledge the limitations of the prior studies. These include the following:

   a) The previous groundwater investigation was based on wells screened exclusively in the shallow glacial till layer. It is possible that the contaminants may have migrated over time through the till and may exist in the weathered shale layer.

   b) The RI/FS needs to identify what chemicals are formed when explosives 2,4,6-trinitrotoluene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, tetryl, RDX, AMX are discharged. The products formed from the discharge of these explosives need to be included in the list of analytes proposed for the RI/FS study. The full Target Compound List (TCL) and Target Analyte List (TAL)(metals) should be considered for use.

5. Section 3.1.3.2, paragraph 5 states "In summary, a substantial sampling and analysis effort has been undertaken by the U.S. Army over the last several years. Although environmentally present, both the concentration and number of samples which detected exposives and heavy metals have failed to indicate that a substantial environmental problem exists at the site."

This statement appears inappropriate as the potential for contamination with explosives and/or metals has been demonstrated at Pads F, B, and H. No data is available for soils beneath Pads A, C, D, E, G or J (refer to previous paragraph). No analysis for explosive degradation products has been conducted.

It appears that additional analysis of surface/subsurface soils and of the berms associated with the pads for a broader range of parameters including: Target Analyte List (TAL)(metals), and full TCL, is required before conclusions regarding the existence of contamination at these pads can be made.

6. The RI/FS needs to expand upon Section 3.2.4 of the scope of work to demonstrate that ingestion of groundwater is not a route of human exposure of concern at this site. Groundwater samples collected from on-site monitoring wells contained levels of contaminants above NYSDOH Part 5-1 drinking water standards. The RI/FS needs to address the potential impact of the contaminated groundwater on residential wells in the vicinity of the OB areas.

7. This document has very little information on how natural ecosystems on or off site will be evaluated. A Habitat Based Assessment should be performed (a copy enclosed). Initially, only Steps I and III should be performed. After Steps I and III are performed and evaluated, a recommendation should be made whether it is appropriate to complete Steps II and IV. Though the document recommends (P3-4) fish tissue sampling to evaluate the possible exposure due to ingestion of contaminated fish, this seems premature since it is not known whether fish habitats have been contaminated. The decision to do fish tissue sampling should be reserved until Steps I and III have been completed.

8. To help assess the potential for fish and wildlife exposure due to the migration of contaminants off site through Reeder Creek, sediment samples from Reeder Creek and its collection streams will need to be collected. The sediment sampling is needed since many of the contaminants of concern at this site have low solubility and high bioaccumulation factors. This sampling is in addition to the proposed surface water samples.

9. Habitats that can be anticipated to have contaminated sediments will need to be evaluated for their potential or actual impacts on natural resources. The procedures in the document "Sediment Criteria - December 1989" should be utilized for this evaluation. A copy is enclosed.

10. To interpret the significance of chemical analyses of water and sediments on fish and wildlife resources, it will be necessary to have hardness and total organic data respectively.

11. The evaluations required to determine impacts on natural resources should be performed by an individual(s) experienced to do so.

12. The RI/FS must include a section for the protection of the community. This section is intended to ensure that there is no release of harmful levels of contaminants to the community as a result of on-site field activities. Whenever field activities occur at the site, there must be continuous real-time monitoring conducted for volatile organic compounds (VOCs) and particulates at the downwind site perimeter. If the level of VOCs at the downwind site perimeter exceeds 5 ppm above background levels measured upwind from the work area, then all activities must be stopped and corrective measures implemented to control the source of the release. If the level of airborne particulates at the downwind site perimeter exceeds the action level of 150 $\mu g/m^3$ that is established in the New York State Department of Environmental Conservation Technical and Administrative Guidance Memorandum entitled "Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites", then all work activities must be stopped and corrective measures implemented to control the release of the airborne particulates. Particulate monitoring is especially important since surficial soils have been shown to contain elevated levels of metals.

13. P3-18. Section 3.4.2.1 discusses potential ARARs. The following should also be added as potential ARARs.

- The standards and guidance values contained in NYSDEC DOW TOGS 1.1.1 (9/90) must be included as ARARs. Tables and references to water quality criteria should be corrected accordingly (many corrections are necessary).

- Article 1 ECL Declaration of Policy
- Article 3 ECL Department of Environmental Conservation; General Functions, Powers, Duties and Jurisdiction
- Article 15 Title 5 ECL Protection of Water
- 6 NYCRR Part 701 Classifications and Standards of Quality and Purity
- 6 NYCRR Part 608 Use and Protection of Waters

14. P3-18. Section 3.4.2.2 discusses potential items to be considered (TBCs). The following 2 items should be listed as TBCs.

- Habitat Based Assessment
- Sediment Criteria - December 1989

If you have any questions, please give me a call at (518) 457-3976.

Sincerely,

Kamal Gupta

Kamal Gupta
Federal Projects Section
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation

cc: G. Kittal, SEAD
M. Martinez, USEPA, Region II
R. Tramontano, NYSDOH, Albany

DRAFT

TO: Regional Hazardous Waste Engineers, Bureau Directors, Section Heads and Regional Supervisors of Natural Resources

FROM: Michael J. O'Toole, Jr., Director, Division of Hazardous Wase Remediation and Kenneth Wich, Director, Division of Fish and Wildlife

SUBJECT: DIVISION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM (TAGM): HABITAT BASED ASSESSMENT, GUIDANCE DOCUMENT FOR CONDUCTING ENVIRONMENTAL RISK ASSESSMENTS AT HAZARDOUS WASTE SITES

DATE: December 28, 1989

Background- State and Federal laws and regulations establish the basis for the evaluation of the threat to human health and environment from inactive hazardous waste sites. The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), was established to ensure that threats to public health, welfare, or the environment would be appropriately evaluated. In order that remediation of sites would meet the requirements of sections 121(b)(1) and (d) of CERCLA, the EPA developed several guidance documents: Guidance on Remedial Investigations Under CERCLA, Superfund Public Health Evaluation Manual, Guidance on Feasibility Studies Under CERCLA and most recently, Risk Assessment Guidance For Superfund--Environmental Evaluation Manual and the Human Health Evaluation Manual.

The New York State Environmental Conservation Law Article 27 Section 1313 establishes Department responsibilities for the identification and remediation of inactive hazardous waste sites for the protection of human health and environment. The remediation process is an interdivisional review process established to insure that the potential threat of releases from hazardous waste sites are identified. The Division of Fish and Wildlife is responsible for the evaluation of threat to fish and wildlife populations within this process. In order to adequately predict and identify site specific risks, the Division in association with the Division of Hazardous Waste Remediation has established the following guidance document based upon the above noted EPA guidance.

Please review this proposed TAGM and provide comments no later than Janurary 26, 1989 to Jack Cooper c/o Bureau of Environmental Protection, Division of Fish and Wildlife, 50 Wolf Road, Albany, New York 12233, area code (518)457-1769.

Introduction- This Habitat Based Assessment(HBA) provides guidance for the characterization of the fish and wildlife values and threats at hazardous waste sites being

considered for remediation. This evaluation involves a stepwise approach: 1)description of the existing environment with respect to fish and wildlife species and habitats, 2)identification of existing hazards to fish and wildlife,
3)analysis of potential risk to fish and wildlife, 4)the evaluation of proposed remedial measures and 5)development of a monitoring plan.

Objectives of the Habitat Based Assessment-

1. Provide a proper characterization of the existing ecological values of the site and the identification of habitats which may be located within the pathways of contamination
2. Identify the types of fish and wildlife receptors that would utilize these habitats
3. Evaluate the potential acute, chronic or bioaccumulation affects expected from site contaminants
4. Identify areas where further sampling is needed; ie, bioassay or tissue sampling
5. Evaluate proposed remedial alternatives to determine the extent of protection afforded the environment

Step I

"A Description of the Existing Environment"

A. Site description-the Remedial Investigation/Feasibility Study (RI/FS) report should include a description of the existing ecology of the site and the adjacent off-site areas which could be affected by contaminants. The RI/FS should describe the natural resources associated with the site in terms of the vegetative covertypes and their associated fish and wildlife populations(within 0.5 mile radius). Include Significant habitats, wetlands, regulated streams, lakes, other resources of significance within a minimum 2 mile radius and downstream of the site a minimum of 9 miles.

1. Covertype Map(within 0.5 mile radius of site)
-format: use NYS Natural Heritage covertypes,
-methods: aerial photos, groundlevel photos, USGS topo maps, soils maps, followed by ground truthing,
-include: major vegetative communities, wetlands, aquatic habitats, significant habitats (important spawning areas, rookeries), areas of special concern, etc., -verification: conduct limited field checking to verify covertype accuracy and vegetative species

DRAFT

2. Identification of Special Resources(within a 2 mile radius of site and within 9 miles downstream)
-regulated wetlands, streams, lakes, significant habitats, endangered species, wild and scenic rivers
-use file information from the Department of Environmental Conservation, USFWS, EPA, local bird clubs, colleges or other sources (SEE APPENDIX A)

3. Habitat description/value
-major vegetative communities, typical vegetative species, and general densities within terrestrial, wetland and aquatic habitats. Within aquatic habitats, the chemical and physical parameters should be discussed (water chemistry, temperature, DO, depth, substrate, flows, gradient, submergent vegetation, among others)

B. Resource Characterization-

1. Associate the fish and wildlife species that would utilize the habitats shown on the covertype map
-methods: contact with NYS Department of Environmental Conservation Central and Regional Offices, US Fish and Wildlife Service, local bird clubs, colleges, standard natural history references (SEE APPENDIX B)

2. Consider the general quality of the habitat in providing the needs of organisms
-methods: contact with NYS Department of Environmental Conservation Central and Regional Offices, US Fish and Wildlife Service, local bird clubs, colleges, standard natural history references
-collect chemical and physical water quality data such as pH, alkalinity, hardness, temperature, DO.
-when little background data is known about the site a reconnaissance survey will be necessary (can be conducted during the covertype verification).
(SEE APPENDIX A)

3. Consider existing stress caused by the hazardous waste site
-areas of stressed vegetation, leachate seeps, fish and wildlife mortality, known population impacts

C. Hazard Threshold Identification

1. Identify the fish and wildlife related Applicable or Relevant and Approprate Requirements (ARARs) and To Be Considereds (TBCs)
-Freshwater wetlands Act and implementing regulations (Article 24 ECL, 6NYCRR Part 663 and Part 664): a) describe how the remedial action

alternative meets the permit issuance standards included in Part 663, b) show all regulated wetlands on the site and downgradient of the site(within 2 mile radius minimum), c) include classification, d) include location on the covertype map (boundaries should be delineated by Regional Fish and Wildlife Staff)
-Tidal Wetlands Act (Chapter 10 of 6NYCRR Part 661)
-Regulated streams (Article 15 ECL, 6NYCRR Part 608): a) describe how the remedial action plan meets the permit issuance standards in Part 608, b) show location and classification of all streams on site and downgradient of site(within 5 miles downstream minimum), c) include aquatic resources (fisheries), d) show location on covertype map
-Navigable waterbodies (Article 15 ECL, 6NYCRR Part 608): same as above
-Coastal Zone Significant fish and wildlife habitats: show locations on covertype map
-Significant habitats as shown by Natural Heritage Program (show locations on covertype map)
-Wild, Scenic and Recreational Rivers Act
-Rare, endangered or threatened plant and animal species
-NYS Water Quality Standards/Guidance values (6NYCRR Part 701 and TOGS 1.1.1);application of the sediment criteria formula based upon AWQS/GV above should be used to establish "clean-up levels" for contaminated sediments
-Toxicity information from literature reviews(use where no standards or guidance values exist)

2. Exceedance of established limits or mandated standards established in regulations, or guidances (above) should "trigger" the need for more evaluation as indicated in Step II.

STEP II

"Hazard Identification"

If any phase of the RI/FS study indicates potential contaminant migration into the habitats identified in the "Step I HBA", and indicates that "hazard thresholds" are exceeded, then more involved studies must be conducted to determine if the contaminants pose a significant threat to the fish and wildlife receptors which utilize the habitat.

A. Specific objectives for additional studies:

1. determine the concentration of site contaminants found in the tissues of aquatic or terrestrial organisms on the site

DRAFT

2. determine the concentration of site contaminants found in vegetation which is consumed by fish and wildlife receptors
3. determine the toxicity (acute and chronic) of contaminants found on the site to fish and wildlife species utilizing the site (prey or predator species)
4. determine the effect of site contamination upon habitat suitability to species utilizing the site
5. determine the impact of site contamination upon the use or consumption of fish and wildlife by humans (recreational, commercial, aesthetic, etc.)

B. Investigative Approaches (SEE APPENDIX B)

1. Tissue sampling and analysis, bioaccumulation studies supported by chemical analysis of various media, hydrogeological modelling and environmental fate modelling, comparison with FDA advisories

2. In situ toxicity tests, laboratory toxicity tests using various on and off-site media, chemical analyses of various media compared with standards and criteria when available, documentation of past fish and wildlife mortality events, collection of specimens for histopathology studies

3. Collection of population density, diversity or species richness data and calculate biotic index for macroinvertebrates to determine impact of contaminants on long term fish and wildlife use of the site relative to control areas or expected occurrence

4. Characterization of expected or potential use that would be made of the fish and wildlife resources within the site and direct off-site areas; ie. trapping, hunting, fishing, birdwatching, commercial fishery, etc, determine how the site contamination has affected these uses

5. Literature search of existing contaminant specific toxicity data on the fish and wildlife species known or expected to inhabit the site

STEP III

"Impact Analysis"

A. Risk Assessment-this assessment should be conducted regardless of whether or not a Step II is completed.

Information outlined in Step I and/or Step II of the Habitat Based Assessment will be utilized to evaluate the potential risk that contaminants pose to the resident and migratory fish and wildlife receptors using the site. This assessment will allow the consultant/PRP and/or the reviewing agency to make quicker and more informed decisions on the potential threat to the environment.

The assessment of risk to fish and wildlife should include the following:
-Toxic affect; acute, chronic and subacute
- bioaccumulation of site contaminants
- population affects, reduction in diversity, numbers, long term population trends, vigor
- reduction in use of habitats
- reduction in recreational use of fish and wildlife
- threat to upper level consumers both human and other fish and wildlife

B. Mitigation-relates to the methods used to minimize, reduce or eliminate project related impacts or compensate for habitat destruction via the creation of new habitat of equal value.

1. Toxicity related
   - pump and treat, biotreatment, chemical or physical reactions
2. Habitat related
   - create new habitat of equal quality and quantity to compensate for lost or degraded habitat
   - improve existing habitat to increase carrying capacity
   - must be developed on a site specific basis
   - must comply with statutory mandates (ECL and regulations)

3. Construction related
   - involves siltation and erosion controls
   - temporary seeding
   - creating limited work zones
   - limiting construction to avoid critical times
   - applying site specific conditions on construction
   - other site specific protective conditions

C. Assess future risk to fish and wildlife
-with and without remediation include both direct and indirect impacts on fish and wildlife
-evaluate effectiveness of mitigation measures

DRAFT

-determine reduction in toxic effects, threat to upper level consumers or changes in: population densities, habitat use and recreational use
-assess construction related impacts

STEP IV
"Monitoring"

A. Develop monitoring plan with specific objectives
- determine long term effectiveness of remediation
- determine if contaminants are remaining at levels protective of fish and wildlife
- determine long term response of fish and wildlife species to clean-up
- effectiveness of mitigation features
- other site specific issues

B. Parameters which may be evaluated during monitoring
-tissue sampling
- water and sediment sampling
- population monitoring (long term trends)
- toxicity tests or biomonitoring

C. Establish "Red Flags" to alert to potential problems and establish a chain of command for handling the situation

ATTACHMENT
cc: N. Sullivan
D. Markell
A. DeBarbieri
C. Goddard
E. McCandless
R. Tramontano, DOH
A. Fossa
J. Kelleher
J. Colquhoun
M. Keenan
D. Ritter
Regional Directors
Regional Engineers
Regional Solid and Hazardous Waste Engineers
Regional Citizen Participation Specialists

DRAFT

APPENDIX A

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ENVIRONMENTAL RESOURCE INFORMATION SOURCES

A. SIGNIFICANT HABITATS PROGRAM AND NATURAL HERITAGE PROGRAM FILE INFORMATION:

STATEWIDE REQUESTS

Requests for data from the New York Natural Heritage Program and the Significant Habitat Program are now being consolidated. When requesting information from our files, please include a brief description of the proposed project and a photocopy of the appropriate topographic quadrangle(s) with the site or sites identified. All requests should be addressed as follows:

ATTN: Information Services
Significant Habitat Unit
NYS Dept. of Environmental Conservation
Wildlife Resources Center
Delmar, New York 12054-9767

REGIONAL REQUESTS

REGION 1 (Nassau, Suffolk Counties)

NYS Department of Environmental Conservation
Region 1
SUNY Campus, Building 40
Stony Brook, New York 11794

CONTACT PERSON: Mike Schieble

REGION 2 (New York City)

NYS Department of Environmental Conservation
Region 2
Hunters Point Plaza
47-40 21st Street
Long Island City, New York 11101

CONTACT PERSON: Joe Pane

REGION 3 (Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, and Westchester Counties)

NYS Department of Environmental Conservation
Region 3
21 South Putt Corners road
New Paltz, New York 12561

CONTACT PERSON: Bill Rudge

REGION 4 (Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady, and Schoharie Counties)

NYS Department of Environmental Conservation
Region 4
2176 Guilderland, Avenue
Schenectady, New York 12306

NYS Department of Environmental Conservation
Region 4
Route 10 - Jefferson Road
Stamford, New York 12167

CONTACT PEOPLE: Bill Sharrick - Schenectady
Nate Tripp - Stamford

REGION 5 (Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington Counties)

NYS Department of Environmental Conservation
Region 5
Route 86
Raybrook, New York 12977

NYS Department of Environmental Conservation
Region 5
Box 220
Hudson Street Extension
Warrensburg, New York 12885

CONTACT PEOPLE: Al Koechlein - Warrensburg
Ken Kogut - Ray Brock

DRAFT

REGION 6 (Herkimer, Jefferson, Lewis, Oneida, and St. Lawrence Counties)

NYS Department of Environmental Conservation
Region 6
State Office Building
Watertown, New York 13601

NYS Department of Environmental Conservation
Region 6
State Office Building
207 Genesee Street
Utica, New York 13503

CONTACT PEOPLE: Lee Chamberlaine - Watertown
John Page - Utica

REGION 7 (Broome, Cayuga, Chenango, Cortland, Madison, Onondaga, Oswego, Tioga and Tompkins Counties)

NYS Department of Environmental Conservation
Region 7
615 Erie Boulevard West
Syracuse, New York 13204-2004

NYS Department of Environmental Conservation
Region 7
P.O. Box 5170
Fisher Avenue
Cortland, New York 13045

CONTACT PEOPLE: Ray Nolan - Cortland
Joanne March - Syracuse

REGION 8 (Chemung, Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne, and Yates Counties)

NYS Department of Environmental Conservation
Region 8
6274 East Avon-Lima Road
Avon, New York 14414

CONTACT PERSON: Dave Woodruff

REGION 9 (Allegany, Chattaraugus, Erie, Niagara, Wyoming, and Chautauqua)

NYS Department of Environmental Conservation
Region 9
600 Delaware Avenue
Buffalo, New York 14202

NYS Department of Environmental Conservation
Region 9
128 South Street
Olean, New York 14760

CONTACT PEOPLE: Tom Jurczak - Olean
Mark Kandel - Buffalo

B. GENERAL FISH AND WILDLIFE INFORMATION REQUESTS

STATEWIDE REQUESTS

Division of Fish and Wildlife
Central Office
50 Wolf Road
Albany, New York 12233-4756

Delmar Wildlife Resource Center
Game Farm Road
Delmar, New York 12054

New York State
Department of Environmental Conservation
Habitat Inventory Unit
700-Troy Schenectady Road
Latham, New York 12110

REGIONAL INFORMATION REQUESTS

(Mailing Addresses Listed Above)

REGION 1

Supervisor of Natural Resources - Frank Panek
Wildlife Manager - Harry Knoch
Fisheries Manager - Frank Panek
Supervisor of Regulatory Affairs
(Wetlands and Stream Permit
Information) - Robert Greene

DRAFT

REGION 2

Supervisor of Natural Resources -	Joe Pane (Acting)
Supervisor of Regulatory Affairs (Wetlands and Stream Permit Information) -	Barbara Rinaldi

REGION 3

Supervisor of Natural Resources -	Bruce MacMillan
Wildlife Manager -	Glenn Cole
Fisheries Manager -	Wanye Elliot
Supervisor of Regulatory Affairs (Wetlands and Stream Permit Information) -	Ralph Manna

REGION 4

Supervisor of Natural Resources -	John Renkavinsky
Wildlife Manager -	Quentin VanNortwick
Fisheries Manager -	Russ Fieldhouse
Supervisor of Regulatory Affairs (Wetlands and Stream Permit Information) -	William Clarke

REGION 5

Supervisor of Natural Resources -	Terry Healey
Wildlife Manager -	Robert Inslerman
Fisheries Manager -	Larry Strait
Supervisor of Regulatory Affairs (Wetlands and Stream Permit Information) -	Richard Wild

REGION 6

Supervisor of Natural Resources -	Leigh Blake
Wildlife Manager -	Dennis Faulknham
Fisheries Manager -	Al Schiavone
Supervisor of Regulatory Affairs (Wetlands and Stream Permit Information) -	Randy Vaas

REGION 7

Supervisor of Natural Resources -	Bradley Griffin
Wildlife Manager -	John Proud
Fisheries Manager -	Cliff Creech
Supervisor of Regulatory Affairs (Wetlands and Stream Permit Information) -	Allan Coburn

REGION 8

Supervisor of Natural Resources - Edward Holmes
Wildlife Manager - Lawrence Myers
Fisheries Manager - Carl Widmer
Supervisor of Regulatory Affairs (Wetlands and Stream Permit Information) - Al Butkas

REGION 9

Supervisor of Natural Resources - Lawrence Nelson
Wildlife Manager - Terry Moore
Fisheries Manager - Steve Mooradian
Supervisor of Regulatory Affairs (Wetlands and Stream Permit Information) - Steven Doleski

C. REQUESTS FOR OBSERVED EFFECTS INFORMATION

Fish Kills, Associated Bioassays - NYSDEC Region 1 and 2:

Fish Manager - Region 1

Fish Kills, Associated Bioassays - NYSDEC Regions 3-6:

Environmental Disturbance Investigation Unit
New York State Department of Environmental Conservation
Hale Creek Field Station
7235 Steele Avenue Extension, R.D. #2
Gloversville, New York 12078

Fish Kills, Associated Bioassays - NYSDEC Regions 7, 8, and 9:

Environmental Disturbance Investigation Unit
New York State Department of Environmental Conservation
6274 East Avon-Lima Road
P.O. Box 57
Avon, New York 14414

Wildlife Mortality:

Wildlife Pathology Unit
New York State Department of Environmental Conservation
Wildlife Resource Center
Delmar, New York 12054

Contaminant Residues in Fish and Wildlife Tissues:

Toxic Substances Monitoring Program
New York State Department of Environmental Conservation
50 Wolf Road - Room 530
Albany, New York 12233-4756

Other Reliable Sources:

- o Notes in NYSDEC Phase I Reports.
- o New York State Department of Health Files.
- o New York State Department of Environmental Conservation Regional Offices (Fish and Wildlife Staff).
- o U.S. Fish and Wildlife Service, 100 Grange Place, Cortland, New York 13045
- o Universities.

From: Biothreat Site Ranking Model Users Manual-Oct 88.

Appendix 7.1

USEPA. 1989. Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference Document. EPA/600/3-89/013.

USEPA. 1989. Risk Assessment Guidance for Superfund: Environmental Evaluation Manual. EPA/540/1-89/001A.

Greene, J.C., C.L. Bartels, W.S. Warren-Hicks, B.R. Porkhurst, G.L. Linden, S.A. Peterson, and W.E. Miller, 1988. Protocols for short-term toxicity screening of hazardous waste sites. USEPA. Corvallis, OR. Va

Peltier, W.H. and C.I. Weber. 1985. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. Third edition. EPA/600/4-85/013.

Jones, P.A. 1985. Manual for Toxicity Testing of Industrial and Municipal Effluents. NYSDEC. Division of Water.

Reschke, L. 1987. Natural and cultural ecological communities of New York State. Draft No. 3. December 1, 1987. NYSDEC, Natural Heritage Program. Unpublished report.

Sediment Criteria - December 1989

Used as Guidance by the Bureau of Environmental Protection, Division of Fish and Wildlife, New York State Department of Environmental Conservation

****

Note: This document is used as guidance by the Division of Fish and Wildlife. It is neither a standard nor a policy of the Department.

TABLE OF CONTENTS

I. Introduction and Overview of Sediment Criteria Methodology

On February 2 and 3, 1989, the USEPA presented to its Science Advisory Board (SAB) a methodology for deriving sediment criteria for non-polar (or non-ionic) organic chemicals. It is known as the equilibrium partitioning (EP) approach. A briefing document was given to the SAB which summarized the theoretical basis for the EP methodology and supporting lab and field data, and included the first list of interim criteria derived by the method (EPA 1989).

The methodology has been discussed in the scientific community for several years. It is based on the theory that toxics in sediments will exert their effect, either toxicity or bioaccumulation, to the extent that the chemical becomes freely bioavailable in the sediment interstitial (pore) water. It has been determined that the best sediment parameter with which to make predictions of bioavailability of non-polar organics in sediments is the fraction of organic carbon in the sediment. For sediments which exceed 0.5% total organic carbon the concentration of the chemical in the pore water can be predicted dividing the bulk sediment concentration by the product of the sediment/organic carbon partition coefficient (K_{oc}) and the fraction organic carbon. Few K_{oc} are accurately known, however it has been determined that K_{ow} (octanol/water partition coefficient) is very nearly equal to K_{oc} and may be substituted for K_{oc} in this calculation. By setting the pore water concentration equal to the water quality standard or criterion for the chemical a sediment criterion can be calculated by solving for the bulk sediment concentration. The sediment criterion algorithm normalized for organic carbon (OC) follows:

Sediment Criterion, ug/gOC = (AWQS/GV, ug/l) X (K_{OW}, l/kg) X $\frac{1\ Kg}{1{,}000 gOC}$

where AWQS/GV is the ambient water quality standard or guidance value for a chemical

K_{OW} is the octanol/water partition coefficient for the chemical; units are those for K_{OC}.

and $\frac{1\ Kg}{1{,}000\ gOC}$ is a unit conversion factor.

To derive a sediment criterion for a specific sediment, the OC normalized value is multiplied by the OC concentration in the sediment. For example, table 1 contains a carbon normalized sediment criterion for PCB of 1.4 ug/gOC which is derived as follows:

$$\text{PCB Sediment Criterion} = 0.001 \text{ ug/l} \times 10^{6.14} \times \frac{1\ Kg}{1{,}000\ g\ OC} = 1.4 \text{ ug/gOC}$$

To obtain a site-specific criterion for a sediment with 3% total OC multiply the OC normalized criterion by the fraction of organic carbon:

Site-specific criterion = 1.4 ug/gOC X 30 gOC/Kg = 42 ug/kg

Sediment with contaminants in excess of the criteria would be predicted to contain interstitial water in excess of the AWQS/GV. The PCB AWQS that is the basis for the sediment criterion of 1.4 g/gOC is designed to protect wildlife which consume other biota. Therefore, exceedance of the sediment criterion would be predicted to cause accumulation of PCB in surface water biota to levels that would be harmful to wildlife consumers of the biota.

Table 1 contains sediment criteria for a number of non-polar organic chemicals. For many of the chemicals, there is more than one criterion, reflecting the varied environmental protection objectives of the AWQS/GV/C used to calculate the criteria. Exceedance of the aquatic toxicity based criterion for a chemical would be predicted to cause toxicity to benthic or epibenthic life. Exceedance of the human health residue based criterion would be predicted to cause accumulation of the chemicals in aquatic animals to levels that would exceed a human health tolerance, action level or cancer risk dose (depending on the basis of the AWQS/GV/C). Exceedance of the wildlife residue based criterion for a chemical would be predicted to cause accumulation of the chemical in aquatic animals to levels that would be harmful to wildlife consumers of the animals.

There are a number of sediment criteria in Table 1 whose AWQS/GV/C is followed by the footnote "+". The human health based water quality criteria followed by this footnote are 1 X 10^{-6} cancer risk AWQC derived by the method for calculating water quality standards and guidance values in 6NYCRR 701.12. The wildlife based water quality criteria followed by this footnote are derived by dividing fish flesh criteria from Newell et al. (1987) by bioaccumulation factors.

Table 2 provides sediment criteria for five substances in 1% OC and 3% OC sediments. There are differences between sediment criteria derived using current TOGS values and proposed Division of Fish and Wildlife (DFW) values because DFW has proposed use of low cancer risk based criteria in the case of human health and somewhat more protection for wildlife resulting from revised wildlife risk assessments. The EPA criteria for PCB are considerably higher because the water quality criteria upon which the sediment criteria are based were derived using bioaccumulation factors that are known to be too low and higher fish flesh criteria for wildlife than is prudent.

Although the methodology described above is intended for non-polar organics, there are phenolics in Table 1. Phenolics are generally considered polar or ionic chemicals. However, at pH around neutrality phenolics do not ionize, and they act like non-ionic chemicals. Sorption of phenolics to sediments is known to be an important environmental fate process. Phenolics are also a major environmental contaminant. Therefore, sediment criteria were calculated for the phenolics by the non-polar formula.

For non-polar chemicals with log K_{ow} less than about 2.0 the sediment criteria for typical sediments of 0.5-5% total OC is always less than the AWQS/GV/C that was used to derive the criterion. This can be interpreted to mean that virtually all of the chemical in the sediment is bioavailable. It would not appear to make sense to actually implement sediment criteria that are less than the AWQS/GV/C. Therefore, for non-polar organic chemicals with K_{ow} <2 the sediment criterion should be considered to be the same as the AWQS/GV/C.

Until the non-polar method receives SAB approval and subsequent public review, there will likely be controversy about its use. If its use at a particular site is questioned, then the criteria should be used in conjunction with sediment toxicity and bioaccumulation tests. A limited number of such tests should be conducted to site-specifically calibrate the criteria.

For polar organics (except for phenols) and metals there are no algorithms to calculate sediment criteria in order to account for variable sediment characteristics which may affect metals toxicity. However, following the logic above, in order to ensure compliance with water quality standards, interstitial (pore) water should not exceed AWQS/GV/C for polar organics in TOGS 1.1.1. This application of AWQS/GV/C is complicated by the fact that dissolved organic carbon (DOC) in pore water is generally quite a bit higher than in the water column. DOC tends to reduce toxicity and bioaccumulation of chemicals. Since water column DOC is usually low AWQS/GV/C are not modified by DOC known to occur in specific waters. If partitioning between DOC and a chemical is known, then the effect of DOC on toxicity or bioaccumulation may be accounted for, and AWQS/GV/C may be applied to pore water. K_{DOC} is known for many chemicals. Also, chemicals with low K_{oc} do not show uptake suppressed by DOC. Appended are some methods for collecting interstitial water, along with references.

For metals, the primary concern in sediments is toxicity to benthic (bottom) organisms. The Ontario Ministry of the Environment reviewed a number of methods to derive sediment criteria, each with a somewhat different level of benthos protection, and calculated metals criteria for each as data was available (MOE 1989). Persaud (1989) derived from MOE (1988) no-effect

levels and lowest effect levels for metals (Persaud 1989 is a personal communication which is expected as a formal document in late 1989). Table 4 presents the geometric mean of these two values. Calculation of the geometric mean of a no-effect and lowest effect level is one method used for deriving water quality criteria. It is also appropriate for calculating sediment criteria. The methods used to derive these criteria do not account for variability of bioavailability of metals in sediments with differing organic content, particle size distribution or iron and manganese oxide content. Implementation of these metals sediment criteria is discussed below.

Although there currently is no algorithm for metals to calculate sediment criteria, EPA is working on the problem. Recently, a finding was made that may lead to such an algorithm. A paper by D.M. DiToro et al was presented at the November 1989 meeting of the Society of Environmental Toxicology and Chemistry in Toronto which indicates that bioavailability of cadmium (and probably other heavy metals) in sediments is largely determined by the amount of acid volatile sulfide (AVS) in sediments that is available to bind with cadmium. While confirming studies have not been completed, there is sufficient promise to this approach to warrant advising users of sediment criteria to include quantification of AVS among the measurements of each sediment sample taken where metals are of concern. It appears to be important to avoid contact of sediment samples with air to minimize oxidation of iron and manganese sulfide, and it would be useful to measure AVS at several depths of sediment cores. At this time, interpretation of this data will be site-specific but by 1991, it may be possible to use this data to calculate sediment criteria for the metals. Therefore, it is worthwhile to begin AVS measurement now.

For the measurement technique DiToro et al cited Morse (1987). Appendix 2 is a procedure used by DiToro et al which presumably is derived from Morse et al (1987).

There is concern that use of bioaccumulation based sediment criteria derived by the EP method may not be appropriate if the surface water impairment of concern is an elevated residue in pelagic fish. The SAB is addressing this question. It seems to be well accepted that residues in benthic animals are accurately modeled by the EP method, but for low K_{ow} chemicals (less than about 10^5), residues in pelagic fish may not be clearly related to pore water concentrations. However, for high K_{ow} chemicals (greater than about 10^5) biomagnification through the aquatic food chain is known to occur, and EP criteria may actually be underprotective. For these chemicals, there may be an alternative approach to derive sediment criteria. Recent studies with PCB and 2,3,7,8-TCDD indicate that residues in fish can be predicted by sediment to fish bioaccumulation factors. Accumulation in edible fillet with 3% lipid from sediment with 3% OC is about 0.1-1 times the sediment concentration for 2,3,7,8-TCDD and about 1-10 times the sediment concentration for PCB. Using these sediment to fish accumulation factors, sediment criteria can be back calculated from fish residue levels of concern. Table 3 presents some of these criteria. Complete documentation for this approach can be provided in the near future.

Sediment criteria derived by this sediment-to-fish approach are comparable to those derived by the EP method. For PCB the EP criterion in Table 2 of 0.24 ug/kg may be compared to the criterion in Table 3 of 0.6 - 0.06 ug/kg because they are both 1×10^{-6} cancer risk based; as can be seen the former falls within the range of the latter. Similarly the PCB wildlife based criterion

in Table 2 of 18 ug/kg falls within the range of the PCB wildlife based criteria in Table 3 of 100-10 ug/kg. For 2,3,7,8-TCDD the cancer risk based criterion from Table 2 of 6×10^{-5} ug/kg falls within the range of the cancer risk criteria range in Table 3 of 1.4×10^{-5} to 1.4×10^{-4} ug/kg. The 2,3,7,8-TCDD wildlife based criterion from Table 2 of 0.006 ug/kg falls within the wildlife criteria range in Table 3 of 0.03 - 0.003 ug/kg. The good agreement between these two methods supports the scientific validity of the resultant sediment criteria.

This sediment criteria report will be amended upon completion and review of the EPA Science Advisory Board Report on the EP method for deriving sediment criteria..

II. Use of Sediment Criteria in Risk Management Decisions

As is indicated above, exceedance of sediment criteria can be expected to result in some specific adverse effects. The volume and location of sediment exceeding the criterion, the magnitude of the effect expected, the length of time sediments will be contaminated, and the certainty that the effect will occur, will all play a role in making decisions about how much sediment to clean up in order to eliminate or minimize the adverse effects. The effect of these factors on risk management decisions is discussed below.

Where the volume of sediment exceeding criteria is small and the sediment is fairly accessible, the pragmatic solution may be to remediate all the sediment. Where volumes are large and/or difficult to remediate (either because of accessibility or sensitivity of the impaired habitat), it may be practical to sort out and proceed with remediation of those sediments whose

remediation is practicable and feasible. For the sediments which cannot feasibly be treated or removed, further risk management evaluations may be warranted.

The magnitude of the effect caused by a contaminated sediment will depend on the magnitude of the exceedance of the criterion. Where the criterion is based on direct toxicity to aquatic life or indirect toxicity to wildlife via consumption of contaminated fish, a slight exceedance of a criterion would be expected to cause only a slight adverse effect. Increases in the magnitude of exceedance will cause increases in the magnitude of the effects. It may be useful to attempt to quantify the magnitude of predicted adverse impacts where remediation of sediments is expected to be difficult or costly to accomplish. This may be accomplished by desk-top investigation into the basis for a criterion, or site-specific sediment criterion and/or bioaccumulation tests. Decisions about the volume of sediment to remediate may then be made considering predicted residual effects from any unremediated sediments. Where the sediment criterion is based on human exposure to a carcinogen in fish, shellfish or other edible biota, exceedance of the sediment criterion would be predicted to cause a greater than 10^{-6} incremental cancer risk for humans. The actual risk that society is willing to accept may be factored into cleanup decisions. Presumably, once it is predicted that an FDA or EPA tolerance or action level would be exceeded, then cleanup would have to be made to the associated sediment concentration. As with the fish and wildlife toxicity based sediment criteria, site-specific bioaccumulation tests could be conducted to verify that sediments cause the predicted level of biota residues.

Once the source of contaminants to sediments is cut off, the length of time a particular area of sediments will contain unacceptable levels of contaminants will depend on the persistence of the chemicals and the site-specific dynamics of the sediment which control sedimentation, resuspension, biological and chemical degradation and other fate processes. If a chemical is not persistent (e.g. sediment levels would be expected to fall to acceptable levels within six months) then sediment remediation may not be necessary. Even for a persistent chemical, it may not be necessary to remediate the sediments if the contaminated area is a deposition zone, if burying of the contaminated sediments would be expected to occur within a short time, and if resuspension was unlikely.

The confidence in the EP sediment criteria for non-polar organics depends on a number of factors: that exceedance of a water quality standard or criterion in sediment interstitial water will cause an adverse effect, that no other factors other than OC affect bioavailability and that the K_{ow} or K_{oc} used is accurate. It is difficult to place uncertainty bounds on water quality standards and criteria. Methods to derive them have been developed and fine-tuned for a number of years. It is assumed that they have no uncertainty. Currently, EPA also makes this assumption about its sediment criteria approach. Regarding other factors, at this time EPA (1989) has concluded that all other factors contribute a minor amount to bioavailability of contaminants.

For the uncertainty of K_{ow}, EPA has used the correlation between K_{oc} and K_{ow} to place 95% uncertainty bounds about their proposed interim sediment criteria of about (in general) one order of magnitude in either direction. This may be interpreted to mean that there is a high degree of confidence

that exceedance of a criterion by about ten times will be associated with onset of impacts. For sediment criteria based on bioaccumulation this would mean that there is a high degree of confidence that at ten times the criteria aquatic animals exposed to the sediments would accumulate contaminants to levels that would exceed human health or wildlife related tolerances, action levels, fish flesh criteria etc. For sediment criteria based on toxicity to aquatic life this would mean that there is a high degree of confidence that sediments with contaminants at ten times the criteria would exhibit chronic toxicity to benthic animals. Onset of chronic toxicity may be difficult to detect in natural systems. Since water quality criteria to prevent acute toxicity are generally about ten times the chronic criteria, it may be generalized that for sediments with contaminants at 100 times (factors of 10 for uncertainty and acute:chronic ratios, respectively) toxicity based criteria there is a high degree of confidence that there will be onset of acute toxicity to benthic animals. Such effects would likely be evident as an impacted or depauperate benthic community.

It must also be noted that due to uncertainty about actual partitioning of a chemical between water and sediments there is the possibility that the sediment criteria are somewhat underprotective rather than overprotective.

Uncertainty of the metals criteria can not be characterized so simply. The criteria are based on empirical evidence from both lab and field studies without an attempt to normalize for any toxicity controlling factors in the sediment. Variability of toxicity of metals in any given sediment is evident from Table 4 which provides criteria, all of which are lower than the upper 95% confidence limit of pre-industrial metal concentrations in Great Lake

sediments. This is interpreted to mean that in some sediments relatively low levels of metals, even below "high" background, are toxic, whereas in other sediments fairly high levels, i.e. up to and possibly even above "high" background, may not be toxic. However, for all metals, except iron, the "Limit of Tolerance" exceeds "high" bachground by a considerable amount, and at these levels significant and noticeable toxicity would be expected in all sediments. Site-specific tests could be conducted to determine the magnitude of effects caused by contaminants in sediments. Such tests could be used to determine whether onset of effects occurs at sediment concentrations somewhat above or below the sediment criterion.

Where contaminated sediments are not remediated, sediment criteria will be useful in quantifying residual damages for preparation of a natural resource damage claim.

Interpretation and application of sediment criteria should be conducted in coordination with the Division of Fish and Wildlife.

Much of the above implementation guidance can be outlined in a strategy for use of the sediment criteria and actions to take when criteria are exceeded.

1. Compare sediment concentrations with sediment criteria.

   a. quantify the area or volume of sediment in excess of the criteria.

   b. describe the significance of exceedances in terms of the basis of the criteria: e.g. would only bioaccumulation be expected or both

bioaccumulation and toxicity, and based on quantity of exceedance would impacts be expected to be isolated or widespread through the ecosystem of concern.

2. Compare sediment concentrations with unimpacted, local background concentrations; consider significance of criteria exceedances in light of background concentrations, in particular, for naturally occurring substances such as metals.

3. If sediment concentrations are less than criteria, remediation is not necessary to ensure compliance with standards.

4. If sediments exceed criteria, and especially if exceedance is widespread in the ecosystem of concern, a number of steps can be taken to verify the need for remediation.

   a. For non-polar organic chemicals with K_{ow} <3.0, further remedial investigation or sediment remediation is not necessary if it can be demonstrated that the source of sediment contamination will be eliminated and the sediment will cleanse itself within one year. For these chemicals the greatest value of sediment criteria may be for documentation of a significant release.

   b. For sediments exceeding aquatic toxicity based criteria, including metals:

      i. conduct assessments of ecological communities to estimate

degree of impairment: correlate sample specific ecological results with sediment concentrations.

ii. collect sediment samples and conduct acute and chronic toxicity tests with fish and benthic invertebrates; correlate with toxicity test results with sediment contaminant concentrations.

iii. For organics, exceedance of aquatic toxicity based criteria in Table 1 by 100 times in significant portions of the ecosystem indicates the likelihood that biota are impaired and remediation should be considered necessary.

iv. For metals, Table 4 contains "limits of tolerance". If these values are exceeded in significant portions of the ecosystem of concern, it is highly likely that biota are impaired and remediation should be considered necessary.

c. For sediments exceeding human health bioaccumulation based criteria:

i. collect data on residues in edible biota and compare with tolerances/action levels/guidance and/or 1×10^{-6} cancer risk levels, or

ii. collect sediment samples, test with representative edible biota, measure residue.

d. For sediments exceeding wildlife risk bioaccumulation based criteria:

i. identify biota which consume aquatic life and study them to determine whether they have been impaired by contaminants in their food supply.

ii. collect sediment samples, test with wildlife food supply and measure residues; compare with residue levels known to be toxic to wildlife.

5. When sediment concentrations and criteria are less than detection, ecological assessments are necessary to directly measure toxicity of sediments or residues in biota if it is suspected that sediments were contaminated by releases.

a. generally, it is expected that low level impacts would be associated with presence of contaminants in sediments below detection.

b. however, if impacts are found to be of unacceptable magnitude, then iterative ecological assessments may be necessary to quantify the volume of sediments to remediate.

III. Division of Fish and Wildlife sediment criteria contact is Arthur J. Newell, Room 530, 50 Wolf Road, Albany, New York 12233-4756, 518/457-1769.

IV. Detailed Criteria for Contaminants, see tables and appendix.

References

EPA. 1989. Briefing report to the EPA Science Advisory Board on the equilibrium partitioning approach to generating sediment quantity criteria. U.S. EPA, Office of Water Regulations and Standards. EPA 440/5-89-002.

Newell, A.J., D.W. Johnson and L.K. Allen. 1987. Niagara River Biota Contamination Project: Fish flesh criteria for piscivorous wildlife. NYSDEC, Bur. Env. Prot., Technical Report 87-3. 182 pp.

Ontario Ministry of the Environment (MOE). 1988. Development of Sediment quality Guidelines. Phase II - Guideline Development. Prepared by Beak Consultants.

Morse, J.W., F.J. Millero, J.C. Cornwell and D. Rickard. 1987. The chemistry of the hydrogen sulfide and iron sulfide systems in natural waters. Earth Science Reviews 24:1-42.

Persaud, D. 1989. Personal communication - Development of Provincial Sediment Quality Guidelines. Ontario Ministry of the Environment.

TABLE 1

Sediment Criteria, Derived for a Variety of Environmental Protection Objectives. (Sediment criteria are normalized to organic carbon (OC) content as ug/gOC; to obtain criteria for bulk sediments in ug/Kg multiply criteria by fraction OC;i.e. for 1% multiply by 10, for 2% OC by 20, etc.)

			Aquatic Toxicity Basis		Human Health Residue Basis		Wildlife Residue Basis	
Substance	Log K_{OW}	Freshwater or Marine F or M	AWQS/GV/C* ug/l	Sediment Criterion ug/gOC	AWQS/GV/C ug/l	Sediment Criterion ug/gOC	AWQS/GV/C ug/l	Sediment Criterion ug/gOC
Acenapthene	4.33	F		730**				
Anilene		F		0.0662**				
		M		0.248**				
Aldrin and Dieldrin	5.0	F&M			0.001++	0.1		
		F&M	0.084+	8.4	0.00001+	0.001	0.0077+	0.77
Azinphosmethyl	2.4	F	0.005++	0.001				
		M	0.01++	0.003				
Azobenzene	3.82	F&M			0.07+	0.5		
Benzene	2.0	F&M			6++	0.6		
Benzo(a)pyrene and some other PAHs♦	6.04	F			0.0012++	1.3		
		M			0.0006++	0.7		
Benzidene	1.4	F	0.1++	0.003				
Bis(2-chloro-ethyl) ether	1.73	F&M			0.2+	0.01		
Bis(2-ethylhexyl) phthalate	5.3	F	0.6++	119.7				
Carbofuran	2.26	F	1++	0.2				

Table 1 (continued)

Substance	Log K_{ow}	Freshwater or Marine F or M	Aquatic Toxicity Basis AWQS/GV/C* ug/l	Aquatic Toxicity Basis Sediment Criterion ug/gOC	Human Health Residue Basis AWQS/GV/C ug/l	Human Health Residue Basis Sediment Criterion ug/gOC	Wildlife Residue Basis AWQS/GV/C ug/l	Wildlife Residue Basis Sediment Criterion ug/gOC
Carbon tetrachloride	2.64	F&M			1.3+	0.6		
Chlordane	2.78	F&M			0.002++	0.001		
		F&M	0.01+	0.006	0.00008+	$8X10^{-8}$	0.01+	0.006
Chlorobenzene	2.84	F&M	5++	3.5				
Chloro-o-toluidine	about 2.0	F&M			6.5+	0.65		
Chlorpyrifos	5.11	F		3.22**				
		M		0.44**				
DDT, DDD & DDE	6.0	F&M					0.001++	1
		F&M						0.828**
		F&M	≤0.05+	≤50	0.00001+	0.01		
Dieldrin	5.0	F		19.5**		0.13**		
		M		5.77**		0.13**		
Diazinon	1.92	F	0.08++	0.007				
Dichlorobenzenes	3.38	F&M	5++	12				
1,2-Dichloroethane	1.48	F&M			24+	0.7		
1,1-Dichloroethylene	1.48	F&M			0.8+	0.02		
2,6-Dinitrotoluene	2.05	F&M			1+	0.1		
Diphenylhydrazine	3.03	F&M			0.1+	0.1		

Table 1 (continued)

Substance	Log K_{ow}	Freshwater or Marine F or M	Aquatic Toxicity Basis AWQS/GV/C* ug/l	Aquatic Toxicity Basis Sediment Criterion ug/gOC	Human Health Residue Basis AWQS/GV/C ug/l	Human Health Residue Basis Sediment Criterion ug/gOC	Wildlife Residue Basis AWQS/GV/C ug/l	Wildlife Residue Basis Sediment Criterion ug/gOC
Endosulfan	3.55	F	0.009++	0.03				
		M	0.001++	0.004				
Endrin	5.6	F&M	0.002++	0.8			0.0019+	0.8
		F		1.04**		0.0532**		
		M		0.215**		0.0532**		
Ethyl Parathion	2.1	F		0.081**				
Heptachlor & Heptachlor epoxide	4.4	F&M	0.001++	0.03	0.00003+	0.0008	0.0038+	0.1
		F				0.11**		
		M				0.104**		
Hexachlorobenzene	6.18	F&M	<5+	<7568	0.0001+	0.15	0.008+	12
Hexachloro-butadiene	3.74	F&M			0.06+	0.3	0.07+	0.4
		F	1++	5.4				
		M	0.3++	1.6				
Hexachloro-cyclohexanes	3.8	F		0.157**				
		F	0.01++	0.06				
		M	0.004++	0.03				
		F&M			0.009+	0.05	0.23+	1.5
Hexachlorocyclo-pentadiene	3.99	F	0.45++	4.4				
		M	0.07++	0.7				
Isodecyldiphenyl phosphate	5.4	F	1.73++	434				

Table 1 (continued)

Substance	Log K_{ow}	Freshwater or Marine F or M	Aquatic Toxicity Basis AWQS/GV/C* ug/l	Aquatic Toxicity Basis Sediment Criterion ug/gOC	Human Health Residue Basis AWQS/GV/C ug/l	Human Health Residue Basis Sediment Criterion ug/gOC	Wildlife Residue Basis AWQS/GV/C ug/l	Wildlife Residue Basis Sediment Criterion ug/gOC
Linear alkyl-benzene sulfonates	3.97 (Sodium dodecyl-benzene sulfonate)	F	40++	373				
Malathion	2.2	F&M	0.1++	0.02				
Methoxychlor	4.3	F&M	0.03++	0.6				
Mirex	5.83	F&M F&M			0.001++ 0.0001+	0.7 0.07	0.0055+	3.7
Octachloro-styrene	About 6.0						0.0005+	0.5
Parathion & methyl parathion	2.5	F	0.008++	0.003				
Pentachlorophenol	5.0	F	0.4++	40				
Phenanthrene	4.45	F M		139** 102**				
Phenols, total	2.75	F	1++	0.6				
Phenols, total unchlorinated	2.0	F	5++	0.5				
PCB	6.14	F&M F&M F M	<0.2+	<276	0.000006+	0.008	0.001++ 0.0004+	1.4 0.6 19.5** 41.8**

Table 1 (continued)

Substance	Log K_{OW}	Freshwater or Marine F or M	Aquatic Toxicity Basis AWQS/GV/C* ug/l	Aquatic Toxicity Basis Sediment Criterion ug/gOC	Human Health Residue Basis AWQS/GV/C ug/l	Human Health Residue Basis Sediment Criterion ug/gOC	Wildlife Residue Basis AWQS/GV/C ug/l	Wildlife Residue Basis Sediment Criterion ug/gOC
2,3,7,8-Tetrachlorodibenzo-dioxin	7.0	F&M F&M	<0.001+	<10	$1X10^{-6}$++ $2X10^{-10}$+	0.01 $2X10^{-6}$	$2X10^{-8}$+	0.0002
1,1,22-Tetrachloroethane	2.56	F&M			0.7+	0.3		
Tetrachloroethylene	2.88	F&M			1++	0.8		
O-Toluidine	1.4	F&M			18+	0.45		
Toxaphene	3.3	F&M	0.005	0.01	0.009+	0.02		
Trichlorobenzenes	4.26	F&M	5++	91				
1,1,2-Trichloroethane	2.17	F&M			4+	0.59		
Trichloroethylene	2.29	F&M			11++	2		
Triphenyl phosphate	4.59	F	4++	156				
Vinyl chloride	0.6	F&M			18+	0.07		

* AWQS/GV/C = Ambient water quality standard or guidance value in TOGS 1.1.1 or other water quality criterion.
+ AWQGV proposed by Division of Fish and Wildlife.
++ Current NYS AWQS or GV in TOGS 1.1.1.
** EPA proposed interim sediment criteria; taken from an EPA briefing document for the EPA Science Advisory Board.
♦ The sediment criterion for benzo(a)pyrene also applies to benz(a)anthracene, benzo(b)fluoranthene, benzo-(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, and, methylbenz(a)anthracenes. These PAH have the same TOGS 1.1.1. guidance value as benzo(a)pyrene.

TABLE 2

Sediment Criteria for Five Non-polar Substances in 1% and 3% Organic Carbon Content Sediment

Substance	F or M	Sediment Criteria, ug/kg Aquatic Toxicity Basis	Human Health Residue Basis	Wildlife Residue Basis
Benzo(a)pyrene				
1% OC	F		13*	
	M		7*	
3% OC	F		39*	
	M		21*	
Dichlorobenzenes				
1% OC	F&M	120*		
3% OC	F&M	360*		
Mirex				
1% OC	F&M		7*	37
	F&M		0.7+	
3% OC	F&M		21*	111
	F&M		2.1+	
PCB				
1% OC	F&M		0.08+	14*
	F&M			6+
	F,M			195,418#
3% OC	F&M		0.24+	42*
	F&M			18+
	F,M			585,1254#
2,3,7,8-TCDD				
1% OC	F&M	100+	0.1*	0.002+
	F&M		2×10^{-5}+	
3% OC	F&M	300+	0.3*	0.006+
	F&M		6×10^{-5}+	

* Based on current NYS AWQS or GV in TOGS 1.1.1.

\+ Based on AWQGV proposed by Division of Fish and Wildlife; human health based criteria relate to 1×10^{-6} cancer risk from fish consumption and wildlife based criteria are derived from wildlife fish flesh criteria.

\# EPA proposed interim sediment criteria.

TABLE 3

Sediment Criteria Derived by the Sediment-to-fish Bioaccumulation Method

	PCB		2,3,7,8-TCDD	
	Fish Residue ug/kg	Sediment Criterion*, ug/kg	Fish Residue ug/kg	Sediment Criterion,* ug/kg
Tolerance or Advisory	2000	2000-200	0.01	0.1-0.01
10^{-6} Cancer Risk @ $\frac{1}{2}$ lb/week fish consumption	0.6	0.6-0.06	$1.4X10^{-5}$	$1.4X10^{-4}$-$1.4X10^{-5}$
Wildlife Fish Flesh Criterion	100	100-10	0.003	0.03-0.003

* For PCB and 2,3,7,8-TCDD, the ranges result from dividing the Fish Residue by a fish to sediment accumulation factor of 1-10 and 0.1-1, respectively.

Table 4. Sediment criteria for metals, $\mu g/g$ (ppm) except iron which is in percent.

	Background*	Criteria**	Limit of Tolerance***
Arsenic	12	5 (4.0- 5.5)	33
Cadmium	2.5	0.8(0.6- 1.0)	10
Chromium	75	26 (22 - 31)	111
Copper	65	19 (15 - 25)	114
Iron (%)	5.9	2.4 (2 - 3)	4
Lead	55	27 (23 - 31)	250
Manganese	1200	428 (400 -457)	1100
Mercury	0.6	0.11(0.1- 0.12)	2
Nickel	75	22 (15 - 31)	90
Zinc	145	85 (65 -110)	800

* From MOE (1988); upper 95% confidence limit of pre-industrial concentrations in Great Lakes sediments.

** Values in parentheses are "no-effect" and "lowest-effect" levels, respectively, from Persaud (1989).

*** Concentration which would be detrimental to the majority of species, potentially eliminating most. (Persaud 1989)

APPENDIX 1

Collection of Interstitial Water

At this time, there is not a specific recommendation for a site-specific method to collect interstitial water. It is recommended that regulated parties investigate the subject and propose to DEC a method which will provide a sample to best characterize the bioavailable metals in site-specific interstitial water. As a start, it is suggested at least four methods should be considered along with some references.

1. Centrifugation (Edmunds and Bath 1976; Giesy et al. 1988; Landrum et al. 1987; Engler 1977);

2. Squeezing (Reeburgh 1967; Bender et al. 1987; Kalil and Goldhaker 1973);

3. Suction (Knezovich and Harrison 1987); and

4. Equilibrium by using dialysis membrane or fritted glass sampler (Hesslin 1976; Mayer 1976; Bottomley and Bayly 1984; Pittinger et al. 1988).

Additional literature which should be considered are Carignan et al. 1985, Bray et al. 1973, Lyons et al. 1979, Word et al. 1987, and Jenne and Zachara 1987.

These suggestions and references were obtained from a draft ASTM guidance document on sediment collection, storage, characterization, and manipulation. However, this document is not yet available for circulation or reproduction.

REFERENCES (for collection of interstitial water)

Bender, M., W. Martin, J. Hess, F. Sayles, L. Ball, and C. Lambert. 1987. A whole-core squeezer for interfacial pore-water sampling. Limnol. Oceanogr. 32:1214-1225.

Bottomley, E.Z. and I.L. Bayly. 1984. A sediment porewater sampler used in root zone studies of the submerged macrophyte, Myriophyllum spicatum. Limnol. Oceanogr. 29:671-673.

Bray, J.T., L. Bricker, and B. Troup. 1973. Phosphate in interstitial waters of anoxic sediments oxidation effects during sampling procedure. Science 180:1362-1364.

Carignan, R., F. Rapin, and A. Tessier. 1985. Sediment porewater sampling for metal analysis: a comparison of techniques. Geochim. Cosmochim. Acta 49:2493-2497.

Edmunds, W.M., and A.H. Bath. 1976. Centrifuge extraction and chemical analysis of interstitial waters. Environ. Sci. Technol. 10:467-472.

Engler, R.M., J. Brannon, J. Rose, and G. Bigham. 1977. A practical selective extraction procedure for sediment characterization. In T.F. Ven (ed.), Chemistry of Marine Sediments, Ann Arbor Sci., Ann Arbor, MI. pp. 163-171.

Giesy, J.P., R.L. Graney, J.L. Newsted, C.J. Rosiu, A. Benda, R.G. Kreis and F.J. Horvath. 1988. Comparison of three sediment bioassay methods using Detriot River sediments. Environ. Toxicol. Chem. 7:483-498.

Hesslin, R.H. 1976. An in situ sampler for close interval pore water studies. Limnol. Oceanogr. 21:912-914.

Jenne, E.A., and J.M. Zachara. 1987. Factors influencing the sorption of metals. In K.L. Dickson, A.W. Haki, and W.A. Brungs (eds.), Fate and Effects of Sediment-Bound Chemicals in Aquatic systems. Pergamon Press, New York, pp. 83-98.

Kalil, E.K., and M. Goldhaker. 1973. A sediment squeezer for removal of pore waters without air contact. J. Sediment. Petrol. 43:553-557.

Knezovich, J.P., and F.L. Harrison. 1987. A new method for determining the concentrations of volatile organic compounds in sediment interstitial water. Bull. Environ. Contam. Toxicol. 38:937-940.

Landrum, P.F., S.R. Nihart, B.J. Eadie, and L.R. Herche. 1987. Reduction in bioavailability of organic contaminants to the amphipod Pontoporeia hoyi by dissolved organic matter of sediment interstitial waters. Environ. Toxicol. Chem. 6:11-20.

Lyons, W.B., J. Gaudette, and G. Smith. 1979. Pore water sampling in anoxic carbonate sediments: oxidation artifacts. Nature 277:48-49.

Mayer, L.M. 1976. Chemical water sampling in lakes and sediments with dialysis bags. Limnol. Oceanogr. 21:909-911.

Pittinger, C.A., Va.C. Hand, J.A. Masters, and L.F. Davidson. 1988. Interstitial water sampling in ecotoxicological testing: partitioning of a cationic surfactant. W.J. Adams, G.A. Chapman, W.D. Landis (eds.), Toxicology and Hazard Assessment, Vol. 10, pp. 138-148. ASTM 971, American Soc. Testing Materials, Philadelphia, PA.

Reeburgh, W.S. 1967. An improved interstitial water sampler. Limnol. Oceanogr. 12:163-165.

Word, J.Q., J.A. Ward, L.M. Franklin, V.I. Cullinan, and S.L. Kiesser. 1987. Evaluation of the equilibrium partitioning theory for estimating the toxicity of the nonpolar organic compound DDT to the sediment dwelling amphipod Rhepoxynius abronius. Battelle/Marine Research Laboratory Report. Task 1, WA56. Sequim, Washington. 60 pp.

APPENDIX 2

ACID VOLATILE SULFIDE
Procedure Used at Manhattan College

The apparatus consists of the following vessels:

A 500-mL Erlynmeyer flask fitted with a three-hole stopper, where the sample to be analyzed is placed.

Three 250-mL Erlynmeyer flasks. Into the first is placed 175-200 mL of pH 4 buffer (0.05M potassium hydrogen phthlate). The second and third contain 175-200 mL of a 0.1M silver nitrate solution. Each of these is fitted with a two-hole stopper.

The four flasks are connected in sequence with appropriately shaped glass and Tygon tubing. All fittings must be air tight.

A nitrogen gas line is introduced into the first vessel through one hole of the stopper. A thistle tube with a stopcock is placed in the second hole. The exit line from the first to the second vessel is placed in the third hole. The second, third and fourth stoppers contain the entry and exit lines, the entry line being below the liquid surface and the exit line, above.

Between the nitrogen tank and the first vessel, an oxygen-scrubbing system must be placed. This system consists of a vanadous chloride solution in the first scrubbing tower and the matrix of the analyte (usually seawater or freshwater) in the second tower. The solution used in the first tower is prepared in the following manner. Four grams of ammonium metavanadate is boiled with 50 mL of concentrated hydrochloric acid and diluted to 500 mL. This solution is then transferred to the tower. Amalgamated zinc, prepared by taking about 15 grams of zinc, covering it with deionized water and adding 3 drops of concentrated hydrochloric acid before adding a small amount of mercury to complete the amalgamation, is then added to the vanadous chloride solution in the first tower. The solution should now be blue or green. When nitrogen is bubbled through it for a time it will turn purple. When the solution is exhausted, it will turn back to blue or green. It may be replenished by adding more amalgamated zinc or a few drops of concentrated hydrochloric acid.

The sample or standard to be analyzed is placed in the first vessel after the entire system has been purged with nitrogen for about an hour. The usual sample size is 10-15 grams of wet sediment. Any water used in the transfer of the sample to the vessel must be completely deaerated. The system is again purged for 5-10 minutes. Deaerated 6M hydrochloric acid is now added from the thistle tube qs to achieve a final concentration in the vessel of 0.5M.

The system is now run for an hour with the nitrogen at a bubble rate of about four/sec. The sample vessel should be swirled every five or ten minutes. When the reaction is complete and all hydrogen sulfide produced has been converted to silver sulfide in the third vessel, the solution in that vessel should be relatively clear and the precipitate should have settled to the bottom. There should be no precipitate in the fourth vessel.

The suspension in the third vessel is passed through a 1.2 micron GF glass fiber filter, which is dried at 102°C. and weighed.

A standard can be prepared from appropriate quantities of iron(II) sulfate and sodium sulfide, the latter being best added from a solution standardized against lead perchlorate.

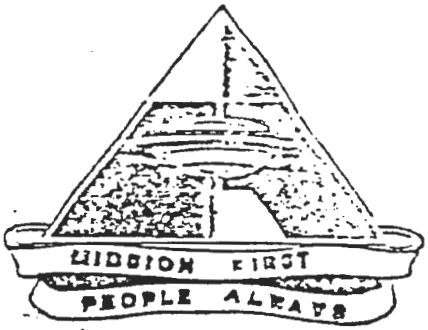
Typical silver sulfide precipitates are in the range 10-30 mg. When a blank is run (sample without acid), about 0.9 mg silver sulfide is obtained. When the acid is run without a sample, about 0.6 mg silver chloride is obtained.

SENECA ARMY DEPOT

BLDG 123

ROMULUS, N.Y.

14541



DIRECTORATE of ENGINEERING and HOUSING

DATE: 25 Feb TIME: _____ # of PAGES W/ COVER SHT: 50

TO: Healy / Romeo

OFFICE/CO.: Huntsville

FAX# _____

FROM: Randy Battaglia

SENECA ~~ARMY~~ DEPOT

FAX# (607) 869-1382

PHONE# (607) 869-1532

COMMENTS: Sending 25 pgs at a time!

Letter from NYSDEC rec'd 25 Feb 91

Subj: SEAD Site 30 #850006

RI/FS Documents Vol 00/00

****
*** ACTIVITY REPORT ***
****

TRANSMISSION OK

TX/RX NO.	0909
CONNECTION TEL	712059553089
CONNECTION ID	
START TIME	02/26 07:45
USAGE TIME	23'21
PAGES	26
RESULT	OK

****
*** ACTIVITY REPORT ***
****

TRANSMISSION OK

TX/RX NO.	0907
CONNECTION TEL	712059553089
CONNECTION ID	
START TIME	02/26 07:03
USAGE TIME	25'19
PAGES	25
RESULT	OK

****
*** ACTIVITY REPORT ***
****

TRANSMISSION OK

TX/RX NO.	0903
CONNECTION TEL	717172675447
CONNECTION ID	
START TIME	02/25 14:46
USAGE TIME	15'43
PAGES	25
RESULT	OK

****
*** ACTIVITY REPORT ***
****

TRANSMISSION OK

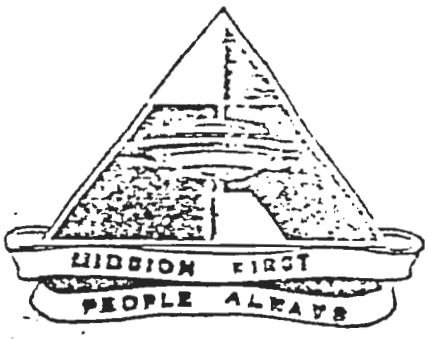
TX/RX NO.	0905
CONNECTION TEL	717172675447
CONNECTION ID	
START TIME	02/25 15:19
USAGE TIME	15'05
PAGES	26
RESULT	OK

SENECA ARMY DEPOT

BLDG 123

ROMULUS, N.Y.

14541



DIRECTORATE of ENGINEERING and HOUSING

DATE: 25 Feb TIME: _____ # of PAGES W/ COVER SHT: 50

TO: Tim Toplisek

OFFICE/CO.: DRSCOM

FAX# _____

FROM: Randy Battaglia
SENECA ARMY DEPOT
FAX# (607) 869-1382
PHONE# (607) 869-1532

COMMENTS: Sending 25 pgs at a time!

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT
ROMULUS, NEW YORK 14541-5001

REPLY TO
ATTENTION OF

SDSSE-HE (200)

10 OCT 1991

MEMORANDUM FOR

Ms. Carla Struble, Project Manager, Federal Facilities Section, Room 2930, Region 2, U.S. Environmental Protection Agency, 26 Federal Plaza, New York, NY 10278

Mr. Kamal Gupta, Project Manager, Federal Projects Section, Bureau of Eastern Remedial Action, Division of Hazardous Remediation, NYS Department of Environmental Conservation, 50 Wolf Road, Albany, NY 12233-7010

Subject: Quarterly Report

1. In accordance with para 26.1 of the soon to be finalized Inter Agency Agreement, between the Army, the United States Environmental Protection Agency (USEPA) and the New York State Environmental Conservation (NYSDEC), the following quarterly report is submitted.

a. Minutes From Formal Meetings Held During the Reporting Period: There were no formal meetings of the project Managers or the Technical Review Committee during the Reporting Period.

b. Milestones Met On Schedule, Expanation of Milestones Not Met on schedule:

(1) Signing of the IAG:

The IAG is currently being reviewed by the Environmental Law Division of Headquarters Department of the Army (HQDA), Washington D.C.

(2) Ash Landfill Milestones:

(a) Progress made toward workplan approval and fieldwork initiation -

Recap of last Quarterly Report: On June 24, 1991, a phone conference was held between the Army and the regulatory agencies to resolve remaining comments on the revised Draft-Final Ash Landfill Workplan. Seneca was optimistic regarding progress made during the phone conference and was confident that an approved workplan could be achieved by an early July timeframe.

The Army's workplan contractor, C.T. Main was unable to supply the revised pages to the regulatory agencies as expeditiously as originally promised in the June 25, 1991 phone conversation. C.T. Main was unable to proceed with the revisions on schedule do to the procedural delays associated with the securing of additional funds for the project. As a result, the Army was unable to revise the workplan in a timeframe shorter than what is required by paragraph 17.7(f) of the IAG. The Army submitted revised pages for the revised Draft Final Ash Landfill Workplan to the regulatory agencies on August 1, 1991.

Seneca Army Depot received USEPA comments on the Ash Landfill Workplan on September 24, 1991. The USEPA requested that two of the five comments provided by the USEPA be addressed by the Army before final approval of the workplan is granted. The USEPA comments did not necessitate another major revision and submittal of the workplan, rather the submision of replacement pages.

Seneca Army Depot received correspondence from the Huntsville Division of the Army Corps of Engineers on September 25, 1991 advising Seneca of the Divisions intentions to begin fieldwork at the Ash Landfill and Open Burning (OB) Grounds commencing immediately. The Huntsville Division's primary concern was that without an immediate initiation of both projects, the opportunity to finish Phase I fieldwork prior to the onset of the winter season will be lost. The Huntsville correspondence provided a discussion of how the Army intends to comply with the five issues identified in the September 17, 1991 USEPA correspondence.

Seneca Army Depot provided the regulatory agencies with correspondence on September 30, 1991 announcing the Army's intention to mobilize for fieldwork at the Ash Landfill.

(b) USEPA oversight of fieldwork -

On September 24, 1991 Seneca received written correspondence from the USEPA which summarized the USEPA's expected fieldwork oversight roles. Examples of USEPA field oversight activities include the supervision of several groundwater monitoring wells and the collection of numerous groundwater, soil, and sediment samples. The USEPA is employing the services of Alliance Inc. to perform field oversight activities. EPA informed the Army of its needs for a 30 day notice prior to field sampling activities on September 23, 1991.

(3) Open Burning Grounds Milestones:

(a) OB Grounds Workplan in overview -

During the reporting period, a revised OB Grounds Workplan was submitted to the regulatory agencies. Prior to this, the last submittal of an OB Grounds Workplan was on April 25, 1991. In overview, the OB Grounds Workplan has been under review for approximately five months.

(b) Progress made towards OB Grounds Workplan approval and field work initiation -

The NYSDEC submitted comments on the OB Grounds Draft Workplan on June 6, 1991. Final NYSDEC comments, on the workplan arrived at Seneca on June 20, 1991. The USEPA submitted comments on the OB Grounds Draft Workplan to Seneca on July 12, 1991. After completing a thorough review of the regulatory comments, Seneca requested formal consultation pursuant to the IAG para 17.7e(1), in order to resolve regulatory determinations that the Army felt warranted further clarrification. This response was followed by an August 1, 1991 correspondence, pursuant to the IAG 17.7e(2), which provided a detailed explanation of the aspects of the regulatory comments that the Army was in disagreement with.

During the reporting period, Seneca indicated to the USEPA that face to face meetings beween the Army and the regulators would be the preferred method of conducting formal consultations. Seneca's basis for preferring face to face negotiations, versus phone conferences, was the success that resulted during the February 1991 Ash Landfill Workplan consultations held in NYC. Due to scheduling diffucullties at the USEPA, which prohibited face to face formal consultations prior to the IAG required due date for the consultation, phone conferences were utilized.

Formal consultations were held on August 8, 12 & 15, 1991. At the conclusion of the August 15, 1991 consultation, most comments were adequately addressed, with the exception of the following four issues:

- The issue of future land use scenarios to be used in the performance of a risk assessment.
- The requirement to use lower detection limits in analysis of groundwater samples.
- The requirnment that sieve analysis be performed on sediment samples taken to assure that the fine sediments were being sampled.
- The use of the NYSDEC Technical Assistance Guidance Manual when filtering water samples versus relevant USEPA Guidance.

On August 29, 1991, Seneca submitted to the regulatory agencies C.T. Main's formal responses to both the NYSDEC and the USEPA's written comments on the Draft Workplan. This response incorporated the agreements reached and progress made in the formal consultations.

On September 13, 1991, Seneca received revised copies of the OB Grounds Workplan from C.T. Main for resubmittal for regulatory approval. The workplan was submitted to the regulators, by Seneca, on September 30, 1991.

Seneca Army Depot provided the regulatory agencies with correspondence on September 30, 1991 announcing the Army's intention to mobilize for fieldwork at the OB Grounds.

On October 8, 1991, Seneca received formal response from the USEPA on the August 29, 1991 formal comments provided by MAIN. At this point in time, only minor revisions to the workplan were requsted by the USEPA. A phone conference was held on the afternoon of October 8, 1991, to discuss the remaining issues. This phone conference resulted in the resolution of all unresolved issues raised by the USEPA. It was also decided that the request by the NYSDEC for sreening for radioactive materials at the site will be followed.

(4) Solid Waste Management Unit (SWMU) Classification Report (SCR):

Seneca Army Depot submitted, to the regulatory agencies, a Draft SCR on April 19, 1991. Currently, no agreement has been reached between the Army and the regulatory agencies regarding the proper classification of the sixty-nine (69) SWMU's identified in the SCR. The SCR remains in draft form pending future negotiation and resolution between the regulatory agencies and the Army.

The NYSDEC is requesting that sixty-seven (67) of the sixty-nine (69) SWMU's be considered AOC's. The Army is requesting that only thirty (30) SWMU's be classified as AOC's. The USEPA is requesting that sixty-eight (68) of the sixty-nine (69) SWMU's be classified as AOC's.

Seneca Army Depot received the final USEPA comments on the draft SCR on June 28, 1991. These comments were extensive and consisted of specific comments regarding the Army's classification of each SWMU. Seneca feels strongly that some areas classified as AOC's by the USEPA do not pose a reasonable threat of release. On August 6, 1991, Seneca provided the USEPA with written correspondence discussing why several of the SWMU's should not be classified as AOC's. This correspondence also addressed comments provided by the NYSDEC on July 17, 1991.

On July 17, 1991, Seneca received comments from the NYSDEC and the New York State Department of Health (NYSDOH) on the Draft SCR. This correspondence stated that fifty-seven (57) of the known SWMU's at Seneca Army Depot should be classified as AOC's. On August 8, 1991, Seneca received additional comments on the Draft SCR from the NYSDEC. The NYSDEC indicated that, based on these additional comments, sixty-seven (67) SWMU's should be considered AOC's. The August 8, 1991 transmittal by the NYSDEC did not contain a close of comment period notice.

On September 4, 1991, Seneca received a close of comment period notice for the SCR from the NYSDEC. Seneca followed by providing a detailed response to the August 8, 1991 NYSDEC comments. This correspondence was sent to the NYSDEC on September 19, 1991.

In a September 19, 1990 letter from Seneca Army Depot to the NYSDEC, Seneca proposed that the IAG schedule be waved for the SCR. This request was based on factors such as the large number of SWMU's that require extensive consultations and the need for future visual inspections of the site by the USEPA and NYSDEC representatives.

(5) CERCLA Site Investigation (SI) Activities for SWMU Areas Identified as Areas of Concern (AOC):

As a result of the findings in the Draft SCR, C.T. Main is presently under contract to develop workplans for CERCLA Site Investigations (SI) at the eleven highest priority (eight of the "High Priority" and three of the "moderate priority", according to the draft SCR recommendations) SWMU's listed in the study. Although the study itself recommends sampling to be performed, C.T. Main will be making its own recommendations, which will undergo review prior to workplan approval by the Regulators.

On July 15-16, 1991, representatives from C.T. Main visited Seneca in order to visually inspect the eleven (11) sites being investigated under the SI contract. C.T. Main was instructed by Seneca to incorporate relevant NYSDEC and USEPA sampling recommendations, as stated in USEPA and NYSDEC categorical responses to the SCR for the eleven relevant SWMU's, into the forthcoming SI workplans.

The Army's schedule for preparation of the Workplan contains an estimated target date of February 24, 1992 for finalization. This time line includes a 30 day regulatory review period for both the Draft and Draft-Final iterations. Assuming that such a review scenario is sufficient, the Army anticipates implementation (actual sampling) to begin with the arrival of the optimal field sampling season(i.e. circa May 1992).

(6) ATSDR Health Assessment Inititiated:

On July 11-12, 1991 representatives from the Agency for Toxic Substances and Disease Registry (ATSDR) conducted a Site visit of the Ash Landfill, OB Grounds, and several high priority AOC's. The site visit by ATSDR is the first of many activities conducted by the ATSDR that will culminate in a Health Assessment document for Seneca Army Depot.

During an in briefing, which preceded the site visit by ATSDR, members of Seneca Army Depot's environmental staff expressed Seneca's concern reguarding the need for interagency coordination between the ATSDR, USEPA, NYSDEC, and the Army. Specifically, Seneca is concerned that the Health Assessment document, being prepared by ATSDR, may reach a different conclusion than reached in the Army's Risk Assessment which will be conducted as part of the forthcoming RI.

Seneca expressed its concern that at the conclusion of the RIFS (after the Record of Decision (ROD)), an after the fact Health Assessment differing in results from the data which the Army's ROD is based on would be issued by the ATSDR. The ATSDR representatives explained in the briefing that the schedule for preparing the Health Assessment document was much longer than Seneca's IAG schedule. Seneca's best case timeframe for "RIFS to ROD" is 30 months under the IAG "D+" schedule.

The ATSDR assured Seneca that efforts will be taken by the to ATSDR expedite the Health Assessment process for Seneca. In addition, Seneca has taken steps to make the ATSDR more aware of the review schedules for Seneca's reports and studies, and steps have been taken to include representatives from ATSDR in the review chain for these reports.

The purpose of the July 10-11, 1991 site visitation by representatives of ATSDR was to execute the Congressionally mandated Health Assessment process of ATSDR, a branch of the United States Public Health Service. All Department of Defense National Priorities List (NPL) sites are required, by law, to have a Health Assessment performed by ATSDR.

c. Outside Inspections Reports and Audits and Administrative Information:

(1) Reports , Audits, Administrative Information:

Their were no outside reports or audits during this quarterly reporting period.

(2) Funding Status:

PROJECT	AWARDED (Y/N)	FY	$
Phase 1a Remedial Investigations at the Open Burning (OB) Grounds	YES	FY-91	992K
Phase 1a Remedial Investigations at the Ash Landfill	YES	FY-91	941K
Solid Waste Management Unit Classification Report (SCR)	YES	FY-90	75K
CERCLA Site Investigation (SI) of eleven (11) Solid Waste Management Units	YES	FY-91	150K
Community Relations Plan(CRP)	YES	NA	NA
OB Grounds Remedial Investigation\Feasibility Study continuation	NO	FY-92	1M
Ash Landfill Remedial Investigation \Feasibility Study continuation	NO	FY -92	1M

(3) General Administrative:

During the reporting period, Seneca learned of the U.S.Army Corps of Engineer's intentions to decentralize the conduct of Installation Restoration Program (IRP) activities at Army Material Command (AMC) installations around the country. This proposed decentralization would result in the replacement of the Huntsville Division with the Baltimore District as the executing agent of IRP studies and investigations at Seneca. Seneca has asked for this decision to be reconsidered. The action could result in significant disruption of CERCLA processes at Seneca.

d. Permit Status as Applicable:

There was no change in Seneca Army Depot's RCRA facility permit status during the reporting period.

e. Personal Staffing Status:

f. Laboratory Deliverables:

No IAG laboratory deliverables were received by Seneca Army Depot during the reporting period.

SDSSE-HE (200)
Subject: Quarterly Report

g. Community Relations:

Seneca Army Depot received nine (9) copies of the Draft Community Relations Plan (CRP) from the Army Toxic and Hazardous Materials Agency (USATHAMA) on July 23, 1991. Seneca submitted three copies of the CRP to both the NYSDEC and the USEPA on August 6, 1991. The USEPA indicated to Seneca on August 13, 1991 that additional copies of the CRP would not be necessary. On August 14, 1991, two (2) additional copies of the CRP were submitted to the NYSDEC.

Seneca received USEPA comments on the CRP on September 6, 1991. This correspondence indicated that future EPA comments on the CRP should be anticipated. On September 10, 1991 Seneca Army Depot received NYSDEC comments on the CRP which included a close of comment notice. Seneca has forwarded all regulatory comments received thus far on the CRP to the USATHAMA for incorporation into the plan.

2. POC is James Miller at (607) 869-1450.

FOR THE COMMANDER:

Stephen M Absolom

for GARY W. KITTELL
Director of Engineering and Housing

Encls

CF:
Legal Office, SEAD

File

SDSSE-HE (200)

MEMORANDUM FOR RECORD

SUBJECT: FONECON on Remaining USEPA and NYSDEC Comments on the OB Grounds

1. Reference FONECON, 8 Oct 91, SAB, with the following individuals:

REGULATORY AGENCIES -

Carla Struble, USEPA
Ammillia Jackson, USEPA
Jeffrey Healy, Alliance Technology Corporation

ARMY

Michael N. Duschesneau, C.T. Main, Inc.
James Chaplic, C.T. Main, Inc.
Kevin Healy, Huntsville COE
Randy Battaglia, SEAD
James Miller, SEAD

2. Items discussed are as follows:

a. The issue of future land use scenarios to be used in the performance of a risk assessment.

b. The requirement to use lower detection limits in analysis of groundwater samples.

c. Results of the validation of aquatic laboratory by the U.S. Army Corps of Engineers, Missouri River Division (MRD).

3. Future Use Scenarios:

a. The Army Agreed to change page 3-23 and 3-24 of the workplan to reflect the residential Use Scenario. C.T. Main assured both the Army and the USEPA that enough data will be collected during the RI to support a residential classification.

b. Main agreed to FAX relevant revised pages to Carla as soon as possible, which was estimated to be within a couple of weeks from the phone call at the latest.

c. The Army (Mr. Battaglia) emphasized that it is not a possibility that the Army would allow any development (residential, industrial or otherwise) of the site in the future.

d. This issue is considered resolved by all parties (pending relevant agreed upon corrections).

SDSSE-HE (200)
SUBJECT: FONECON on Remaining USEPA and NYSDEC Comments on the OB Grounds

4. Validation of Aquatic:

a. Mr. Healy stated that Aquatic has reviewed the proper certification. Mr. Healy explained the error which led to a delay in this certification.

b. This issue is considered resolved by all parties pending submittal by Mr. Kevin Healy of the appropriate certification.

5. Use of the 500 Series (Method 524.2M4) Analysis for Groundwater Samples:

a. The conditions under which it is appropriate to use the 500 series at the OB Grounds was discussed at great lengths. An agreement was reached between all parties.

b. C.T. Main is FAXing relevant revisions to the quality assurance project plan portion of the workplan to Ammillia Jackson. Main agreed to perform this task within the next two weeks.

6. Finalization:

It was agreed by all parties that because of the minor changes that are required, the workplan is best corrected by the submittal of revised pages. An Addendum cover letter to be added to the workplan which states the workplan is final will be submitted to the regulators by C.T. Main.

7. Incorporation of NYSDEC, 8 Oct 91, FAX into the Workplan:

C.T. Main agreed to incorporate the 8 Oct 91 comments by the NYSDEC into the OB Grounds workplan. These comments necessitated screening of radioactive materials at the site and the use of NYSDEC's Technical Assistance Guidance Manual (TAGM) No. 4015.

8. All parties participating in the FONECON agreed that mobilization and initiation of fieldwork should continue at both the OB Grounds and Ash Landfill.

James M. Miller

JAMES M. MILLER
Env. Prot. Spec.

CF:
Steve
Randy
Gary

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

JACOB K. JAVITS FEDERAL BUILDING

NEW YORK, NEW YORK 10278

AUG 0 2 1991

Mr. Gary W. Kittell
Director of Engineering and Housing
Department of the Army
Seneca Army Depot
Romulus, NY 14541-5001

Re: OB Grounds RI/FS Draft Work Plan
Formal Consultation Request

Dear Mr. Kittell:

This letter is in response to yesterday's letter to me regarding USEPA comments on the OB Grounds RI/FS Draft Work Plan. Thank you for including a summary of comments requiring further clarification. After Stephen Absolom's July 26, 1991 letter, Seneca informed me that the resolution to your formal consultation request would take the form of a conference call. USEPA staff could participate in a conference call by August 16, 1991.

If in fact you would prefer a meeting to discuss all the comments in our letter, as stated in yesterday's correspondence, this could not be arranged until some time after August 16. Our July 12, 1991 OB Ground letter summarizes the reviews of many USEPA departments and our contractor. We will require the participation of these reviewers in order to ensure your questions receive the proper attention.

Randy Battaglia informed me that Seneca will have comments in addition to those I received yesterday. Please let me know what your additional concerns are as soon as possible. We certainly would like to resolve this matter without delay. If you have any questions, feel free to call me at 212-264-4595.

Sincerely yours,

Carla M. Struble, Project Manager
Federal Facilities Section

cc: R. Battaglia, Seneca
K. Healy, USACE
K. Gupta, NYSDEC
M. Duchesneau, C.T. Main

DRAFT

MEMORANDUM FOR

Ms. Carla Strubal, Project Manager, Federal Facilities Section, Room 2930, Region 2, U.S. Environmental Protection Agency, 26 Federal Plaza, New York , NY, 10278

Mr. Kumal Gupta, Project Manager, Federal Projects Section, Bureau of Eastern Remedial Action, Division of Hazardous Remediation,NYS Department Of Environmental Conservation, 50 Wolf Road, Albany NY 12233-7010

Subject : Quarterly Report

1. In accordance with para 26.1 of the soon to be finalized Inter Agency Agreement between the Army, the United States Environmental Protection Agency (USEPA) and the New York State Environmental Conservation (NYSDEC) the following quarterly report is submitted.

(A) Minutes From Formal Meetings held during the Reporting Period

Meetings

1. There were no formal meetings of the project Managers or Technical Review Committee during the reporting period.

(B) Milestones meet on schedule, explanation of milestones not meet on schedule

1. Signing of the Inter Agency Agreement (IAG)

The IAG is currently being reviewed by the Environmental Law Division of Head Quarters Department of the Army (HQDA), Washington D.C.

2. Ash Landfill Milestones

(a) progress made toward workplan approval & fieldwork initiation

Recapping the last quarterly report, On June 24, 1991, a phone conference was held between the Army and the regulatory agencies to resolve remaining comments on the revised draft final Ash Landfill Workplan. Seneca was optimistic reguarding progress made during the phone conference and was confident that an approved workplan could be achieved by an early July time frame.

The Armys workplan contractor, C.T Main was unable to supply the revised pages to the regulatory agencies as expeditiously as originally promised to the agencies in the June 25, 1991 phone conference. MAIN was unable to proceed with the revisions on schedule do to the procedural delays associated with the securing of additional funds for the project. As a result, the Army was unable to revise the workplan in a time frame shorter than what is required by para. 17.7(f) of the IAG. The Army submitted revised pages for the revised Draft Final Ash Landfill Work Plan to the regulatory agencies on August 1, 1991.

Seneca Army Depot received USEPA comments on the Ash Landfill Workplan on September 24, 1991; ~~this correspondence was dated September, 17 , 1991~~. The USEPA requested that two of the five comments provided by the USEPA be addressed by the Army before final approval of the workplan is granted. The USEPA comments did not necessitate another major revi$sion and submittal of the Workplan, rather the submittion of replacement pages.

Seneca Army Depot received correspondence from the Huntsville Division of the Army Corps of Engineers on September 25, 1991 advising Seneca of the Divisions intentions to begin fieldwork at the Ash Landfill and Open Burning Grounds commencing immediately. The Huntsville Divisions primary concern was that without an immediate initiation of both projects, the opportunity to finish Phase I fieldwork prior to the onset of the winter season will be lost. The Huntsville correspondence provided an discussion of how the Army intends to comply with the five issues identified in the September 17, 1991, USEPA correspondence. ~~WE SENT IT to Regulators on ?~~

( ) — SEE in OB GR

(b) USEPA oversight of fieldwork

On September 24, 1991, Seneca received written correspondence from the USEPA which summarized the USEPA's ~~requested~~ EXPECTED fieldwork oversight roles. Examples of USEPA field oversight activities include the supervision of several groundwater monitoring wells and the collection of numerous groundwater, soil, and sediment samples. The USEPA is employing the services of the Alliance Inc., to perform field oversight activities.

3. Open Burning Grounds Milestones

(a) OB grounds workplan in overview

During the reporting period, a revised OB Grounds Workplan was submitted to the regulatory agencies. Prior to this submittal, the last submittal of a OB Grounds Work Plan to the regulators was on April 25, 1991. In overview, the OB Grounds Workplan has been under review for approximately five months.

(b) Progress made toward OB Grounds Workplan approval & field work initiation

The NYSDEC submitted comments on the OB Grounds Draft Workplan on June 6, 1991. Final NYSDEC comments on the workplan arrived at Seneca on June 20, 1991. The USEPA submitted ~~their~~ comments on the OB grounds draft Workplan to Seneca on July 12, 1991. After completing a thorough review of the regulatory comments, Seneca requested formal consultation pursuant to the IAG para 17.7 e(1), in order to resolve regulatory determinations that the Army felt warranted further clarification. This response was followed by an August 1, 1991 correspondence pursuant to the IAG 17.7 e (2), which providied an detailed explanation of the aspects of the regulatory comments that the Army was in disagreement with.

During the reporting period, Seneca indicated to the USEPA that face to face meetings beween the Army and the regulators would be the preferred method of conducting formal consultations. Seneca's bases for preferring face to face negotiations, verses phone conferences, was the success that resulted during the February 1991 Ash Landfill workplan consultations held in NYC. Because of scheduling difficulties at the USEPA which prohibited face to face formal consultations prior to the IAG required due date for the consultation, phone conferences were utilized.

Formal consultations were held on August 8, 12, and 15, 1991. At the conclusion of the August 15 consultation, most comments were were adiquatly addressed with the exception of the following four issues:

- ♦ The issue of future land use scenarios to be used in the performance of a risk assessment
- ♦ The requirnment to use lower detectiion limits in analysis of groundwater samples
- ♦ The requirnment that sieve analysis be performed on sediment samples taken to assure that the fine sediments were being sampled.
- ♦ The use of the NYSDEC Technical Assistance Guidance Manual when filtering water samples versis relevant USEPA Guidance

On August 29, 1991, Seneca submitted to the regulatory agencies C.T. Mains formal responses to both the NYSDEC and the USEPA's written comments on the Draft Workplan. This response incorporated the agreements reached and progress made in the formal consultations.

On September 13, 1991, Seneca received revised copies of the OB Grounds Workplan from C.T. Main for resubmittal for regulatory approval. The workplan was submitted to the regulators by Seneca on September 30, 1991.

Seneca Army Depot provided the regulatory agencies with correspondence on September 30, 1991 announcing the Army's intention to mobilize for field work at the OB Grounds ~~and Ash Landfill.~~

On October 8, 1991 , Seneca recieved formal respones from the USEPA on the Augest 29, formal comments provided by MAIN. At this point in time, only minor revisions to the workplan were requsted by the USEPA. A phone conference was held on the afternoon of October 8, 1991, to discuss the remaining issues. This phone conference resulted in the resolution of all unresollved issues raised by the USEPA.It was also decided in this phone conference that the recent request by the NYSDEC that sreening for radioactive materials at the site will be followed.

DO NOT INCLUDE

4. Solid Waste Management Unit (SWMU) Classification Report (SCR)

(b) progress made toward finalization of the SCR

Seneca Army Depot submitted to the regulatory agencies a Draft SCR on April 19, 1991. Currently, no agreement has been reached between the Army and the regulatory agencies reguarding the proper classification of the sixty nine (69) SWMU's identified in the SCR. The SCR remains in draft form pending future negotiation and resolution between the regulatory agencies and the Army.

The NYSDEC is requesting that sixty seven (67) of the sixty nine (69) SWMU's be considered AOC's. The Army is requesting that only thirty (30) SWMU's be classified as AOC's. The USEPA is requesting that sixty eight (68) of the sixty nine (69) SWMU's be classified as AOC's.

Seneca Army Depot received the final USEPA comments on the draft SCR on June 28, 1991. These comments were extensive and consisted of specific comments reguarding the Army's classification of each SWMU. Seneca feels strongly that some areas classified as Areas of Concern (AOC) by the USEPA do not pose a reasonable threat of release. On August 6, 1991, Seneca provided the USEPA with written correspondence discussing why several of the SWMU's should not be classified as AOC's. This correspondence also addressed comments provided by the NYSDEC on July 17, 1991.

On July 17, 1991, Seneca received comments from the NYSDEC and the New York State Department of Health (NYSDOH) on the Draft SCR. This correspondence stated that fifty seven (57) of the known SWMU's at Seneca Army Depot should be classified as AOC's. On August 8, 1991, Seneca received additional comments on the Draft SCR from the NYSDEC. The NYSDEC indicated that based on these additional comments, Sixty Seven (67) SWMU's should be considered AOC's. The August 8, 1991 transmittal by the NYSDEC did not contain a close of comment period notice.

On September 4, 1991, Seneca received an close of comment period notice for the SCR from the NYSDEC. Seneca followed by providing a detailed response to the August 8, 1991 NYSDEC comments. This correspondence was sent to the NYSDEC on September 19, 1991.

In a September 19, 1990 letter from Seneca Army Depot to the NYSDEC, Seneca proposed that the IAG schedule be waved for the SCR This request was based on factors such as the large number of SWMU's that require extensive consultations and the need for future visual inspections of the site by the USEPA and NYSDEC representatives

5. CERCLA Site Investigation (SI) activities for SWMU Areas identified as Areas of Concern (AOC)

As a result of the findings in the Draft SCR, C.T. Main is presently under contract to develop Work Plans for CERCLA Site Investigations at the eleven highest priority (eight of the 'High Priority' and three of the 'moderate priority', according to the SCR recommendations) SWMU's listed in the study. Although the study itself recommends sampling to be performed, CT. Main will be making its own recommendations which will undergo review prior to WP approval by the Regulators.

Draft

On July 15-16 representatives from C. T Main visited Seneca in order to visually inspect the eleven (11) sites being investigated under the SI contract. C. T Main was instructed by Seneca to incorporate relevant NYSDEC and USEPA sampling recommendations, as stated in USEPA and NYSDEC categorical responses to the SCR for the eleven relevant SWMU's, into the forthcoming SI work plans.

The Army's schedule for preparation of the Work Plan contains a estimated target date of February 24, 1992 for Finalization. This time line includes a 30 day regulatory review period for both the Draft and Draft-Final iterations. Assuming that such an review scenario is sufficient, the Army anticipates implementation (actual sampling) to begin with the arrival of the optimal field sampling season i.e. circa May 1992.

♦ ATSDR HEALTH ASSESSMENT INITIATED

On July 11-12, 1991 representatives from the Agency for Toxic Substances and Disease Control Registry (ATSDR) conducted a Site visit of the Ash Landfill, OB grounds, and several high priority

AOC's. The site visit by ATSDR is the first of many activities conducted by the ATSDR that will culminate in a Health Assessment document for Seneca Army Depot.

During an in briefing which preceded the site visit by ATSDR, members of Seneca Army Depots environmental staff expressed Seneca's concern reguarding the need for interagency coordination between the ATSDR, the USEPA and the NYSDEC, and the Army. Specifically, Seneca is concerned that the Health Assessment document being prepared by ATSDR may reach a different conclusion than reached in the Army's Risk Assessment which will be conducted as part of the forthcoming remedial investigation.

Seneca expressed its concern that at the conclusion of the Record of Discission (ROD), which is required within 31 months in accordance with the IAG , an after the fact Health Assessment differing in result from the data which the Army's ROD is based on, would be issued by the ATSDR. The ATSDR representatives explained in the briefing that the schedule for preparing the Health Assessment document was much longer than Senecas IAG schedule for completion of the ROD.

The ATSDR assured Seneca that efforts will be taken by the to ATSDR expedite the Heath Assessment process for Seneca. In addition, Seneca has taken steps to make the ATSDR more aware of the review schedules for Senecas reports and studies, and steps have been taken to include representatives from ATSDR in the review chain for these reports.

The purpose of the July 10-11, 1991 site visitation by representatives of ATSDR was to execute the Congressionally mandated Health Assessment process of ATSDR, a branch of the United States Public Health Service. All Department of Defense National Priorities List (NPL) sites are required by law to have a Health Assessment performed by ATSDR.

C. Outside inspections reports and Audits and Administrative information

1. Reports , Audits, Administrative Information

Their were no outside reports or audits during this quarterly reporting period

2. Funding Status

PROJECT	AWARDED (Y\N)	FY	$
Phase 1a Remedial Investigations at the Open Burning (OB) Grounds	YES	FY-91	992K
Phase 1a Remedial Investigations at the Ash Landfill	YES	FY-91	941K
Solid Waste Management Unit Classification Report (SCR)	YES	FY-90	75K
CERCLA Site Investigation (SI) of eleven (11) Solid Waste Management Units	YES	FY-91	150K
Community Relations Plan(CRP)	YES	NA	NA
OB Grounds Remedial Investigation\Feasibility Study continuation	NO	FY-92	1M
Ash Landfill Remedial Investigation \Feasibility Study continuation	NO	FY -92	1M

3. General Administrative

(A) During the reporting period, Seneca learned of the U.S.Armys Corps of Engineers intentions to decentralize the conduct of Installation Restoration Program (IRP) activities at Army Material Command (AMC) installations around the country. This proposed decentralization would result in the replacement of the Huntsville

Division with the Baltimore District as the executing agent of IRP studies and investigations at Seneca.

SENECA has asked for this division to be reconsidered. The ~~results~~ action could result in a significant disruption of ~~the past IRP~~ CERCLA process at Seneca.

Seneca firmly apposes the proposed replacement of the Huntsville Division with the Baltimore District and has voiced its strong displeasure with the realignment to the Army Chain of Command. The Huntsville division played an active role in Seneca's IAG negotiations and is intimately familiar with responsibilities and demanding schedules that the IAG imposes upon Seneca and the Army as a whole.

(D) permit status as applicable

There was no change in Seneca Army Depots RECRA facility permit status during the reporting period.

(e) Personal staffing Status

(F) Laboratory Deliverables

1. No IAG laboratory deliverables were received by Seneca Army Depot during the reporting period.

(g) Community Relations

1.Community Relations Plan

Seneca Army Depot received nine (9) copies of the Draft Community Relations Plan (CRP) from the Army Toxic and Hazardous Materials Agency (USATHAMA) on July 23, 1991. Seneca submitted three copies of the CRP to both the NYSDEC and the USEPA on August 6, 1991. The USEPA indicated to Seneca on August 13, 1991 that additional copies of the CRP would not be necessary. On August 14, 1991, two (2) additional copies of the CRP were submitted to the NYSDEC.

Seneca received USEPA comments on the CRP on September 6, 1991. This correspondence indicated that future EPA comments on the CRP should be anticipated. On September 10, 1991 Seneca Army Depot

received NYSDEC comments on the CRP which included an close of comment notice. Seneca has forwarded all regulatory comments received thus far on the CRP to the USATHAMA & FOR INCORPERATION into the PLAN.

.

MAIN
—1893—

CHAS. T. MAIN, INC.

PRUDENTIAL CENTER, BOSTON, MASSACHUSETTS 02199 • TELEPHONE 617 262-3200 • TELEX 4430035 • FAX 617 859-2575

August 26, 1991
1345-082-6228

Mr. John Romeo
CEHND-PM-E
U.S. Army Corps of Engineers
Huntsville Division
Huntsville, Alabama 35807-4301

SUBJECT: RI/FS Work Plan, OB Grounds

Dear Mr. Romeo:

In response to the comments received from Jeff Healy of Alliance Technologies Corporation (Alliance), Carla Struble of the U.S. Environmental Protection Agency (EPA) and Kamal Gupta of the New York State Department of Environmental Protection (NYSDEC), Chas. T. Main, Inc. (MAIN) submits the following responses to the OB Grounds Work Plan originally submitted by MAIN in April of 1991. The comments received from Alliance, EPA, and NYSDEC are underlined and followed by MAIN's responses. These responses have incorporated the information obtained from discussion which took place in several conference calls (August 8, 12, and 15, 1991) as part of MAIN's request for clarification on several issues (July 31, 1991 letter).

ALLIANCE PAGE-SPECIFIC COMMENTS

Section 3.2 - Identification of Potential Receptors and Exposure Scenarios

P. 3-19 This comment concerns dermal exposure to fugitive dusts.

The exposure pathway model presented in Figure 15 indicates that dermal contact with dusts will be evaluated for area residents, but not for site visitors, while the discussion on pages 3-21 and 3-22 seems to imply exposure to dusts will be greater for site visitors than for area residents. This exposure pathway should be clarified. Additionally, no distinction is made between surface and subsurface soils.

Figure 15 is set up to show that area residents may experience ingestion, dermal, and inhalation exposure via movement of fugitive dusts offsite. Dermal contact with dust to site visitors is not included in this block because they may be subject to dermal exposure to soils, a much greater magnitude exposure than the exposure envisioned for area residents. Thus, the dermal contact with dust for visitors is covered by the dermal exposure to soils scenario. A distinction between surface and subsurface soils will be made, where appropriate. The Work Plan will be clarified.

P. 3-22 This comment concerns 1) environmental impact of contaminated soils on burrowing mammals, and 2) future use of the site as light industrial.

1) The potential environmental impact of contaminated soils on burrowing mammals should be included in the discussion of exposure pathways and receptors.

2) Further justification should be provided in support of the assumption that future use of the site will be restricted to light industrial uses. Justification should include: information on local zoning, master plans for neighboring communities, additional information on nearest residences and sources of drinking water supplies. The potential for additional residences utilizing groundwater as a source of drinking water being located adjacent to or on the site at some time in the future may need to be considered in developing future exposure scenarios.

1) MAIN will characterize the terrestrial animals as part of an initial survey, and if present, the potential impacts on burrowing animals shall be included. This will be stated in the Work Plan.

2) The additional information for the assumption that the future use of the site will be restricted to light industrial uses is provided below.

MAIN contracted the Romulus Town Clerk, Jonie Hamilton, regarding zoning maps for the site and surrounding area. According to Ms. Hamilton, no zoning maps exist for the site or surrounding areas in the Town of Romulus. She also stated that there were no plans for neighboring communities. She did state that New York State has preliminary plans for a correctional facility in Seneca on Route 96A near Deal Road, approximately 1.5 miles southwest of the site. However, these plans have been delayed due to the state's financial difficulties. She was not able to provide plans for the facility. She did state that any development would have to meet the requirements of the New York State Uniform Fire Prevention and Building Codes and Subdivision Regulations of New York state.

MAIN contacted the Building Code Enforcement Office regarding the proposed correctional facility development. Wayland Daffler of this office stated that the development was on hold for financial reasons. He knew of no other planned developments in the area.

The Seneca County Department of Health was contacted regarding the presence of private residential wells near the site. Charles Carroll of this office stated that the Seneca army depot was serviced by water from Seneca Lake. The residences to the west of the depot all have private wells as no water service is provided to this area, according to Charles Carroll. Based on this

information the nearest residential wells would be approximately 1.5 miles to the west of the OB grounds. The Department of Health does not maintain a list of private wells. Mr. Carroll also knew of no planned developments in the area of the site.

Given the current and anticipated use of the site as a restricted area for open burning, it is unlikely that it will be used for residential development in the future.

This information will be incorporated into the Work Plan.

Section 3.4 - Preliminary Identification of Applicable or Relevant and Appropriate Requirements

P. 3-45 This comment concerns evaluating potential impacts on white deer.

While there are no ARARs protecting the rare white deer found on the Seneca Army Depot (Department of the Army, Installation Environmental Assessment for the Seneca Army Depot, 1980), it may be appropriate to discuss potential site impacts on this unique population.

Currently, the Seneca Army Depot has in place a Wildlife Management Plan which includes the white deer. As part of the plan, population indices prepared by NYSDEC are compared to aerial counts performed by SEAD employees. Together they provide accurate year to year data on the number of deer and the white-to-brown ratio.

Because the deer are known to live and feed outside the area which makes up the OB grounds, MAIN does not feel that the impacts of the site on this population can be accurately assessed. The RI investigation will collect a great deal of data on the OB grounds, however, data on other areas outside the OB grounds will not be collected. It would be inappropriate to evaluate the impacts to the deer based on data from only the OB grounds, as the off-site areas also have the potential to impact the deer. Distinguishing between on-site and off-site impacts to the white deer is beyond the scope of the RI/FS. MAIN is not aware of how this could be evaluated during the RI/FS. No change will be made to the Work Plan.

Section 3.6 - Data Gaps and Data Needs

P. 3-65 This comment concerns sampling groundwater at residential locations.

If residential wells are determined to be located near and downgradient from the site while gathering background information, water samples should be collected and analyzed for contaminants to establish a baseline.

Groundwater flow has been determined to be to the east-northeast toward Reeder Creek (Figure 26). Based on field reconnaissance, no residential wells have been

determined to be located directly downgradient of the OB grounds. However, if during the course of the investigation residential wells are to be located near and downgradient from the site, they will be sampled and analyzed for contaminants. While residences with private drinking water wells are present west of SEAD, presently, MAIN does not feel that it is necessary to sample groundwater from these residential wells farther downgradient of the site. This clarification will be added to the Work Plan.

P. 3-68 This comment concerns the collection of background soil and groundwater samples.

Item 3 - Data Needs for Soils includes as the third bullet, to "establish background levels for similar soils, off the OB/OD grounds."

During the collection of background samples, MAIN should take precautions to assure that all background samples are collected from "clean areas." This is essential due to the large number of other suspected source areas present on the SEAD property. It may be advisable to collect background samples off site.

MAIN will take precautions to assure that soil background samples are collected from nearby "clean areas." Background surface water and groundwater samples will be collected from nearby the site in upgradient locations to determine the quality of water entering the site. MAIN does not feel that it will be necessary to collect background samples from areas outside of the Seneca Army Depot.

This information will be added to the Work Plan.

P. 3-69 This comment concerns wetlands delineation.

A wetlands delineation should be included in the biological data needs section.

A wetlands delineation of the OB grounds will be included in the biological data needs section.

MAIN proposes to delineate wetlands on the approximately 30 acre OB grounds using the Unified Federal Routine Method Routine Method. Figure 29 illustrates the approximate area of the OB grounds. Wetland covertypes will be evaluated using aerial photographs, existing wetland maps (NYSDEC Wetland Regulatory Maps and United States Fish and Wildlife Service (USFWS) National Wetland Inventory Maps) and field reconnaissance. Wetland boundaries will not be surveyed as part of this delineation.

Wetlands outside the OB grounds will be evaluated using aerial photographs, existing wetland maps (NYSDEC Wetland Regulatory Maps and USFWS National Wildlife Inventory Maps) and field reconnaissance to confirm wetland delineations, where necessary.

Section 4.2 - Field Investigation

Section 4.2.1 - Geophysical Investigation

P. 4-3 This comment concerns the areas of the geophysical surveys.

Figure 22 does not clearly indicate the different survey areas for the four proposed geophysical exploration techniques. No explanation is provided on the figure for the two different shaded regions, except that they are both the "areas of geophysical survey." Also, the twenty-foot wide access paths shown on the figure are not discussed in the text.

The figure should be amended to illustrate the extent of coverage for the four different geophysical surveys. The overall perimeter of the geophysical investigation for the OB area should be clearly indicated.

An explanation for the two regions of the proposed geophysical surveys will be added to the map (Note: the RADAR and STOLS surveys will not be performed per the discussion during the June 24, 1991 conference call between EPA, Seneca and their contractors). The Work Plan will be modified to reflect only the two geophysical surveys. The 20 foot wide access paths will be discussed in the text.

The overall perimeter of the geophysical surveys will be clearly indicated on Figure 22.

P. 4-4 This comment concerns the grid spacing for the RADAR and STOLS surveys.

The second paragraph discusses a 30-acre grid consisting of a 200-foot grid node spacing. This grid system, and the overall grid perimeter, should be illustrated on a figure.

Is the 200-by-200-foot grid spacing being proposed for the RADAR and STOLS surveys? Additional information regarding the adequacy of this grid spacing for location of individual UXOs should be discussed. Are the proposed grid spacings adequate to locate objects of the expected size of the UXO? Discussion of the width detection of the RADAR and STOLS surveys should be included.

This information will be deleted from the Work Plan as the RADAR and STOLS surveys will not be performed per the above note.

P. 4-8 This comment concerns the 25 foot grid spacing plots for the SIR-10 System geophysical survey.

The 25 feet grid spacing plots discussed in the third paragraph which will be used for the geophysical surveying and soil sampling should be illustrated on a figure.

The 25 foot grid spacing plots correspond to soil sampling locations.

P. 4-8 This comment concerns a staging area for excavated soils.

The last paragraph of page 4-8 discusses cross-section excavation and sampling of subsurface geophysical anomalies. MAIN states, "The contents of each bucket of material removed from the excavation will be gently placed on the ground and spread out so as to expose the contents as much as possible for visual inspection." A staging area, which includes run-off containment features, should be set up for visual inspection of the contents so that soils potentially contaminated with hazardous constituents are not spread out over the site.

Agreed. A staging area, similar to that described above, will be set up for visual inspection of the soils. This will be stated in the Work Plan.

P. 4-9 This comment concerns calibration of geophysical equipment based on information of depth and orientation of uncovered UXOs.

Information regarding the depth and orientation of the UXO relative to the transect will be useful in calibration of the geophysical results. This information should be collected and analyzed to evaluate if predicted depths to UXO can be refined as experience with analysis of the geophysical results at the site increases.

Where possible, the geophysical equipment will be calibrated using the results of the depth and orientation of any uncovered UXOs. This will be stated in the Work Plan.

Section 4.2.2 - Soils Investigation

P. 4-9 This comment concerns conditions for terminating borings.

The conditions for termination of the soil borings at the OB grounds are unclear. The last paragraph of page 4-9 states that continuous split-spoon soil borings will be collected across the OB grounds and on each burning pad form 0 to 10 feet deep. Yet, in the fourth paragraph on page 4-10, it is stated that the soil borings will be performed until refusal, and that refusal is expected at 10 feet.

The soil borings should be advanced to refusal, as is stated on page 4-10. The last paragraph on page 4-9 should therefore be edited to avoid confusion about the conditions at which borings will be terminated. MAIN should change "0-10 feet deep" to "refusal, which is anticipated to be at ten feet deep."

Agreed. The conditions for terminating the soil borings will be made consistent as described above.

P. 4-10 This comment concerns detection limits and levels of potential risk.

In paragraph 6, MAIN states that two complete Level IV and Level V analyses per borehole will satisfy the Data Quality Objectives (DQOs) of the risk assessment. The following comment is noted.

In cases where potential site contaminants are suspected to pose toxicological risks at environmental concentrations below the Contract Required Quantitation Limits (CRQLs) (based on a review of toxicity data), it may be advisable to analyze a percentage of the TCL/TAL analyses to a lower detection limit for those specific compounds, to verify that the suspect contaminants are not present at these lower concentrations.

As agreed upon in previous meetings, MAIN will use NYSDEC CLP protocols, including the standard quantitation limits, for the analyses to be performed. A review of potential site contaminants and detections limits indicates that none of the contaminants presents a significant toxicological risk at the detection limit. No change will be made to the Work Plan.

P. 4-11 This comment concerns the Level II screening analysis.

The first paragraph states, "Level II analyses will only be performed to certain indicator compounds. The indicator compounds selected for the screening program are lead for heavy metals, TNT for explosives, and total volatile hydrocarbons for the volatiles." MAIN states that lead and TNT were judged to be good indicator compounds "because they were found to be prevalent in earlier soil investigations and at elevated concentrations."

Level II analyses for the indicator compounds will be performed on all of the subsurface soil samples taken at the OB grounds during soil investigation activities. Based on these Level II results, one subsurface soil sample for each boring will be collected for Level IV and Level V analyses consisting of NYSDEC CLP analytical methods for TCL and TAL constituents and Method 8330 for explosives.

2,4-DNT and 2,6-DNT have been detected in site soils during previous sampling efforts. MAIN states that 2,4-DNT and 2,6-DNT are considered to be moderately mobile and are the most mobile of the explosives detected on site. Furthermore, MAIN states in Section 3.1.3, that 2,4-DNT was detected in a groundwater sample in excess of Federal water quality criteria.

Under the proposed soil sampling strategy, only one subsurface soil sample from each boring will be analyzed for the full Level IV and Level V analyses. While the full

Level V explosive analyses will be performed on the split spoon sample containing the highest level of TNT, the sample submitted for full explosives analyses may not necessarily contain the highest explosive contaminant concentration of the interval samples collected for the boring due to the limited indicator compound list.

Based on the above discussion, MAIN should provide discussion on why the indicator compounds for the Level II screening of subsurface soil samples does not include 2,4-DNT and 2,6-DNT.

MAIN's understanding of a screening program is select indicator compounds to streamline the number of constituents to be analyzed and the complexity of the analysis. Furthermore, analytical screening methods are not available for all the explosive constituents found at the site. The approach taken by MAIN is to select indicator compounds for the various chemical groups of interest. To expand these indicator compounds is beyond the scope of screening program and will complicate the selection criteria for samples which will undergo a higher level of analysis. MAIN respectfully requests EPA reconsider this position and provide guidance as to why the selection of these indicator compounds is inappropriate.

MAIN has proposed the use of field screening techniques to provide a larger data base then would be available if full level IV analyses were performed on all of the samples, given reasonable financial limitations for laboratory analyses. MAIN used the general methodology outlined in EPA's "Data Quality Objectives For Remedial Response Activities" Development Process (March 1987) (EPA 540/G-87/003) to identify data quality needs for the RI/FS. The EPA document cites the use of Level II data to determine "extent of contamination."

In addition, the field screening program was based on review of the available analytical data, the capabilities of Level II data, and the volume of data generated when Level II and Level IV are combined. Specifically, MAIN has chosen TNT as an indicator compound for explosives. In reviewing the data presented in TAbles 3 and 4 and on subsequent figures (8, 9, and 10) it is evident that TNT is a good indicator compound for explosives in soil for the following reasons:

- Table 4 USAEHA Phase 2 Data: TNT ranges from ND-9270 ppm and is fairly prevalent (occurs in 6 of 24 samples) when compared to the lower concentrations detected for other explosive compounds which are less prevalent. The exception is RDX which occurs in 18 of 24 samples, however, the concentrations of this compound are low (ND-2.7 ppm).

- Table 4 USAEHA Phase 2 Data: The same general relationships for TNT and other explosive compounds can be seen in this 1984 data summary. TNT is the most prevalent explosive compound and also was detected at the highest concentrations.

- In Figures 8 through 10 the analytical summary boxes indicate the vertical presence of TNT and other explosive compounds. In most instances explosive compounds including TNT were detected at the surface from 0-0.5 feet. As MAIN's sampling program includes Level IV analysis of every surface soil sample (0-0.5 feet) per boring, as well as one other sample per boring, which based upon screening, has been shown to contain explosive compounds.

In a similar manner, the existing background data was reviewed. Based upon the frequency of occurrence and the concentrations of lead was selected as an indicator compound for the heavy metal fraction.

When Level II and IV data are combined, the resulting data set is expected to provide the most information about the concentrations and extent of contamination on-site.

No change was made to the Work Plan.

P. 4-11 This comment concerns earth moving methods and the spreading of contaminated migrating soils.

MAIN states in the last sentence of p. 4-11 that "A backhoe or suitably equivalent piece of equipment will be used to open berms for sampling."

MAIN should provide further discussion on the proposed earth-moving methods during berm sampling that will mitigate the potential of spreading contaminated soils across the OB grounds during this activity.

MAIN proposes to conduct the sampling of the berms in such a way as to minimize the spreading of contaminated soils across the OB grounds. MAIN will accomplish this in the following way.

1) Using designated areas for temporary storage of the soil during excavation and collection of the sample. The temporary storage area will be immediately adjacent to the excavated area;

2) The backhoe or suitably equivalent used for berm sampling will be decontaminated using a steam cleaner after excavating at each sampling location. In addition, the decontamination procedures in Section 4.5 may also be employed; and

3) Returning the excavated soil immediately to the berm upon completion of the soil sampling.

This information will be added to the Work Plan.

P. 4-14 This comment concerns the Level II screening data and determining the extent of vertical and horizontal contamination of the site.

The second paragraph states that "the Level II screening data will be used to evaluate the extent of vertical and horizontal contamination at the site." Only the vertical and horizontal extent of lead, TNT and total volatile hydrocarbons will be able to be evaluated. Other contaminants which have been previously detected on site, such as barium, TDX, HMX, tetryl, 2,4-DNT and 2,6-DNT, are not included on the indicator compound list for Level II screening of subsurface soils and, therefore, limited data will be available. This data will include one surface soil result and one subsurface soil result (which will probably be taken for various intervals throughout the site) from each boring. The vertical and horizontal extent of contamination of these other compounds may not be able to be evaluated effectively due to the varying soil sample collection depth.

MAIN's response is the same as in the first comment on p. 4-11, above. No change was made to the Work Plan.

Section 4.2.3 - Surface Water Investigation

P. 4-25 This comment concerns background concentrations in Reeder Creek, and wetland sampling.

The first paragraph of Section 4.2.3 states "concentration levels in Reeder Creek, upstream of the OB/OD grounds will be used as background." MAIN should provide a statement regarding whether or not upstream areas have been impacted by other SEAD sources or offsite sources.

In the same paragraph, MAIN states that onsite surface water will be sampled "if the size of water represents a wetland." MAIN should state the minimum size that would represent a wetland.

In order to fully characterize the nature and extent of contamination of surface waters and sediments at the OB grounds, surface water and sediment samples should be collected from all identified onsite wetlands areas and drainage ditches.

Based on the review of the available data to date, MAIN has not uncovered information indicating that upstream areas have been impacted by other SEAD sources or off-site sources. This will be stated in the Work Plan.

MAIN intends to delineate wetlands on the OB grounds site. Wetland determinations on the OB grounds will not be based on size alone rather the methods described below. MAIN proposes to delineate wetlands on the approximately 30 acre OB grounds using the Unified Federal Routine Method Routine Method. Figure 29 illustrates the approximate area of the OB grounds. Wetland covertypes will be

evaluated using aerial photographs, existing wetland maps (NYSDEC Wetland Regulatory Maps and United States Fish and Wildlife Service (USFWS) National Wetland Inventory Maps) and field reconnaissance. Wetland boundaries will not be surveyed as part of this delineation.

Wetlands outside the OB grounds will be evaluated using aerial photographs, existing wetland maps (NYSDEC Wetland Regulatory Maps and USFWS National Wildlife Inventory Maps) and field reconnaissance to confirm wetland delineations, where necessary.

MAIN's choice of sample locations in "potential wetland" areas is based on a cursory inspection of the site. These areas were identified as being most likely to be impacted by site activities.

MAIN's intent is to sample the six low-lying areas, which were determined to be likely areas of temporary surface water storage and therefore areas of sediment deposition. These areas were identified by field reconnaissance. It is not MAIN's intent to sample all wetlands identified using the methods described above, because any potential on-site wetland may not represent an area of sediment deposition.

MAIN feels that the selection of on-site low-lying areas and drainage channel samples will provide a good indication as to whether surface run-off from on-site activities have impacted these areas. The surface water and flow patterns for the site, Figure 25, indicates that surface water flow is toward Reeder Creek. As seen from the figure, surface water flows through one or more of the sampling locations. The selection of these locations was based upon these identified surface water flow patterns and the topographic site contours. For clarification, sampling points for the identified potential wetland areas and drainage channels will be marked on the Surface Water and Sediment Sampling Plan, Figure 25, as requested. An explanation for selecting the six sampling locations will be added to the Work Plan.

P. 4-25 This comment concerns sediment and surface water sampling locations.

The first paragraph of Section 4.2.3.1 states that "Sediment samples will be collected for each surface water sample collected." The RI/FS Work Plan does not state whether or not sediment sampling locations will correspond with surface water sampling locations.

Sediment samples should be collected at the same point as corresponding surface water samples.

To clarify this, the sediment samples will be collected for the same general location as the surface water samples. Specifically, the sediment samples will be collected from areas of deposition and the surface water samples will be collected from areas of slow

moving water. These two locations will be the same in Reeder Creek. This will be clarified in the Work Plan.

P. 4-26 This comment concerns surface water sampling, rainfall data, analysis of material sediment for hardness, and organic carbon.

In Section 4.2.3.2, MAIN recognizes the impact of seasonal variation in the site water level and suggests that surface water sampling will take place in late summer to minimize dilution of contaminants. It would be preferable to have replicate surface water and sediment samples for each location taken at different times during the remedial investigation, if possible.

Information on local rainfall, including average annual rainfall and total rainfall for the year prior to sampling would be useful and should be obtained.

The following additional water and sediment quality parameters should be determined: hardness and dissolved organic carbon. These parameters affect the availability of the contaminants and are sometimes necessary for calculating target criteria.

Presently, MAIN is confident that the sampling program for surface water and sediment will provide the appropriate data to meet the data needs identified in the data quality objectives, however, MAIN will evaluate the potential for an additional round of surface water and sediment sampling upon review of the first round.

Information on rainfall data will be collected prior to sampling.

Analysis for hardness will be performed for surface water. Through the clarification process it was learned that the reference to dissolved organic carbon was a typing error and this should be ignored. MAIN will ignore this. Hardness will be added to the text and tables.

Section 4.2.4 - Groundwater Investigation

P. 4-31 This comment concerns performance of pumping tests.

If groundwater remediation is determined to be necessary , pump tests will be required to determine additional aquifer characteristics such as the "radius of influence" of capture wells.

Agreed. In the event that groundwater remediation is determined to be necessary, a pumping test will be performed to obtain additional aquifer characteristics. This statement will be added to the Work Plan.

P. 4-33 This comment concerns an additional well and movement of one well.

In Figure 26, it appears that weathered bedrock monitoring wells will not be installed downgradient of burning pads D and E. Also, the proposed locations of the weathered bedrock monitoring well at burning pad C is shown adjacent to, and not downgradient of, the burning pad.

MAIN should consider including a single bedrock monitoring well downgradient of burning pads D and E, and that MAIN consider repositioning the location of the proposed bedrock well by burning pad C so that it is downgradient of the pad, and coupled with the proposed overburden well in this area.

Agreed, MAIN will install an additional well downgradient of burning pads D and E. The proposed bedrock well by burning pad C will be located downgradient of the pad and coupled with the proposed overburden well in this area. These modifications will be incorporated into the Work Plan.

P. 4-35 This comment concerns drilling methods.

Paragraph 2 states, "The drilling techniques to be used [for bedrock wells] will be identical to those previously mentioned [for overburden wells]." Overburden wells will be installed remotely using hollow stem augers.

Difficulties may be encountered in using hollow stem augers to boreholes for weathered bedrock well installation. Based on the proposed well construction specifications, a minimum of three feet must be drilled into the bedrock. If auger refusal is reached before the three feet is drilled or the weathered zone is thinner than three feet, other drilling methods may have to be used. MAIN should discuss alternative drilling methods they intend to use (i.e., wash rotary, air rotary, coring methods, etc.) in the event that hollow stem augering is inadequate.

In the event that hollow stem augering does not penetrate the weathered bedrock, air rotary techniques will be used to advance the boring to the specified depth. This statement will be added to the Work Plan.

Section 4.2.5 - Ecological Investigation

P. 4-39 This comment concerns collection of mammals and water fowl for tissue analysis.

MAIN proposes to collect tissues of aquatic organisms for contaminant analyses. It may be appropriate to collect and analyze waterfowl or mammal tissue samples, in addition to the aquatic organisms as well, since the base is used for hunting (Department of the Army, Installation Environmental Assessment for the Seneca Army Depot, 1980).

Based on discussions held during the request for clarification period, MAIN proposes to conduct tissue sampling, if necessary, as part of a Phase II Investigation. The first phase will be a habitat characterization to obtain information on what species are likely to utilize the site, as well as an assessment of soil, sediment and aquatic chemistry. Following an analyses of Phase I results, a determination regarding necessity and scope of tissue sampling plan will be made. The Work Plan will be revised to incorporate a phased approach to tissue sampling.

p. 4-41 This comment concerns measurement endpoints for terrestrial organisms.

The second paragraph states that "Toxicity testing will depend upon the results of Phase One. For example, if pollutants are reaching Reeder Creek and do not seem to effect terrestrial organisms in route then toxicity testing for Reeder Creek organisms only would be conducted." While a tiered approach is recommended for ecological assessments, the criteria for determining whether terrestrial organisms are effected needs to be further defined.

The criteria will be 1) habitat abnormalities (vegetational) and 2) soil chemistry data. This information will be added to the Work Plan.

P. 4-42 This comment concerns gross abnormalities in fish.

Observations of gross abnormalities in fish should be recorded during fish sampling.

If fish tissue samples are to be collected from migratory fish, it may be necessary to restrict sampling to young-of-the-year fish to link contamination to the site, if other sources of contamination are possible.

Agreed. This is done as a matter of routine during fish sampling. Table A-9 identifies MAIN's standard fish collecting forms and these forms make note of abnormalities. No change will be made to the Work Plan.

Yes, collection of young-of-the-year fish would be our intent, if they are present. Sampling adults, however, would provide a more direct link to human consumption.

Section 4.2.6 - Surveying

P. 4-46 This comment concerns identification of control points prior to the aerial photographic survey.

MAIN discusses the location and identification of survey control points in the second paragraph. Control points should be located prior to the aerial photographic survey to assure that the control points are able to be identified during the flight.

U.S.G.S control points exist at the Seneca Base. This information is available to the surveyor and will be used by the surveyor.

P. 4-48 This comment concerns determining the boundary for the aerial photographs survey and photographing existing conditions outside the base boundary.

MAIN discusses aerial photographic surveying activities in the third paragraph of page 4-48, and states that "The photographs to be taken will be sufficient enough to cover the entire area to be investigated, including the sections of Reeder Creek which will be sampled."

Additional discussion should be provided on the boundaries of the aerial photographic survey. If the intent of the aerial survey is to provide information for determining groundwater and surface water movement, existing conditions outside the base boundary may help identify onsite conditions. A U.S.G.S. topographic map should be used in determining the limits of the photographic survey. A copy of the survey boundary should be included as a deliverable for the surveyor.

As stated in the Work Plan "the photos taken will be sufficient enough to cover the entire area to be investigated including the sections of Reeder Creek which will be sampled." The boundary of the photographic survey will correspond approximately to the area defined as the "Extent of Terrestrial Survey" on Figure 29. A U.S.G.S. topographic map will be used to determine the limits of the photographic survey. MAIN will provide a copy of the survey boundary as a deliverable to the surveyor.

Section 4.3 - Data Reduction, Assessment and Interpretation

P. 4-49 This comment concerns the interpretation of the geophysical data.

In Section 4.3.1, MAIN provides the objectives of the geophysical investigation. No discussion is given on the proposed use of the geophysical information. MAIN should provide a description of the figures that will be included in the RI report to illustrate and interpret collected geophysical data.

The following figures will be prepared to support the interpretation of the geophysical data:

Electromagnetic Induction Survey (EM)

1) The EM survey grid will be shown on a base map of the site.
2) Contours of the quadrature and in-phase component readings will be prepared and shown on a base map of the site. The individual EM readings will be provided on tables.

Ground Penetrating Radar (GPR) Survey

3) The GPR survey lines will be shown on a base map of the site.
4) The subsurface image radar profiles from the graphic strip recorder, annotated by the geophysicist, will be provided as an appendix.

EM and GPR Surveys

5) Anomalous areas defined by the EM and GPR survey will be shown as shaded areas on a base map of the site.

Section 4.4 - Baseline Risk Assessment

P. 4-52 This comment concerns selection of indicator compounds.

The Guidance for Assessing Human Health Risks from Chemically Contaminated Fish and Shellfish (U.S. EPA, 1989) should be used to interpret fish tissue sampling data.

Current guidance favors carrying most contaminants through the risk assessment unless there is adequate justification for eliminating them, rather than selecting a few indicator compounds. It is unclear from the Work Plan which approach will be taken.

The Guidance for Assessing Human Health Risks from Chemically Contaminated Fish and Shellfish (USEPA, 1989) will be used when appropriate during the course of the FI/FS. This will be referenced in the Work Plan.

It is MAIN's intent to carry most compounds through the risk assessment and only exclude compounds with proper justification. This will be clarified in the Work Plan.

P. 4-55 This comment concerns identification of receptor populations and future use scenarios.

The preliminary identification of receptor populations presented in Section 3.2 should be expanded in the risk assessment; the location of nearest residences, sensitive subpopulations (e.g., schools, hospitals, etc.), surrounding land use, etc. should be provided.

Future exposure scenarios may need to include the possibility of exposure to onsite surface water and sediments, especially in the wetlands areas.

Receptors identified in the risk assessment will include sensitive populations and locations of nearby residences, etc. Information on these potential receptors and on current and future land uses will be obtained from local sources as a part of the risk assessment.

Future exposure scenarios will include the possibility of exposure to onsite surface waters and sediments. This will be clarified in the Work Plan.

P. 4-56 This comment concerns models for air contamination estimation and future use scenarios.

The model to be used to determine concentrations of airborne contaminants should be specified and described.

It is unclear whether scenarios involving excavation workers will include exposure to both surface and subsurface soils.

Future scenarios may need to consider the possibility of residential development of the area. If such scenarios are not to be considered, the rationale for their exclusion should be fully justified.

The use of the Risk Assessment Guidance for Superfund (RAGs) and the newly-developed, Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors (U.S. EPA, 1991) should be used as the primary source for exposure parameters. The Superfund Exposure Assessment Manual (U.S. EPA, 1990) and the Exposure Factors Handbook (U.S. EPA, 1990) should only be used for scenarios not included in the supplemental guidance.

A Gaussian plume dispersion model will be used to assess dispersion of airborne contaminants; both particulate and vapor phase, from the site to potential receptors. Estimation of vapor and fugitive dust concentrations will be performed using models contained in Methods for Estimating Fugitive Particulate Emissions from Hazardous Waste Sites (USEPA, 1988a), as well as other publications. The particular models to be used depends on the nature of the site areas to be assessed as sources (e.g., bare fields, grassy fields, berms, etc.) and an explanation of each of the models that may be used is too lengthy to be included in the Work Plan. All models used in the risk assessment will be described and their use justified. This statement will be added to the Work Plan.

Exposure to excavation workers will include exposure to both surface and subsurface soils. The Work Plan will be changed to state this.

Future uses scenarios considering residential development are to be further clarified through the above correspondence between EPA, NYSDEC, MAIN and Alliance.

Agreed. Supplemental Guidance will be used. The Work Plan will be changed to state this.

P. 4-57 This comment concerns exposure scenarios, dermal absorption factors and intake assumptions.

Separate exposure scenarios should be developed for children since they represent a sensitive subpopulation.

The Absorption Factor given is recommended for use with potting soil; the absorption factor for kaolin clay may be more appropriate at this site.

Intake assumptions presented in Table 22 should be modified to be consistent with the new guidance cited above.

Exposure of children is accounted for in chemical intake calculations and activity patterns (e.g., wading in offsite portions of Reeder Creek), although these are not specified as applying to children in the text.

The absorption factor for kaolin clay will be used. The Work Plan will be changed to state this.

Agreed. Intake assumptions in Table 22 will be modified.

P. 4-59 This comment concerns the environmental assessment.

The discussion of the Environmental Assessment is not well-defined. It is unclear: (1) how contaminants of concern will be selected or if the contaminants of concern selected for the human health exposure assessment will be used; (2) whether the assessment will be entirely qualitative, and if not, how exposure doses will be determined for classes of organisms not sampled, (3) how macroinvertebrate tissue sample data will be utilized; and (4) if data will be collected on fish populations while collecting fish for tissue analysis. The data to be used in the environmental assessment and the methods of interpretation should be clearly specified.

1) Contaminants of concern will be selected separately for the environmental assessment using the same criteria for human health assessment: Magnitude and frequency of detection, distribution, toxicity, environmental fate, and other factors. Toxicity criteria will be based on potential effects to habitats and environmental receptors and environmental fate considerations will put greater emphasis on the potential for bioaccumulation and biomagnification.

2) The first phase of the assessment will be largely qualitative.

3) The selection of organisms for tissue analysis (Phase II) will depend on the results of the habitat assessment (Phase I). Quantitative exposure doses will not be determined for organisms not sampled. Because tissue sampling is to be included as part of Phase II, details regarding the use of macroinvertebrate

tissue sample data, if collected, will be provided upon review of the Phase I data. In general, tissue sample data will be used to assess the bioaccumulation of contaminants of concern so that estimates of the potential for effecting humans and other higher organisms can be assessed. Shell fish are indicator species which can represent worst case bioaccumulation.

4) MAIN will collect data on fish populations as defined on the "Fish Data Sheet," Figure A-9.

The above mentioned items will be clarified in the Work Plan.

Section 4.6 - Task Summary Plan

P. 4-62 This comment concerns data useability for risk assessment.

The Guidance for Data Useability in Risk Assessment (U.S. EPA, 1990) should be used in evaluating data to be used in the risk assessment.

Agreed. This document will be used and the Work Plan will be modified accordingly.

P. 4-63 This comment concerns background samples in wetlands.

Table 23 implies that background samples will not be included for wetlands. Background samples are necessary for evaluating data collected at locations influenced by the site.

Background samples for wetlands will be performed. The background wetlands will be comparable in function to on-site wetlands. The background wetland sample location will be chosen based on the results of the wetlands determination. The Work Plan will be modified to incorporate this.

Section 5.1 - Development of Remedial Action Objectives

P. 5-1 This comment concerns remedial response objectives.

MAIN states in the second paragraph that "The remedial response objectives for protection of human health and the environment should: ... Determine acceptable contaminant levels in soils, air, and water."

Response objectives do not determine acceptable contaminant levels, rather response objectives are contaminant levels which must be met during remedial action. The contaminant levels are determined during the risk assessment.

Agreed. Remedial action objectives are acceptable contaminant levels. Wording in the Work Plan will be changed to reflect this. However, MAIN believes that

acceptable contaminant levels are determined during the feasibility study, not during the baseline risk assessment.

Section 5.2 - Development of Remedial Action Alternatives

P. 5-3 This comment concerns preliminary remedial response actions.

In Section 5.2.1, MAIN identifies preliminary remedial response actions. However, these preliminary remedial response actions are for soil only and do not include the groundwater remedial response actions which were proposed in Section 3.3 (carbon adsorption, ion exchange, chemical oxidation, and reverse osmosis). Also, two of the soil remedial response actions of Section 3.3 are not included on the list on page 5-3 (composting and soil washing/flushing).

Agreed. MAIN will include in Section 5.2.1 the groundwater alternatives listed in Section 3.3. Composting and soil washing/flushing will be included on the list on page 5-3.

P. 5-3 This comment concerns volume estimates based on sampling and analyses of split spoon samples.

MAIN states that volume estimates will account for variability in the underlying subsurface by collection of continuous spoon samples. It is questionable whether or not the collection of split-spoon samples can be used to establish a three-dimensional depiction of the areas and/or volumes of media requiring treatment considering the fact that only one subsurface split-spoon sample per boring will be analyzed for the complete TCL/TAL.

To what extent does MAIN intend to utilize the Level II screening data, as opposed to the Level IV and Level V data, to establish the volumes and/or areas of media requiring treatment?

MAIN is confident that the proposed sampling program involving continuous split spoon sampling at all boring locations and collection of field screening (level II) and NYSDEC CLP (Level IV) data will provide adequate information to establish volumes of contaminated media. MAIN proposed to collect one surface sample and one subsurface sample from each boring for Level IV NYSDEC CLP analyses.

In addition, the screening parameters (TNT, Pb, and total volatiles) collected from the split spoon samples will provide additional information on the distribution of the indicator compounds as well as the associated compounds. MAIN realizes that this approach involves assumptions regarding association of indicator compounds with the remaining compounds not analyzed for during screening, however, MAIN feels that the sampling program provides for the best mix of screening and Level IV data to estimate volumes of contaminated media.

The Level II screening data will supplement the Level IV and V data and will help determine contaminated from noncontaminated areas based on indicator compound associations.

Section 6.1 - Scheduling

P. 6-1 This comment concerns the scheduling of borings and reduction of geophysical data.

Based on Figure 33, it appears that the soil boring programs and the monitoring well installation tasks will begin prior to the initiation of the geophysical data reduction task. Geophysical data should be interpreted and assessed prior to commencement of the soil boring program or installation of monitoring wells.

The reduction of geophysical data and the boring program overlap because the data will be interpreted and addressed as the investigation proceeds allowing the boring program to begin in the areas investigated. The geophysical investigation will be performed periodically during the course of the subsurface investigation to locate UXOs. Borings will not be performed in areas not previously investigated (including data reduction) by geophysics.

Appendix A - Field Sampling and Analysis Plan

P. 2-1 This comment concerns actual responsibilities of field personnel.

Section 2.1, Communications provides reasonable considerations for site communication, but what are the actual responsibilities of field personnel during the RI regarding communication? These should be stated.

The actual responsibilities of the field personnel during the RI regarding communication will be stated in the Work Plan.

P. 2-3 This comment concerns quality control samples.

Section 2.3, Quality Control Samples, should be modified to state that: (1) Trip blanks will be preserved; and (2) Trip blanks must accompany shipments of aqueous samples for volatile organics analysis.

Agreed. This section will be modified to state the suggested language.

P. 2-4 This comment concerns labeling the lower depth interval of soil samples.

Section 2.4, Sample Numbering Scheme, does not indicate how the depth interval for collection of the samples will be identified. For instance, two digits which represent the lower depth interval for the sample could be added to the numbering scheme for

clarification [i.e., a sample collected from 10 to 12 feet would have "-12" appear at the end of the sample identification number].

The depth interval of soil samples will be recorded in a field log and on the boring log book which indicates the sample number. The Work Plan will be modified to state this.

P. 3-1 This comment concerns use of geophysical methods.

Section 3.1, Geophysical Survey, identifies a number of geophysical surveys to be completed during the RI; however, this section does not identify the survey methods which will precede other survey methods. MAIN should clearly define the sequence and strategy of the survey activities.

The RADAR and STOLS geophysical methods will not be performed as per discussion during the June 24, 1991 conference call between EPA, Seneca and their contractors. Therefore, the sequence for the remaining geophysical surveys will be 1) GSSI Subsurface Interface Radar (SIR) System, and 2) Hand-held magnetometer survey. Both survey methods will be conducted periodically during the subsurface investigation to locate UXOs.

The results from the two methods will be superimposed, where appropriate, to make determinations of subsurface objects.

The above referenced information will be added to the Work Plan.

P. 3-2 This comment concerns the ground penetrating radar survey.

Section 3.1.1, Ground Penetrating Radar Survey, should clearly define which areas at the site are accessible, and what the approximate aerial extent of these areas is.

This comment is not applicable as the RADAR survey will not be performed on-site. The Work Plan will be modified to show this change.

P. 3-4 This comment concerns the magnetometry survey and determination of UXOs encountered.

In Section 3.1.2.2, Magnetometry Survey Procedures, what types of procedures will MAIN utilize to determine when and what type of UXOs have been encountered? Will trenching operations be used to verify UXO type?

Section 3.1.5.2 in Appendix A, provides an explanation of how cross sectional sampling will be performed on the areas of subsurface geophysical anomalies. This will be clarified in the Work Plan.

P. 3-9 This comment concerns air monitoring during cross sectional sampling.

Section 3.1.5.2, Cross Section Sampling Procedures, should propose air monitoring with a combustible gas indicator (CGI), and a photoionization detector (HNu/PID) or Organic Vapor Analyzer (OVA) during this activity.

MAIN will use an HNu meter or OVA to monitor the excavated area. The HFA UXO safety officer will have absolute and final authority in determining procedures and safety issues associated with the excavation. See Section 3.1.5.2 in Appendix A for more information on specific procedures to be performed during cross section sampling.

P. 3-10 This comment concerns decontamination procedures for excavation equipment.

Section 3.1.5.2 states, "excavation equipment will be cleaned between cross section site sampling operations in accordance with decontamination procedures." These decontamination procedures should be cross-referenced in this section.

The decontamination procedures for the excavation equipment will be cross-referenced in this section of the Work Plan.

P. 3-10 This comment concerns the use of the term "mid-depth".

In Section 3.2, Soil Sampling, the term "mid-depth" soil samples should be clearly defined to assist field personnel in retrieving these samples.

MAIN defines "mid-depth" to mean the point half way between the top and bottom elevations of the berms. This will be clarified in the Work Plan.

P. 3-10 This comment concerns the termination of borings.

In the last paragraph, MAIN states "The ultimate depth of the exploratory borings will be at the top of competent bedrock or at ten feet."

As previously mentioned, the condition for boring termination is not well-defined. Will drilling continue if the bedrock is found to be at a depth greater than ten feet? All borings should be advanced to refusal regardless of the expected depth of bedrock.

Agreed. Drilling will continue to refusal if the bedrock is found to be at a depth greater than 10 feet.

P. 3-11 This comment concerns grouting of borings and continuous split spoon sampling.

Section 3.2.2, Boring Techniques, states that upon completion of sampling, borings will be backfilled with bentonite/cement grout to the surface. The discussion of grouting

should be more specific. Typically, 2 to 4 percent by weight of bentonite to cement is recommended. MAIN should clarify this discussion.

This section implies, but does not specifically state, that all soil borings will be continuously sampled. This should be stated.

The grout will be mixed in the field and consist of 2 to 4 weight percent of bentonite to cement. These percentages have also been incorporated on page 3-20. Grout will be placed into the hole using a tremie pipe to prevent bridging of a collar, and thus an ineffective seal. Further clarification of this will be provided in the Work Plan.

The text will be changed to include continuous split spoon sampling for the length of the boring.

P. 3-13 This comment concerns clarification of sampling procedures.

Section 3.2.3, Sampling Procedures, Paragraph 4, should be clarified. The VOA fraction should be a grab sample from the location in the split spoon with the highest meter (OVA/HNu) response. To gain representativeness, the remaining soil from the spoon should be homogenized in a clean stainless steel bowl, then put in the appropriate laboratory jars and placed on ice.

Agreed. The sampling procedures will be clarified as suggested.

P. 3-14 This comment concerns continuous split spoon sampling.

Paragraph 4 states continuous sampling will be conducted. Again, this should be stated in the soil boring section (Section 3.2.2).

This comment was previously addressed. The Work Plan will be clarified.

P. 3-16 This comment concerns well construction specifications.

The well construction specifications appear to be a modification to the Region QA specifications for well construction (p. 40, Section VII, QA Manual). Typical well construction includes: a sand pack installed to 2 feet above the screen, and a 2-foot bentonite seal. MAIN should discuss their well-construction rationale. Also, what is the reason for including a 6 inch layer of fine sand above the sand pack?

MAIN's well construction specifications follow the general requirements outlined in Section VII of the Region II QA Manual. MAIN's well specifications call for a sand pack installed to two feet above the well screen in accordance with the Region II QA Manual. Although the Region II QA Manual specifies a two-foot thick bentonite seal, a 3-foot bentonite seal is indicated in the Work Plan to ensure a good seal.

The 6 inch layer of fine sand between the bentonite seal and filter pack is to prevent any bentonite material from penetrating into the filter pack around the well screen. This procedure is outlined in "6 NYCRR Part 360, Solid Waste Facilities," December 31, 1988, a NYSDEC publication.

P. 3-17 This comment concerns alternate types of drilling if heaving sands are encountered.

In reference to Section 3.3.3.1, Type of Drilling, if extreme heaving sands are encountered, will MAIN utilize an alternate drilling method (e.g., drive and wash techniques)?

What procedures will be used to install wells in the weathered bedrock layer? These are not stated.

Because glacial till is expected to be encountered in the subsurface, heaving sands are not expected. However, as an alternate drilling method to hollow stem augering, air rotary will be used. Air rotary methods will be used to install wells in the weathered bedrock if the desired depth can not be reached using hollow stem augering.

P. 3-18 This comment concerns well casing and well screen.

Section 3.3.3.2, Well Casing and Well Screen, should be modified to state that the interface of the weathered bedrock and the till will be sealed to prevent the spread of contamination during drilling into the rock. Are the layers of till or bedrock anticipated to be too thin to install such a seal?

This section does not contain site specific details discussed in the main body of the RI task plan. Specifically, the RI task plan states that ten foot lengths of well screen will be employed starting at a depth at the base of the till layer. The Field Sampling and Analysis Plan does not include details of well construction.

Section 3.3.3.3, Monitoring Well Filter Pack, states that methods for sizing filter material and well screen opening are available in the literature. The specific references should be cited.

The weathered bedrock is expected to be too thin to obtain seal across the weathered bedrock and till interface during drilling. The anticipated 5' thickness of the weathered bedrock will allow for a bentonite seal between the weathered bedrock and till after well installation.

Details of the well construction will be added to Appendix A, Section 3.3.3, Well Installation of Field Sampling and Analysis Plan.

Specific references for the methods for sizing filter materials and well screen opening will be cited in the Work Plan.

P. 3-19 This comment concerns the appropriate method to place a sand pack around the monitoring well.

Paragraph 4 states that "The sand pack material must be placed using the a tremie method or another method approved by NYSDEC if bridging is to be avoided." These methods should be identified and discussed. Note that the depth of the well is the most critical parameter for determining the appropriate method.

A discussion of the specific methods (i.e. tremie method) will be identified and discussed in the Work Plan.

P. 3-20 This comment concerns sealing of the weathered bedrock/till interface prior to drilling.

Section 3.3.3.4, Bentonite Seal, does not state whether the interface of the weathered bedrock will be sealed with grout prior to drilling into the rock, to prevent overburden contaminants from entering the weathered zone. This should be stated.

The weathered bedrock is expected to be too thin to obtain a seal across the weathered bedrock and till interface during drilling. The anticipated 5' thickness of the weathered bedrock will allow for a bentonite seal between the weathered bedrock and till after well installation.

P. 3-20 This comment concerns a typing error.

In Section 3.3.3.5, Annular Sealant, Paragraph 2, "The ground mixture..." should state "The grout mixture..."

In Section 3.3.3.5, Annular Sealant, Paragraph 2, "The ground mixture..." will be changed to "The grout mixture..."

P. 3-20 This comment concerns a typing error.

Section 3.3.3.6 is titled "Protective Coating." This should be "Protective Casing."

Section 3.3.3.6 titled "Protective Coating" will be changed to "Protective Casing."

P. 3-21 This comment concerns well development.

Well development should continue until pH, temperature, and conductivity vary no more than 10 percent. This should be stated.

Agreed. The Work Plan has been modified to include this specification.

P. 3-23 This comment concerns well development criteria.

Section 3.4.3, Development Criteria, Item 2 (stabilization criteria for temperature, pH, and conductivity), should be stated in the procedures section (see previous comment). Also, the types of field meters to be used for these measurements should be stated.

Agreed. Development criteria will be stated in the procedures section.

The manufacturer and model number of the thermometer, pH meter, and specific conductivity meter will be stated in the Work Plan.

P. 3-23 This comment concerns the well survey.

Section 3.4.4, Well Survey, states the vertical location of the ground surface and the mark made on the top of the monitoring well riser pipe will be accurately measured. What type of mark? A notch in the top of the PVC is recommended as opposed to a permanent marker.

The mark on the top of the PVC will be a cut notch, not a mark made with a permanent marker.

P. 3-23 This comment concerns decontamination of downhole development equipment.

The methods to be used for decontamination of downhole development equipment is not provided in the FASP and should be discussed.

The decontamination procedures for downhole development will be referenced in Section 4.5, Equipment and Material Decontamination in Appendix A.

P. 3-25 This comment concerns groundwater sampling procedures/analyses.

In Section 3.4.5, Groundwater Sampling Procedures/Analyses, the number of new monitoring wells should be stated.

Paragraph 3 should define percent stabilization requirements for well purging. Pumping the well dry is not recommended for well purging. Pumping the well dry is not recommended due to the loss of potential volatiles due to the cascading effect in the screen. The pump should be set above the screen.

At a minimum, Appendix C, the Chemical Data Acquisition Plan, should be referenced as a source for this information.

The number of new proposed monitoring wells (16) has been added to Section 3.4.5, Groundwater Sampling Procedures/Analyses.

Prior to sampling, the wells will be purged such that when indication parameters such as pH, temperature and specific conductance are observed to vary less than 10% over the removal of successive well volumes. In accordance with the EPA Region II CERCLA QA Manual, in wells with very low recoveries, removal of 3-5 well volumes may not be practical and in this case, the well will be evacuated to near dryness and allowed to recover sufficiently prior to sampling. This will be the procedure stated in the Work Plan.

Where possible the pump to evacuate the well will be placed above the well screen to prevent loss of volatiles due to cascading. This will be stated in the Work Plan.

Appendix C will be referenced in this section.

P. 3-31 This comment concerns monitoring for volatile organic compounds while sampling of surface water for metals.

This section describes sampling of surface water for metals. If only metals analyses are being conducted, why does MAIN propose monitoring for volatiles with an HNu?

In Item 3, if bottles are used for sample collection, a 45-degree angle should be proposed for collecting samples. Also, sampling should proceed from downstream locations to upstream locations to minimize impacts associated with disturbance of sediments.

Monitoring for volatile organic compounds during surface water sampling for metals will be performed for health and safety reasons as volatiles are a potential contaminant on the site.

Agreed. If bottles are used for sample collection, a 45-degree angle will be used. Sampling will proceed from downstream locations to upstream locations to minimize impacts associated with disturbance of sediments. The Work Plan will be modified to incorporate this.

P. 3-32 This comment concerns sediment sampling procedures in Section 3.5.3.

In Section 3.5.3, Sediment Sampling Procedures, the techniques provided are only suggested techniques. This should be explained. What techniques will be used in the field? Could a hand auger be used to obtain sediment samples?

Collection of Reeder Creek surface water and stream sediment samples should begin at the most downgradient sampling point and progress upstream to ensure that downstream sampling locations are not contaminated by the disturbance and resuspension of upstream sediments. If wading into Reeder Creek is required for surface water or and sediment sample collection, the sampler should approach the

sampling location from downstream so as to not disturb the surrounding sediments. Note that areas of high flow should be avoided when collecting sediment samples.

The discussion in this section is meant as a quick overview of the different sampling techniques. Per discussions held during the request for clarification period, MAIN will use a ponar sampling device to collect surface sediment samples from 0-6" deep. A hand auger will not be used to collect the samples.

Reeder Creek sample collection will begin at downstream locations and proceed to upstream locations. The sampler will approach the sample location from a downstream position.

P. 3-33 This comment concerns collection of QA/QC samples and sampling equipment.

Paragraph 1 states that ten percent of the surface water/sediment samples will be collected for QA/QC. Does MAIN suggest these to be duplicate samples?

The statement that equipment needed to collect soil samples is the same as that for soil samples is incorrect.

The samples collected for QA/QC will be duplicate samples. This will be clarified in the Work Plan.

The statement that equipment needed to collect soil samples is the same as that for soil samples will be removed from the Work Plan.

THE FOLLOWING COMMENTS ARE FROM EPA'S TOXIC AND HAZARDOUS WASTE SECTION

Appendix A - Field Sampling and Analysis Plan

Section 2.3, Quality Control Samples

P. 2-2 and 2-3 This comment concerns the use of demonstrated analyte-free water.

a) All water used for the trip blank, field equipment rinse blank and for the final water rinse in the decontamination procedure must be demonstrated as analyte-free. This is defined as water which has been tested prior to the start of the sampling event for the organic and inorganic parameters of interest and found to contain less than the reported quantitation limits of these compounds.

b) The trip blanks are only required when aqueous samples are collected for volatile organic analysis.

c) The frequency of collection for field equipment rinse blanks should be as stated in the QAPP for the Ash Landfill, dated May 1991, Section 4.4.2, page C-67.

a) Agreed. All water used for trip blanks, field equipment rinse blanks and for the final rinse in the decontamination procedure will be demonstrated as analyte-free.

b) This section does state that trip blanks are only prepared for volatile organic compound determinations.

c) The frequency of collection for field equipment rinse blanks will be stated as in the QAPP for the Ash Landfill, dated May 1991, Section 4.4.2, page C-67. Specifically one equipment rinse blank will be collected each day a decontamination event is carried out, not to exceed one per day.

Section 3.1 - Geophysical Survey

P. 3-1 This comment concerns the use of RADAR and STOLS.

Correct this section by eliminating the use of RADAR and STOLS as per the discussion during the June 24, 1991 conference call between EPA, Seneca and their contractors.

All references to RADAR and STOLS have been eliminated as requested.

Section 3.2.3 - Sampling Procedures and Analyses

P. 3-13 and 3-14 This comment concerns sampling procedures and analyses.

a) The split spoons used should be carbon steel.

b) The correct bottles to be used for the volatile organics in soil are 40 ml glass vials with septum seals.

c) Can the laboratory assure delivery of the field screening results in a timely manner and still meet the holding time for the full laboratory analyses?

d) The split spoons and other field sampling equipment must be decontaminated as per the procedure outlined in Attachment 1. It is acceptable for the drilling augers to be steam cleaned prior to and in between use.

e) All soil/sediment samples collected, except those for volatile organic analysis, must be homogenized in a stainless steel bowl with a stainless steel spoon prior to being paced into the sample containers.

f) Surface soil samples should be collected with stainless steel trowels or scoops.

a) A carbon steel split spoon sampler will be used.

b) 40 ml glass vials with septum seals will be used for the volatile organics in soil.

c) Yes, the laboratory can assure the delivery of the field screening results in a timely manner and still meet the holding time for the full laboratory analyses.

d) The split spoons and other sampling equipment will be decontaminated as per the procedures outlined on EPA's Region II QA Manual. This procedure will be incorporated in Section 4.5, Equipment and Material Decontamination.

e) Agreed. The Work Plan will incorporate this.

f) Surface sediments from Reeder Creek will be collected using an appropriate sampling device (i.e. ponar sampler, beaker, etc.).

Section 3.3.3.2

P. 3-17 This comment concerns well screen slot size.

Please correct the first paragraph here to state the well screen slot size in the existing wells.

The slot size of the existing wells (0.010") will be added to the text.

Section 3.4.2

P. 3-21 This comment concerns turbidity units for water.

The correct units for water turbidity are NTUs. Please correct the text.

The Work Plan has been corrected.

P. 3-23 This comment concerns decontamination of equipment used for developing and purging wells.

All equipment used to develop and purge the groundwater wells must be cleaned as stated in the QA Project Plan for the Ash Landfill, dated May 1991, Section 4.6.3, pages C-72 and C-73.

The decontamination procedures for equipment used to develop and purge the groundwater wells is the same as that described in the QA Project Plan for the Ash Landfill. This information will be added to Appendix A, Section 4.5, Equipment and Material Decontamination.

Section 3.4.5 - Groundwater Sampling Procedures and Analysis

P. 3-25 This comment concerns groundwater sampling procedures and analyses.

a) Comment 6 above applies here as well.
b) Any ground covers used must be made of polyethylene, not plastic, in order to avoid phthalate contamination.
c) Sampling must occur within 3 hours of purging for high yield wells.
d) All sampling equipment must be decontaminated as per the procedure in Attachment 1.
e) Groundwater samples undergoing volatile organic analysis must be collected first, before any of the parameters of interest.

f) In the fourth paragraph here, it is stated that the samples for explosives and metals analyses will be sent directly to the lab for analysis. Why aren't the samples for organic analysis included here as well?

a) Decontamination of sampling equipment is described in Appendix A, Section 4.5. This section will be referenced.
b) Agreed. Ground covers will be made of polyethylene, not plastic.
c) Agreed. Sampling will occur within 3 hours for high yield wells.
d) Agreed. These decontamination procedures will be used. They will be incorporated into Section 4.5, Equipment and Material Decontamination. These procedures will be referenced in this section.
e) Agreed. Groundwater samples undergoing volatile organic analysis will be collected first, before any other parameters of interest.
f) The Work Plan will be corrected so that the samples for organic analyses are included in the samples submitted.

P. 3-26 This comment concerns the bottle supplies.

As per my comments on the Ash Landfill QAPP, the sample bottle supplier must be named and the cleaning/QC procedures used on the bottles must be supplied.

Agreed. The sample bottle supplier will be named and the cleaning/QC procedures used on the bottles will be supplied.

Section 3.5.2 - Surface Water Sampling Procedures and Analysis

P. 3-31 These comments concern surface water sampling procedures and analysis.

a) The surface water sampling equipment must be cleaned as per the procedures stated in Attachment 1.
b) As was previously discussed during the review period for the Ash Landfill documents, Region II only accepts results for total metals. Therefore, for the ash landfill investigation, it was decided that filtering of samples will not be performed.

The same regional policy applies here as well, only total metals data will be accepted. If it is decided that filtered metals samples (both acid soluble and dissolved metals) will be collected in any event, additional details regarding the filtering procedure must be provided. The type of detail sought is provided in Attachment 2.

a) Agreed. The surface water sampling equipment will be cleaned as per the procedures in the EPA Region II CERCLA QA Manual.
b) Total metals surface water samples will be collected. The Work Plan will be modified to state this.

Section 3.5.3 - Sediment Sampling Procedures

P. 3-32 These comments concern sediment sampling.

a) A stainless steel scoop or trowel may be used to collect sediment samples, in addition to the sample container, in small streams or near the shoreline.
b) If a beaker is used to collect sediment samples, it should be made of stainless steel or glass
c) When sampling from a river or deep lake with a dredge, care should be taken to avoid collecting the sample from the edge of the sampler, if the material of construction is not stainless steel.
d) All soil and sediment samples collected, except those for volatile organic analysis, must be homogenized prior to being placed into the sample containers.

a & b) Per discussions held during the request for clarification, an appropriate sampling device (i.e. ponar sampler, beaker, etc.) will be used to collect surface sediment samples.
c) Agreed. The specified care will be taken.
d) Agreed. This general comment was previously addressed.

Section 4.1 - Compositing

P. 4-1 This comment concerns compositing soil samples.

If sample compositing is performed, note that the individual parameter's detection limit is raised by a factor equal to the number of samples composited. For example, if three samples are composited, then the detection limit for each parameter is raised by a factor of three.

The lab will be notified as to how many samples were composited so that the correct detection will be used. This will be incorporated into the Work Plan.

Section 4.2 - Field Filtration

P. 4-1 This comment concerns field filtration.

Regarding field filtration, comment 9b above applies here as well.

Agreed. This comment was previously addressed in comment 9b. This will be clarified in the Work Plan.

Section 4.4 - Sample Storage

P. 4-2 This comment concerns sample storage.

Samples collected for metals and water quality parameters must be stored in glass or polyethylene bottles, as plastic is not acceptable.

Agreed. Samples collected for metals and water quality parameters will be stored in glass or polyethylene as requested.

Section 4.5 - Equipment and Material Decontamination

P. 4-4 This comment concerns equipment decontamination.

The decontamination procedure must be corrected as stated in Attachment 1.

Agreed. The decontamination procedures outlined in the EPA's Region II CERCLA QA Manual will be incorporated into the Work Plan.

APPENDIX C - CHEMICAL DATA ACQUISITION PLAN (CDAP)

Section 1.0 - Site Background

P. 1-1 This comment concerns the use of USATHAMA methods

The third paragraph here states that non-standard analyses will follow USATHAMA methods. Please verify this statement as I am not aware of any USATHAMA methods being cited in this CDAP. For the explosives, Method 8330 from SW-846 will be employed.

Comment number 15 with regard to the CDAP states that the method for explosives should be referenced as Method 8330 from SW-846. Method 8330 has not been incorporated into SW-846 at this time as it is still a draft method awaiting promulgation. The reference to USATHMA approval is because USATHMA provided a copy of draft method 8330 as a recommendation for explosives analysis. The reference will be clarified to state draft method 8330 of SW-846. Any reference to USATHAMA will be deleted from the Work Plan.

Section 2.2 - Field Sampling Responsibilities

P. 2-3 This comment concerns maintenance of field equipment.

All equipment used in the field, such as a pH meter, thermometer, and a specific conductivity meter must have the calibration checked on a daily basis prior to use.

Any standards/buffer solutions used must have the expiration date printed on the bottles.

Agreed. These protocols will be incorporated into the Work Plan.

Section 4.3 - General Information and Definitions

P. 4-2 This comment concerns the use of demonstrated analyte free water, trip blanks and frequency of equipment rinse blanks.

Comment 1 above applies to parts e and f here as well.

Agreed. Comment 1 will be applied to parts e and f in this section.

Section 4.4.1 - Sample Conditions and Preservation

P. 4-3 This comment concerns the bottle supplier to be used and the use of hydrochloric acid for VOA preservation.

a) Comment 8 above regarding the sample bottles applies here as well. As per the Army Corps of Engineers Project Manager, Kevin Healy, I-Chem will not be used as the bottle supplier. Delete this reference from the text.
b) The amount of hydrochloric acid used to preserve the aqueous volatile organic samples must be determined in the field by the procedure enclosed as Attachment 3 in EPA's comment letter.

a) Agreed. This reference will be deleted.
b) Agreed. The procedures outlined in EPA Region II CERCLA QA Manual for preserving aqueous volatile organic samples will be used. This will be incorporated into the Work Plan.

Table C-1 - Required Containers, Preservation and Holding Times

P. 4-4 This comment concerns Table C-1.

a) In order for the holding times specified to be met, all samples must be shipped from the field to the lab within 24 hours from collection.
b) Add the following preservation to the TCL volatiles in water entry: HCl to pH < 2, cool to 4 degrees C. When these samples are preserved with HCl, the holding time is extended to 14 days from collection.
c) The aqueous cyanide samples must be tested for the presence of oxidizers and sulfides prior to the preservation with sodium hydroxide, as per Attachment 4.
d) Triple sample volume must be collected for the aqueous extractable parameters (semi-volatiles, pesticides/PCBs) in order for the lab to perform the matrix spike/matrix spike duplicate analysis.

a) Agreed. Samples will be shipped from the field to the lab within 24 hours from collection. This will be stated in the Work Plan.

b) This comment regarding the CDAP states that with preservation, TCL volatiles can be analyzed in a holding time of 14 days. This statement is in conflict with the NYSDEC CLP protocols which states that analysis must be completed within 7 days of validated time of sample receipt. The holding times for NYSDEC may differ from Federal CLP, but because MAIN has referenced using the methodologies from NYSDEC CLP Protocols these will be used. Table C-1 will be changed to include "HCL to pH <2, cool to 4 degrees C." MAIN will follow the holding times presented in the NYSDEC CLP.

c) Agreed. The aqueous cyanide sample will be tested for the presence of oxidizers and sulfides prior to the preservation with sodium hydroxide as described in Attachment 4 of the EPA comment letter. This will be included in the Work Plan.

d) Agreed. Triple sample volume will be collected for the aqueous extractable parameters in order for the lab to perform the matrix spike/matrix spike duplicate analysis. This statement will be added to the Work Plan.

Section 4.4.3.2 - Surface and Groundwater Sampling

P. 4-5 This comment concerns adding preservatives to samples.

Preservatives must be added to the samples immediately after collection, as per Section 4.4.1, page 4-3, paragraph 3. This is especially important of the aqueous volatile organic samples since once the vial containing the sample is closed, it may not be reopened to test the pH or to add additional acid as a loss of the volatiles will occur. Following the procedure in Attachment 3 will allow determination of the volume of acid required on a "test" vial which will be discarded.

Agreed. This information will be incorporated into this section.

Section 4.4.3.5 - Field Equipment Blanks

P. 4-6 This comment concerns the use of demonstrated analyte-free water

As per comment 1a above, the water used to collect field equipment rinse blanks must be demonstrated as analyte free.

Agreed. Water used to collect field equipment rinse blanks will be demonstrated as analyte-free.

Section 4.4.3.6 - Trip Blanks

P. 4-7 This comment concerns trip blanks for volatile organics.

Comment 1b above applies here as well.

Agreed. This information will be incorporated into the Work Plan.

Section 8.2.3 - Laboratory

P. 8-3 This comment concerns use of EPA Region II SOPs for Evaluating Organic and Inorganic Data.

The EPA Region II Standard Operating Procedures (SOPs) for Evaluating Organic and Inorganic Data must be used to validate the data produced, in lieu of the National Functional Guidelines. The regional SOPs are enclosed as Attachment 5.

Agreed. The EPA SOPs will be used in lieu of the National Functional Guidelines.

This will be added to the Work Plan.

Appendix C - Laboratory Certifications

These comments concern Aquatec Lab.

a) The certifications of interest for the NYSDOH for Solid and Hazardous Waste and for Potable/Non-Potable Water are expired as of April 1991. Please provide the current certificates.

b) Please provide the acceptance letter from the Army Corps of Engineers upon completion of their evaluation of Aquatec Lab. The letter currently provided in this CDAP, dated July 25, 1989, is no longer valid.

The response from Aquatec Labs is as follows:

"Comment number 24(a) and (b) with regard to the CDAP refer to our certification status. Our NYSDOH certificate did expire in April 1991. I have enclosed a copy of a letter we received from NYSDOH in March of 1991 concerning recertification. At this time we are still waiting for our new certificate to be issued.

We have recently contacted USACE concerning our PE results, and for scheduling an audit. We cannot be approved until an on-site audit has been performed. We have expressed to them the urgency of this approval. Perhaps you should call the Missouri River Division of the Corps of Engineers and reiterate the importance of our approval and provide them with proposed time schedule for the project."

Per discussions held August 8, 1991, a final response is pending a phone call from Kevin Healy to the Missouri River Division of the Corps of Engineers.

EPA'S HAZARDOUS WASTE FACILITIES (HWF) BRANCH OF THE AIR AND WASTE MANAGEMENT DIVISION

1. This comment concerns the classification of the unit (i.e., the site as a Subpart X or miscellaneous unit under RCRA 40 CFR 264.

   According to the report, obsolete pyrotechnics, explosives, propellants (PEP) and their packaging materials were routinely burned at the Open Burning grounds. The activities conducted at this site classify the unit as a Subpart X or Miscellaneous unit under RCRA 40 CFR 264. Therefore, closure of this unit must comply with the environmental performance standards specified in 40 CFR § 264.601, and the post-closure care of the unit must comply with §264.603.

   A reference to the Subpart X or Miscellaneous classification of the OB grounds will be added to the ARARs in Section 3.4, Preliminary Identification of Applicable or Relevant and Appropriate Requirements.

2. This comment concerns performing TCLP analyses on the soil to determine if the soils are RCRA characteristic hazardous waste.

   The report indicates that extensive soil sampling will be conducted at this unit and the soil samples will be analyzed for the compounds listed on the Target Compound List (TCL), the Target Analyte List (TAL) and the explosive list of SW-846 Method 8330. In addition to the proposed analysis, HWF recommends that the Toxicity Characteristic Leaching Procedure (TCLP) test be performed on the soil, for both toxic characteristic metals and organics, to determine if the soils are RCRA characteristic hazardous waste. Please refer to 40 CFR §261.24, Table 1, for the list of toxicity characteristic contaminants.

   TCLP will be used to determine if drummed soils are RCRA characteristic hazardous waste prior to disposal. This will be added to the Task Plan Summary section of the Work Plan.

3. This comment concerns Table 12.

   Standards applicable to Generators of Hazardous Waste are contained in 40 CFR Part 262 and standards applicable to Transporters of Hazardous Waste are contained in Part 263, not in 40 CFR Parts 263 and 270 as indicated in Table 12 of the Work Plan.

   This correction to the Work Plan will be made.

4. This comment concerns capping as an alternative for the remediation of the OB grounds.

Section 3.32 of the report indicates that capping is one of the alternatives under consideration for the remediation of the OB grounds. The report also indicates that the design of modern caps must conform to the performance standards contained in 40 CFR 264.310. Please be advised that the final cover must include a component which has a maximum inplace saturated hydraulic conductivity of 1×10^{-7} cm/sec.

This comment is acknowledged.

EPA'S PRE-REMEDIAL AND TECHNICAL SUPPORT SECTION OF THE PROGRAM SUPPORT BRANCH COMMENT AS FOLLOWS:

P. 3-15 to 3-16 This comment concerns filtered groundwater samples.

The Report cited groundwater concentrations for filtered samples. Unfiltered groundwater samples should be utilized in the Risk Assessment.

Agreed. Unfiltered groundwater samples will be used in the Risk Assessment.

P. 3-22 This comment concerns potential future residential use of the site.

What will prevent "Unrestricted residential or other private development" of the site?

Local zoning and planning information will be consulted during performance of risk assessment to determine if unrestricted residential use is a potential future use.

P. 3-23 This comment concerns future use of groundwater.

Couldn't site groundwater be used under on-site future use scenario?

See comment for p. 3-22 above.

P. 4-52 This comment concerns non-explosive semi-volatiles.

Are non-explosive semi-volatiles potentially of concern at the site?

Available analytical data indicate that non-explosive semi-volatiles are not a problem at the site.

P. 4-56 This comment concerns reasonable maximum exposures.

Only reasonable maximum exposures, as outlined in the RAGS guidance, need to be included in the Risk Assessment.

Exposure concentrations may also increase, depending on assumptions regarding future groundwater use on-site.

The upper 95% confidence limit on the arithmetic mean of the log-transformed data should be used to model site contaminant concentrations.

Agreed. Reference to use of averages will be removed and reasonable maximum exposures will be used in the Work Plan.

Acknowledged.

The upper 95% confidence limit of the log transformed data will be used, where applicable. This will be added to the Work Plan.

P. 4-58 This comment concerns obtaining toxicity information.

The Hierarchy of toxicity information should be Iris > Heast Tables > Consultation with USEPA ECAO in Cincinnati, Ohio.

Agreed. The suggested hierarchy of toxicity information will be used. This will be included in the Work Plan.

Note: Section 3.2 and 4.4.2 are somewhat unclear with regard to proposed exposure pathways. The proposed pathways should be presented more clearly in table form, and should be discussed in one, rather than two sections of the document.

Note: A table will be added for proposed pathways. However, format for the work plan and RI task plan dictates that the exposure pathways be discussed in these two sections.

P. 4-59 This comment concerns the ecological assessment.

The Ecological Assessment should be performed according to the RAGS, Part II.

Agreed.

THE FOLLOWING COMMENTS ARE FROM EPA'S WATER MANAGEMENT DIVISION

1. This comment concerns use of 500 series methods of analysis for volatile organic compounds in groundwater.

   According to the U.S. EPA's proposed Groundwater Classification Guidelines, groundwater at this site is at least Class IIB, a potential source of drinking water. Because of this classification, maximum contaminant levels (MCLs) are applicable or relevant and appropriate requirements (ARARs) for groundwater at the site, and the 500 series methods of analysis should be used for determining volatile organic chemical (VOC) concentrations.

   MAIN proposes to use Level IV NYSDEC CLP analysis for volatile organic compounds in groundwater which requires strict QA/QC procedures. MAIN will not use the 500 series for analysis of volatile organic compounds.

2. This comment concerns title inconsistencies in Table 1 and the text.

   On Page 2-8, the first line of Paragraph 3, reads Table 1, AVERAGE BACKGROUND CONCENTRATIONS AND RELATIVE MOBILITIES FOR ROCKS, SOILS, AND WATERS, but contradicts the actual table heading which reads AVERAGE BACKGROUND CONCENTRATIONS FOR ROCKS, SOILS, AND SEDIMENTS.

   The reference to Table 1 will be made consistent.

3. This comment concerns a typing error.

   On Page 2-10, second line of Paragraph 1, the word "pheratic" should be "phreatic."

   The error will be corrected in the Work Plan.

4. This comment concerns sampling of downgradient and off-site private and public wells.

   Sampling and analysis of groundwater from private and public wells, which are located off-site and downgradient from site, should be performed to ascertain whether or not contaminants have migrated off-site.

   Groundwater flow has been determined to be to the east-northeast toward Reeder Creek (Figure 26). Based on field reconnaissance, no private or public wells have been determined to be located directly downgradient of the OB grounds. However, if during the course of the investigation private or public wells are to be located near and downgradient from the site, they will be sampled and analyzed for contaminants. While residences with private drinking water wells are present west of SEAD, presently, MAIN does not feel that it is necessary to sample groundwater from residential wells farther downgradient of the site.

5. This comment concerns two rounds of water level measurements and sampling in "wet" and "dry" seasons.

At least two rounds of water level measurements and samples should be taken, preferably in a "wet" season and "dry" season, to determine whether or not there are significant seasonal variations in groundwater flow directions.

MAIN expects to collect groundwater elevation data in two phases during field investigation. Groundwater data from these phases is expected to provide data from different seasons (i.e., fall and spring). Groundwater flow direction determined from this study will be compared to the flow directions determined by Metcalf & Eddy (October, 1989) and O'Brien & Gere (1985). Precipitation data from October 1989 and the time of the measurements by MAIN will be compared to determine if there is a significant difference in precipitation, as recharge to the shallow aquifers is via percolation associated with local precipitation.

6. This comment concerns EP Toxicity Limits for Mercury.

For Table 4, note the following:

The Extraction Procedure (EP) Toxicity Limit for Mercury should be 0.2 ug/L.

The correction will be made.

7. This comment concerns federal and New York State maximum contaminant levels.

For Tables 3, 5, and 14, note the following:

COMPARISON OF FEDERAL TO NEW YORK STATE MCLS FOR REGION II
(As of January 1991)

INORGANIC

all units are micrograms per liter (ppb)

Chemical	FEDMCL*	NYMCL**
Arsenic	50	50
Cadmium	5	10
Chromium	100	50
Selenium	50	10
Fluoride	4000	2200

* Federal Maximum Contaminant Level
** New York State Maximum Contaminant Level

The current standard for Lead is 15 ppb, which replaces the 50 ppb MCL. This new standard is an action level.

The comment is acknowledged. The chemicals have been reviewed and corrected in the referenced tables.

8. This comment concerns quantification limits and chemical specific ARARs.

For Tables 17, 18, and 20, the quantitation limits for the following compounds should be below chemical-specific ARARs.

Chemical	Quantitation Limit (ug/L)	CHEMICAL-SPECIFIC ARARs MCL* (ug/L)	PMCL**
Vinyl Chloride	10	2.0	-
1,2,4-Trichlorobenzene	10		9
Hexachlorobenzene	10		1
Pentachlorophenol	50		1
Thallium	10		1

* Federal Maximum Contaminant Level
** New York State Maximum Contaminant Level

This comment is acknowledged. None of the compounds in the table for this comment are expected to be present at the site, therefore, the quantitation limits are not as imperative as for compounds known to exist at the site. MAIN proposes to use NYSDEC CLP quantitation limits.

9. This comment concerns wetlands.

The Work Plan proposes to identify wetland habitats (page 4-38), to characterize and map wetland vegetation within the study area (page 4-39), and to "...map the larger wetlands..." (page 4-44). Page 3-33 of Appendix A states that "There are approximately six potential wetlands... which will be sampled..." Marine Wetlands Protection Branch (MWPB) recommends that all on-site wetlands, regardless of size, be mapped using the three-part methodology detailed in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989). Contaminated off-site wetlands downgradient from the Open Burning/Open Detonation (OB/OD) site should also be delineated.

MAIN proposes to delineate wetlands on the approximately 30 acre OB grounds using the Unified Federal Routine Method Routine Method. Figure 29 illustrates the approximate area of the OB grounds. Wetland covertypes will be evaluated using aerial photographs, existing wetland maps (NYSDEC Wetland Regulatory Maps and United States Fish and Wildlife Service (USFWS) National Wetland Inventory Maps) and field reconnaissance. Wetland boundaries will not be surveyed as part of this delineation.

Wetlands outside the OB grounds will be evaluated using aerial photographs, existing wetland maps (NYSDEC Wetland Regulatory Maps and USFWS National Wildlife Inventory Maps) and field reconnaissance to confirm wetland delineations, where necessary.

10. This comment concerns sampling of on-site wetlands and drainage channels.

Additional sampling and testing of groundwater, surface water, soils, sediments, and biota will occur. The surface water and sediment sampling plan (Figures 25, 29) shows that Reeder Creek will be sampled, but sample points are not depicted for the on-site wetland area(s) and drainage channels. MWPB suggests that these locations also be tested for contamination.

MAIN has added three drainage channel sampling locations for contaminant analysis to Figure 25. All wetland and drainage channels sampling locations will be shown on Figure 25.

11. This comment concerns the use of WET technique.

Impacts to wetlands and other aquatic habitats resulting from future remedial actions must be avoided or minimized. If impacts are expected, MWPB recommends that a functional assessment of affected wetlands be performed using the Army Corps of Engineer's Wetland Evaluation Technique (WET). This assessment would provide information needed for the development of a restoration plan.

If necessary, the WET or a comparable technique would be used to conduct functional assessment, although the usefulness of the WET technique is questionable.

THESE COMMENTS ARE PROVIDED BY EPA's ENVIRONMENTAL IMPACTS BRANCH:

1. This comment concerns impacts to terrestrial biota.

On pages 3 -22 and 3-23, the exposure pathways of inhalation of fugitive dust emissions, incidental soil ingestion, and dermal contact include only discussion of impacts to human health. The impacts of these pathways to terrestrial biota may need to be considered.

MAIN will include in the Work Plan exposure pathways of inhalation of fugitive dust emissions, incidental soil ingestion, and dermal contact as they apply to terrestrial biota.

2. This comment concerns cultural resources.

The discussion of cultural resources on page 3-46 is not clear with respect to the potential for discovery of prehistoric sites within the OB/OD Grounds. The report, An Archaeological Overview and Management Plan for Seneca Army Depot

(September 1986), should be reviewed in conjunction with the RI/FS activities and likely remedial actions to determine the need for cultural resource survey investigations.

MAIN has reviewed the report of "An Archaeological Overview and Management Plan for Seneca Army Depot (September 1986), and the Work Plan has been clarified with regard to the potential for discovery of prehistoric sites. Figure A-1 indicates that two prehistorical/historic sites (NYSM, 4826, NYSM 4824) are not near the OB grounds. MAIN can not be more specific on the potential for discovery of prehistoric sites as this information is not available from the 1986 management plan.

3. This comment concerns wetlands survey.

The OB/OD Grounds include at least two potential wetlands of concern ("swampy areas"). A meeting was held on February 27, 1991, with the Project Manager and representatives of the facility regarding the Ash Landfill Area. It was our understanding from this meeting that a site-wide wetlands delineation and assessment would be performed. Accordingly, the Work Plan should include discussion of these actions.

MAIN proposes to delineate wetlands on the approximately 30 acre OB grounds using the Unified Federal Routine Method Routine Method. Figure 29 illustrates the approximate area of the OB grounds. Wetland covertypes will be evaluated using aerial photographs, existing wetland maps (NYSDEC Wetland Regulatory Maps and United States Fish and Wildlife Service (USFWS) National Wetland Inventory Maps) and field reconnaissance. Wetland boundaries will not be surveyed as part of this delineation.

Wetlands outside the OB grounds will be evaluated using aerial photographs, existing wetland maps (NYSDEC Wetland Regulatory Maps and USFWS National Wildlife Inventory Maps) and field reconnaissance to confirm wetland delineations, where necessary.

4. This comment concerns compliance with NEPA.

As you are aware, EPA has determined that its CERCLA/SARA remedial process if functionally equivalent with the National Environmental Policy Act (NEPA). To date, the Army has not made such a determination about its process. Accordingly, the Army will have to take action to ensure that its RI/FS and subsequent remedial action comply with NEPA.

This comment is acknowledged.

EPA'S BIOLOGICAL TECHNICAL ASSISTANCE GROUP PROVIDES THE FOLLOWING COMMENTS:

1. This comment concerns wetlands sampling.

Until the level and extent of contamination have been identified, the proposed biota sampling may be premature. Qualitative descriptions of site flora and fauna, as well as information obtained during the wetland delineation should be sufficient to characterize site conditions at this time. If the level and extent of contamination warrants biota sampling, we request a sampling plan which describes specific data quality objectives. Some of the methods currently proposed may be problematic, and results sought should be clearly defined.

Based on discussions held during the request for clarification period, MAIN proposes to conduct tissue sampling, if necessary, as part of a Phase II Investigation. The first phase will be a habitat characterization to obtain information on what species are likely to utilize the site as well as an assessment of soil, sediment, and aquatic chemistry.

2. This comment concerns wetland sampling.

The BTAG recommends that potential contamination in effected wetlands be characterized. Wetlands represent depositional areas and are frequently found to be contaminant sinks. At this time, it appears that there are several potential pathways for contaminants to migrate into wetlands. To characterize these pathways, the BTAG recommends that groundwater discharge points and surface drainage patterns be identified. In addition, the BTAG suggests that the proposed surface water and sediment sampling should occur during high flow conditions in order to characterize stormwater run-off patterns. The BTAG further suggests that the sediment sampling plan should include the following elements: collection in depositional areas, not random locations, as currently proposed; valid sediment sampling protocols for quality assurance; use of appropriate sampling devices; a better depiction of sampling locations; and TOC and grain size analyses.

MAIN proposes to sample six identified low-lying areas, which may be wetlands, to characterize any contamination in these depositional areas. Groundwater discharge points and surface water drainage patterns will be identified on the appropriate figures. Surface water would be maximally diluted during high flow, MAIN proposes to sample during low flow to obtain a worst case scenario for aquatic conditions. Sediment will be sampled using an appropriate sampling device (i.e. ponar sampler, beaker, etc.) from depositional areas. Sediment sampling locations have not been randomly selected. Locations are based upon surface water drainage locations to Reeder Creek from the OB site. Additionally, other locations were selected to provide an indication of expected downstream concentrations and one location was selected to provide an indication of upstream conditions. This was based upon the flow of Reeder Creek. The actual sample collection spot is variable depending upon the conditions observed

at the time of sampling. MAIN will collect sediment samples at locations which correspond to depositional areas. TOC will be performed on sediment samples.

MAIN believes that the protocol proposed are valid and appropriate. MAIN does not feel that it is necessary to perform sieve analyses on sediment sample collected from Reeder Creek which are to be analyzed for contaminants. To ensure that a representative sediment sample is collected MAIN will use the appropriate sampling device (i.e. ponar sampler, beaker, etc.). MAIN will sample fine-grained sediments from areas of deposition not coarse-grained sediments. The samples will be classified according to the method outlined in "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) (ASTM D-2488-84). MAIN feels that this method will be appropriate to characterize the sample. MAIN does not feel that it would be appropriate to perform grain size analysis by sieving and hydrometer in the laboratory on these samples from Reeder Creek. The use of a grain size distribution curve is questionable for this sampling, as the ASTM Visual-Manual Method would provide documentation regarding grain size.

3. This comment concerns EP Toxicity Levels.

The BTAG notes that contaminant levels in soils and sediments are compared to EP toxicity limits (Table 4, page 2-18). While EP toxicity limits define hazardous materials for disposal purposes, these levels do not necessarily reflect toxicity to indigenous biota.

Acknowledged.

4. This comment concerns the format for human health and environmental risk assessment.

The Work Plan addresses the human health and the environmental risk assessments jointly; we suggest that they be addressed separately as different elements may be of concern. For example, when describing exposure pathways, only human health risks are addressed. Both terrestrial and aquatic biota risk pathways should be included in an environmental assessment.

The discussion of human health and environmental risk assessments will be clarified. Both terrestrial and aquatic pathways will be included in the environmental assessment.

EPA AIR PROGRAMS BRANCH COMMENTS

1. This comment concerns inhalation of fugitive dust emissions.

Page 3-21 Inhalation of Fugitive Dust Emissions - "Some transport of dusts may reach the farm fields which border the site resulting in a potential exposure of farm personnel and potential uptake of contaminants into vegetable crops, however, this exposure is not anticipated to be significant," and "Volatilization of the tri- and dinitrotoluene compounds may result in low-level exposure of SEAD personnel working on our near the site. As with fugitive dusts, volatilized contaminants would not be expected to migrate to off-site in significant concentrations."

These statements should be corroborated with a demonstration which clearly indicates that levels of particulates and volatiles are below "significant levels." To this end, significant levels must be defined and impacts shown to be below these levels. New York State's Air Guide-1 is an excellent document which contains Ambient Guideline Concentrations for many toxic contaminants including the organic and inorganic species found at this site. This demonstration could be included as a task in Section 4.3.2, Soils Investigation, Task Plan for the RI. Please contact me for more information regarding Air Guide--1.

MAIN expects to estimate the potential exposures from these routes and assess the significance of these exposures in the risk assessment. The statement in the preliminary risk assessment section is a preliminary judgement of the potential effects and will be corroborated, however the estimates and comparisons to "significant levels" is part of the risk assessment, not the Work Plan.

2. This comment concerns the use of a wind direction indicator.

Health and Safety Plan, Page 6-2 - WIND DIRECTION INDICATOR - "A wind direction indicator will be erected at every active work site. This will enable the site safety monitor and on-site personnel to determine upwind locations necessary for proper health and safety procedure implementation and, if necessary, evaluation procedures."

Please describe the "wind direction indicator" if it isn't a standard wind vane and provide details regarding location of the vane on-site, and height aboveground level. Also, mention whether or not an anemometer will be deployed on-site.

The wind direction indicator will simply be a flag or length of flagging tape that will allow on-site personnel to determine wind direction visually. There are no plans to have an anemometer on-site.

THE FOLLOWING COMMENTS ARE FROM NYSDEC (JUNE 3, 1991 LETTER)

1. This comment concerns Figure 2.

   2.1: Figure 2 needs a north arrow.

   A north arrow will be added to Figure 2.

2. This comment concerns the explosive list provided in Table 6.

   3.1.2.1: This table should also include the Chemical/Physical Properties of Tetryl (N-methyl-2,4,6- trinitrophenylnitramine).

   Data for Tetryl (N-methyl-2,4,6-) trinitrophenylnitramine will be added to Table 6.

3. This comment concerns potential receptors.

   3.2: The evaluation of the human exposure pathways needs to explain why site visitors are excluded from being potential receptors from ingesting or having dermal contact to contaminated dust. The text indicates on-site workers are potentially exposed by those pathways. This would indicate visitors are also potentially exposed. The reasons for these exclusions need to be stated.

   Site visitors are not strictly excluded from exposure through ingesting or dermal contact to contaminated dust. Rather the exposure to on-site workers is believed to be much greater than that for visitors. While visitors would be exposed via the above mentioned pathways, their exposure would be expected to be much less than that for an on-site worker.

4. This comment concerns inhalation of fugitive dust emissions.

   3.2.2.2: It is stated that the site boundary is at a minimum of 1 mile away from the site. Upon measurement from the Facility Site Plan, we find the site boundary is about 2000 feet away from the site. Route 96-A is at the boundary and thus exposure to the traffic from the fugitive Dust Emissions and Volatile Organic Compounds (VOCs) is a significant threat. We, therefore, once again recommend that whenever field activities occur at the site, there must be continuous real-time monitoring conducted for VOCs and particulates at the downwind site perimeter. If the level of airborne particulates at the downwind site perimeter exceeds the action level of 150 ug/m^3, all work activities must be stopped and corrective measures implemented to control the release of airborne particulates. Particulate monitoring is especially important since surficial soils have been shown to contain elevated levels of metals.

   During field activities at the site, real-time monitoring for volatile organic compounds (VOC's) and particulates will be conducted at the downwind OB grounds site boundary. If the level of VOCs at the downwind OB grounds site boundary exceeds

5 ppm above background levels measured upwind from the work area, then all activities must be stopped and corrective measures implemented to control the source of the release. If the level of airborne particulates at the downwind site boundary exceeds the action level of 150 ug/m^3, all work activities must be stopped and corrective measures implemented to control the source of the release.

5. This comment concerns Table 14 and the New York State Drinking Water Standards as defined in part 5-1 of the New York State Sanitary Code.

3.4: Table 14 must include New York State Drinking Water Standards, as defied in Part 5-1 of the New York State Sanitary Code. These NYSDOH drinking water standards represent an Applicable or Relevant and Appropriate Requirement (ARARs) at this site.

These standards will be included in Table 14.

6. This comment concerns screen length for the weathered bedrock wells.

4.2.4.2: A screen length of 2 feet has been proposed for weathered bedrock monitoring wells. No rationale has been given for this proposed 2 feet screen length. From Table 2 and Figure 11, it appears that the thickness of weathered bedrock is approximately 10 feet and therefore it is possible to provide screen more than 2 feet. Unless there is a reason for the 2 foot screen length, we propose a screen length of 10 feet or depth of weathered bedrock whichever is less. In case of weathered bedrock thickness less than 7 feet, we also recommend that part of the bentonite seal in upper glacial and part in weathered bedrock to provide sufficient screen length.

This comment was addressed by MAIN in the August 8, 1991 conference call, and it was agreed that a 2 foot screen length would be used in the weathered bedrock. The discussion was based on the limited thickness of the weathered bedrock zone (approximately 5 feet) which, when using EPA-approved procedures for well construction (i.e., 2 feet of sand above the screen and 2 feet of bentonite), allows for a screen length of 2 feet. A greater screen length will be used in the weathered bedrock zone when possible. This will be added to the Work Plan.

7. This comment concerns scheduling for the RI/FS.

Scheduling: According to the proposed schedule for the RI/FS at the Open Burning/Open Denotation ground, the time required from the date of the RI/FS Work Plan approval to the date the Feasibility Study report is finalized could take 44 months. This is an exceptionally long schedule and is not consistent with the schedule included in the Interagency Agreement for a typical RI/FS and therefore is unacceptable to the NYSDEC. If the consultant needs more time for a specific task, a justification for the extra time should be given in this section.

MAIN will perform certain aspects of the FS during the RI which will shorten the total schedule somewhat. MAIN will shorten the FS portion of the project by 8 months. However, the actual schedule will not be within the confines of the generic schedule outlined in the IAG.

MAIN feels that the generic schedule for an RI/FS provided in Attachment D of the Interagency Agreement is not appropriate for the RI/FS on the OB/OD grounds. The OB/OD grounds RI will be completed by about the 11th month according to MAIN's schedule, however, this is due to the fact that preparation of a Preliminary Site Characterization Report is necessary to met EPA requirements; this does not appear to be accounted for in the IAG schedule, which allows for 5 months. In addition, MAIN's schedule calls for a 10 month draft preparation and comment period and MAIN feels this is more realistic than the 3 month period provided in the IAG.

With regard to the FS report preparation, the IAG allows approximately 1 month for development of remedial response alternatives and feasibility studies prior to submittal of the draft FS report. MAIN will begin FS work during the RI as suggested.

8. This comment concerns the health and safety plan.

Appendix B, Health and Safety Plan: We acknowledge the receipt of this Health and Safety Plan. However, it should be understood that our review of this document is limited to ensure the health and safety of our employees and does not extend beyond it. The review and acceptance of this document for the health and safety of site workers is the sole responsibility of the Department of the Army.

This comment is acknowledged.

9. This comment concerns expiration of the certificate of approval for laboratory services.

Appendix C, Chemical Data Acquisition Plan: This section contains copies of the NYSDOH "Certificate of Approval for Laboratory Services" for Aquatic, Inc., which expired April 1, 1991. New certificates need to be obtained and replace the copes in Section C.

The response is provided in the response to the first comment of the Field Sampling and Analysis Plan provided by the EPA's Toxic and Hazardous Waste Section of the Monitoring Management Branch.

THE FOLLOWING COMMENTS ARE FROM NYSDEC (JUNE 18, 1991 LETTER)

1. This comment concerns inhalation of fugitive emissions.

3.2.2.2: It is stated that the site boundary is at a minimum of 1 mile away from the site. Upon measurement from the Facility Site Plan, we find the site boundary is about 2000 feet away from the site. Route 96-A is at the boundary and thus exposure to the traffic from the fugitive Dust Emissions and Volatile Organic Compounds (VOCs) is a significant threat. In addition, Seneca Army Depot (SEAD) employees may also be working in the adjacent areas of the Open Burning Grounds and may be subject to the effects of the site activities. We, therefore, once again recommend that whenever field activities occur at the site, there must be continuous real-time monitoring conducted for VOCs and particulates at the downwind Open Burning Ground site perimeter. If the level of VOCs at the downwind Open Burning Ground site perimeter exceeds 5 ppm above background levels measured upwind from the work area, then all activities must be stopped and corrective measures implemented to control the source of the release. If the level of airborne particulates at the downwind Open Burning Ground site perimeter exceeds the action level of 150 ug/m^3, all work activities must be stopped and corrective measures implemented to control the release of airborne particulates. Particulate monitoring is especially important since surficial soils have been shown to contain elevated levels of metals.

This comment was previously addressed in the response to the NYSDEC June 3, 1991 comments.

2. This comment concerns Table 15 and aquatic water criteria..

3.4.2: Table 15 on page 3-51 lists aquatic water quality criteria for Cadmium, Chromium (T), Lead and Mercury as "not available". This statement is incorrect; values are included in the 9/90 version of TOGS 1.1.1. If one assumes a water hardness of 50 mg/l as $CaCO_3$ then the respective criteria are 0.66, 117, 1.3 and 0.2 mg/l.

This comment is acknowledged. The Work Plan has been modified.

3. This comment concerns Figure 25 and sampling of drainage ditches.

4.2.3: A review of Figure 25 indicates that additional sampling sites are necessary. Each of the drainage ditches noted on this Figure should be sampled where it discharges to Reeder Creek (there appear to be 4). If these sites are dry during the intended sampling date(2) then they must be revisited and sampled during a period of stormwater run-off.

MAIN will sample three of the major drainage ditches (three sample locations) that are most likely to transport surface water run-off from the OB grounds to Reeder Creek. MAIN does not feel it is necessary to sample all of the drainage ditches on-

site at this time. Further sampling of the on-site ditches will be evaluated after the initial results have been collected. The locations of the sampling points will be shown on Figure 25. The last sentence of this comment is acknowledged.

4. This comment concerns additional parameters for groundwater and surface water sampling. It also involves screening with a geiger counter.

3.6: The groundwater and surface water should also be analyzed for nitrates, phenols (total), and total dissolved solids based on their potential presence. In addition, a geiger counter should be used during the field program to screen for the presence of radioactive material. In the event that radioactivity is encountered, then field activity should cease and the RI/FS program should be re-scoped to deal with this issue.

MAIN proposes to conduct analyses for phenols as part of the TCL which will yield low detection limits. Nitrates will be added to the groundwater and surface water analyses. Values for nitrate have previously been determined for groundwater on the site and are not a concern. Table 3 of MAIN's RI/FS Work Plan provides a summary of these analyses. In addition, total dissolved solids values have previously been determined for the OB grounds site and are provided in an "Interim Final Report, Groundwater Contamination Survey No. 38-26-0868-88" July 1987. No other total dissolved solids data will be collected. MAIN feels that it is more important to concentrate on volatile organics, semi-volatile organics, explosives, and metals.

The use of a geiger counter is not believed to be necessary as the site is not a mixed waste facility.

5. This comment concerns sampling for acid soluble metals.

4.6: A review of Table 23 indicates that the surface water will also be analyzed for acid soluble metals. At this time no acceptable analytical method for acid soluble metals in water exists. Therefore, these analyses should not be included in the Work Plan. Typically "total" results are used for comparison to ARARs.

Only total metals samples will be collected from surface water sampling locations. The Work Plan will be modified to state this.

Comments related to ecological resources:

6. This comment concerns wetlands delineation.

3.4.2.1: The document states that ten areas of the SEAD are designated as fresh water wetlands by NYSDEC and that none of these are near the OB/OD grounds. The Work Plan calls for "...a more detailed wetlands delineation...". Though the Work Plan does not identify what a more detailed delineation means, it seems premature to delineate wetlands in more detail than is identified in Step I of the Habitat Based Assessment until it is determined through the course of the remedial investigation that

wetlands will have to be disturbed. If, at some point in the RI process, it is determined that it is probable that wetlands will have to be disturbed, then a more detailed delineation may be appropriate. Doing the detailed delineation now may add unnecessary cost to the remedial investigation and may not be useful in determining remedial methods.

MAIN proposes to delineate wetlands on the approximately 30 acre OB grounds using the Unified Federal Routine Method. Figure 29 illustrates the approximate area of the OB grounds. Wetland covertypes will be evaluated using aerial photographs, existing wetland maps (NYSDEC Wetland Regulatory Maps and United States Fish and Wildlife Service (USFWS) National Wetland Inventory Maps) and field reconnaissance. Wetland boundaries will not be surveyed as part of this delineation.

Wetlands outside the OB grounds will be evaluated using aerial photographs, existing wetland maps (NYSDEC Wetland Regulatory Maps and USFWS National Wildlife Inventory Maps) and field reconnaissance to confirm wetland delineations, where necessary.

7. This comment concerns media of preliminary potential concern.

3.4.2.3: Potential Chemical-Specific ARAR and TBC Levels indicates media of preliminary potential concerns as groundwater, surface water, and soil. Sediments should be added to this preliminary evaluation.

Agreed. Sediments will be added to media of potential concern.

8. This comment concerns aquatic toxicity and tissue sampling.

3.6: Surface water chemical analysis should also include hardness. The aquatic toxicity of certain metals can not be interpreted without hardness value. 2) It is stated that fish tissue sampling is required to evaluate the possible exposure due to ingestion of contaminated fish and that analyses of tissue will include the NYSDEC TCL and TAL list of compounds. In our letter dated February 21, 1991 to you, we suggested that the fish tissue sampling be delayed until Steps I and III of the Habitat Based Assessment are performed. This is still believed to be wise for the following reasons.

a) Fish tissue sampling is expensive and not needed if contaminants important to aquatic resources can not be found at the site or if found there is no pathway to the resources. If those conditions exist, fish tissue sampling provides no value since it can not aid in determining remedial methods.

b) Reeder Creek is small and collection of organisms in quantities necessary for analysis could in and of itself have potential adverse impacts on the resource. If those potential impacts can be avoided, they should.

c) Doing full TCL and TAL might be unnecessary and costly. ONce target contaminants that have effects on aquatic resources can be identified at the site then an analytical list can be determined which is not so extensive.

Based on discussions held during the request for clarification period, MAIN proposes to conduct tissue sampling, if necessary, as part of a Phase II Investigation. Phase I will be a habitat characterization to obtain information on what species are likely to utilize the site as well as an assessment of soil, sediment, and aquatic chemistry.

9. This comment concerns the approach to the ecological assessment.

4.2.5.1: Approach to Ecological Assessment states that MAIN ecologists will collect aquatic community data by making aquatic collections. It is premature to make such collections and such collections will induce unnecessary mortality. The first description and risk analysis for aquatic resources should be based on available records or presumptions from other aquatic ecology studies for creeks similar to Reeder Creek. Should risk analysis at some future date need collections then they should be instituted. The aquatic community collections proposed may never be needed for determining remedial measures and would be an unnecessary cost.

In order to determine the inhabitants of Reeder Creek, MAIN must collect samples of aquatic organisms. MAIN does not feel that this would unnecessarily disturb these aquatic communities.

10. This comment concerns fish tissue sampling.

4.2.5.2: 1) Page 4-42; Sampling Program states that chemical analyses for fish samples will be "...fish fillets, skin off, ...". DEC procedures generally leave the skin on fish fillets. See the enclosed DEC procedures. Taking the skins off will make comparisons with an existing DEC database difficult, if not impossible. 2) Page 4-43; Sediment collections should be from depositional areas not "... faster flowing water...". 3) Page 4-44; It is stated, "[i]f no toxicity is observed, then it might reasonably be assumed that any stress noted to biota on or adjacent to the OB grounds is due to habitat description, external sources of toxic chemicals, natural variability, etc." Emphasis added. A clarification is needed since there is no way of determining the difference between external or other sources of toxicity by chemical analysis.

Based on discussions held during the request for clarification period, MAIN proposes to conduct tissue sampling, if necessary, as part of a Phase II Investigation. Phase I will be a habitat characterization to obtain information on what species are likely to utilize the site as well as an assessment of soil, sediment, and aquatic chemistry.

1) If performed as part of Phase II, the DEC method for such preparation should be used.

2) Acknowledged. This will be stated in the Work Plan.

3) This discussion will be clarified in the Work Plan.

11. This comment concerns tissue sampling.

4.4.5: Environmental Assessment does not mention how tissue sample analyses will be used in risk assessment. Since tissue samples are a big part of the proposed biota sampling scheme, how those values are to be interpreted and their purposes should be clearly stated. This section should state how sediment analyses will be interpreted with respect to aquatic resources.

Tissue sampling will be performed as part of Phase II, if necessary. This section of the Work Plan will also provide a statement of how sediment analyses will be interpreted with respect to aquatic resources.

MAIN will conduct the soil boring and excavation sampling program in two phases. Phase I will consist of 1) 20 grid borings, 2) 22 burning pad borings and 3) 32 berm excavations. A second phase of borings and excavation sampling (Phase II) will be performed on the site after the completion of Phase I. Phase II will consist of 1) 30 grid borings, 2) 18 burning pad borings, 3) 28 berm excavations and 4) 28 low-lying hill excavations. The locations of the Phase V and sampling locations may be altered slightly depending on the outcome of the Phase I sampling.

In accordance with discussions held during the request for clarification period, split spoon samples will be collected continuously for the length of the boring. Samples collected from the ground surface to the depth of the first spoon sample in saturated naturally deposited sediments will be sent to the laboratory for Level II analysis. Continuous split spoon sampling will occur for the remainder of the boring, however, the samples will not be submitted for Level II analysis. Because one of the goals of the subsurface investigation is to characterize source areas, MAIN does not feel that it is necessary to analyze split spoon samples below the upper portion of the saturated zone on naturally deposited sediments. All split spoon samples collected in till material will be submitted for Level V analysis.

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

Very truly yours,

CHAS. T. MAIN, INC.

Michael Duchesneau, P.E.
Environmental Engineer
Project Manager

MD/at