UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

Date : September 25, 1992

Subject : Nyanza O.U.1 RA Completion

From : Richard Cavagnero, Chief, Mass. Superfund Section

To : Gerry Levy, Chief, MA Waste Management Branch

Attached hereto is the Remedial Action Report for the first operable unit at the Nyanza Chemical Waste Dump Superfund Site in Ashland, MA. The Report was prepared by the New England Division of the U.S. Army Corps of Engineers, which managed the construction under an Interagency Agreement with EPA, with assistance from both EPA Region I and the MA DEP. Once EPA accepts the report, by signature of the Branch Chief, the first operable unit remedial action will be considered to be completed.

Two minor work items being performed by the Corps are still in progress. The first is the offsite removal of a small number of drummed wastes containing cuttings, decon water, purge water, and Tyveks generated by EPA's ARCs contractor from the operable unit 2 remedial investigation along with a small volume of soil contaminated by minor leakage of the drums. The second is the improvement and/or repairs to the Site security fencing. Neither of these items were included in the original IAG with the Corps or in the Corps' contract with TRICIL Environmental Response, Inc. Thus, they are not part of the first operable unit, per se. Hoewever, after extended discussions with the MA DEP earlier this year about the transition from the construction phase to the O&M phase, for which the State is responsible under the terms of the State Superfund Contract, EPA agreed to complete these items, using the Corps' contracting authority, before the State took over O&M. The Corps let the contracts for this work in mid August, with completion expected in early October, barring unforseen difficulties. I will request the Corps to provide EPA with a separate certification letter upon completion of these additional tasks.

I recommend that you sign below to indicate EPA's acceptance of the Corps' Remedial Action Report.

Signature

9/25/92
Date

Attachment

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254-9149

REPLY TO
ATTENTION OF

September 24, 1992

Construction Directorate

SUBJECT: CONTRACT DACW45-89-C-0001, Nyanza Chemical Superfund Site Clean-up, Certification of Completion

Ms. Pam Shields
Remedial Project Manager
U.S. Environmental Protection Agency
Region I
Waste Management Division
90 Canal Street
Boston, Massachusetts 02203

Dear Ms. Shields:

This letter is to inform you that the Corps of Engineers certifies physical completion of the subject contract for Operable Unit I. The attached Remedial Action Report describes significant events, issues and dates during the execution of the project and indicates that the project is functioning as designed. Should you have any questions, please do not hesitate to call me at 617-647-8260.

Sincerely,

Richard C. Carlson
Director of Construction

sponse to field conditions in many of the areas. These are [illegible]

Enclosure

NYANZA CHEMICAL WASTE DUMP SUPERFUND SITE
REMEDIAL ACTION REPORT

I. INTRODUCTION

Site Location - The Nyanza Chemical Waste Dump Superfund Site is located in Ashland, Massachusetts near the former location of the Nyanza Chemical Co. The site, for purposes of this report, includes: areas on the former Chemical Company's property; Megunko Hill - located behind the chemical plant; and the drainage basin for the entire area. This drainage basin includes several large wetlands, streams, runoff ditches and culverts (Figure 1).

History - From 1917 through 1978, the property was occupied by several companies involved in the manufacture of textile dyes and dye intermediates. The last company involved in such manufacture was Nyanza, Inc., which ceased active operations onsite in 1978. Other products manufactured on the property included inorganic colloidal solids and acrylic polymers. During the time period of site operation, liquid wastes were discharged from the plant into a series of sludge pits and runoff channels. Many of these wastes eventually migrated offsite into Chemical Brook and then to the Sudbury River. Located behind the chemical plant is Megunko Hill. This Hill was used as a "garbage dump" for the chemical plant. Solid waste, additional liquid waste, drums, and various other items were dumped on this Hill for many years. Rain water carried contaminants from the hill sides down in two directions which in turn contaminated two large wetland areas. These wetlands drain into culverts and channels which also connect to Trolley Brook, Chemical Brook and eventually the Sudbury River.

The former plant grounds are now occupied by several industrial concerns, the largest of which is Nyacol Products, Inc.

Components of Remedy and Types of Contaminants - The objective of the cleanup was to excavate and place in a landfill all contaminated soils, sludges, and sediments on the site. The contaminated "source" areas were contributing to the pollution in the Sudbury River and in local groundwater. They were also a potential health hazard to anyone on or near the site. The major contaminants included mercury, lead, chromium, arsenic and cadmium, as well as possible compounds of these metals. Some organic compounds were also present.

The main health risk associated with the site was direct contact with the soil. Secondary risks included inhalation and ingestion. This site was also the source of contamination for the Sudbury River and the groundwater migrating from the vicinity of the site in a north/northeast direction.

The selected remedy called for (i) soil and wetland excavation at nine localized areas of contamination; (ii) solidification of water-bearing excavated sludge, sediments, and soil; (iii) placement, consolidation and capping of those materials with material left in place on the Hill and (iv) construction of a diversion trench on the side of the Hill above and around the capped area to divert surface water flow and to lower the groundwater table beneath the cap. Figure 2 shows a cross section of the cap.

Figure 1

Nyanza Chemical Waste Dump Site
Principal Features

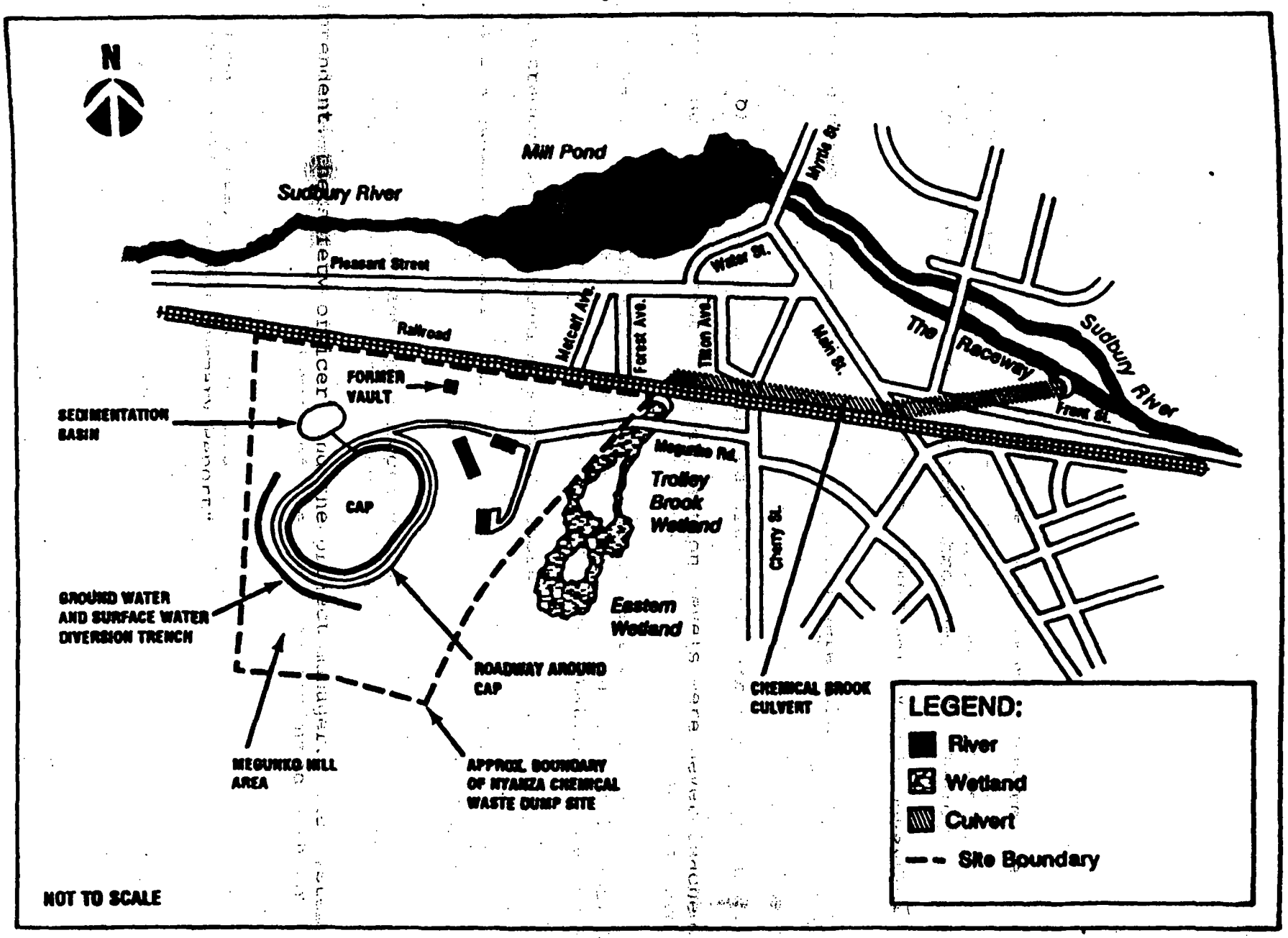
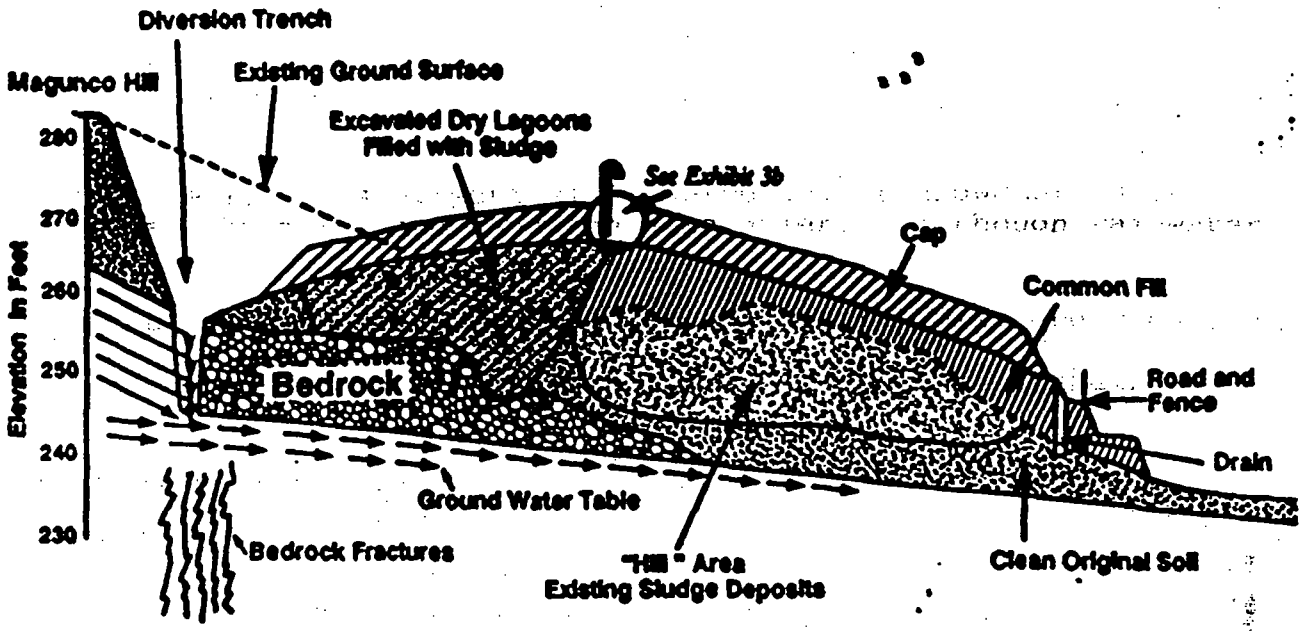
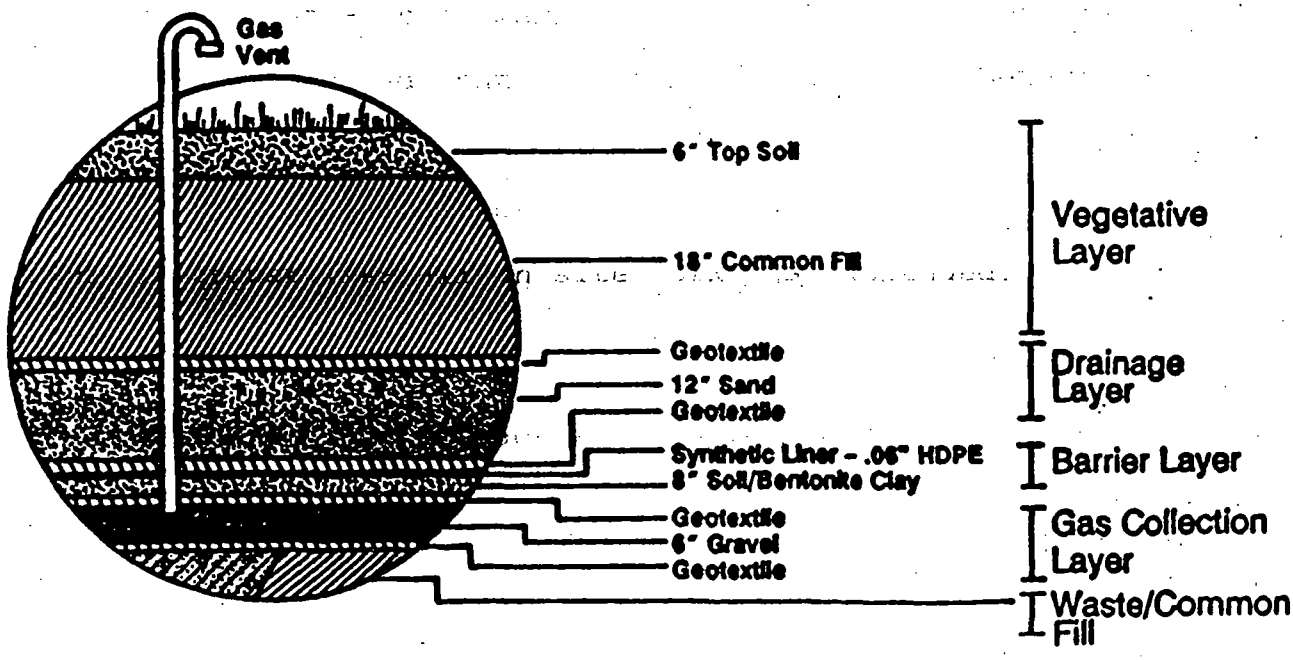


Figure 2

Cross Section of Capped Area





II. CHRONOLOGY OF EVENTS

1970	Mercury contamination found in the Sudbury River as part of overall study of mercury problems in Massachusetts for the Massachusetts Division of Water Pollution Control.
1972	EPA Study by JBF Scientific Corporation focusing on Nyanza, Inc. revealed that mercury contamination in the Sudbury River was caused by uncontrolled sludge and wastewater disposal at the Site.
1/19/83	The Remedial Investigation/Feasibility Study is initiated under a contract with NUS Corporation.
9/1/83	The Site is included on the National Priorities List.
9/4/85	EPA Region I Administrator signs a Record of Decision (ROD) for the Site. The ROD is a document prepared by the EPA to select a remedial action from a number of different options and to explain the rationale for the decision.
4/21/86	The design contract is awarded to Camp, Dresser & McKee of Cambridge Massachusetts. The US Army Corps of Engineers, Missouri River District, Omaha, Nebraska provides technical assistance during the design phase under an Interagency Agreement with EPA.
11/19/87	The Invitation for Bids is advertised.
12/11/87	The final design is completed by CDM and turned over to the Army Corps of Engineers for the lead during Remedial Action.
10/13/88	The construction contract is awarded to Tricil Environmental Response, Inc., of Houston, Texas. The New England Division of the Army Corps of Engineers now assumes the construction management responsibilities.
1/1/89	Contractor mobilizes and begins preparing site for construction activities.
6/89	"Cells" to receive contaminated material are built.
6/7/89	Work in exclusion zones is suspended due to lack of emergency response.
6/27/89	Work in all source areas is suspended due to suspected presence of Dimethyl mercury.
8/89	Interceptor trench is blasted and excavated.
10/31/89	The Site is shutdown because dimethyl mercury detection equipment is not readily available.

11/89 -2/90	Government researches the development of a dimethyl mercury detection system. Tricil is requested to implement the program on site.
3/19/90	Site work resumes with a dimethyl mercury monitoring program in use.
5/90	Remediation begins. The contractor excavates and hauls contaminated material from the source areas to the cells in the landfill.
3/91	Exploratory soil sampling is done in areas outside the defined source areas.
4/91	Construction of the landfill cap begins with gas collection layer.
5/91	All remediation is complete.
8/91	Wetland areas are revegetated.
8/91	Landfill cap is completed. Major layers include gas collection layer, bentonite clay layer, HDPE liner, drainage layer, common fill and topsoil layers.
11/7/91	All construction activities are complete.
11/91 -9/92	Closeout phase.
9/92 -10/92	Additional work items performed by Webster Engineering

III. PERFORMANCE STANDARDS AND QUALITY CONTROL

The objective of the work was to excavate contaminated soils, sludges, and sediments in the outlying areas, consolidate the excavated wastes with the wastes buried on Megunko Hill, and build a multi-layer cap over the consolidated wastes. The ROD specified that wastes were to be excavated to background levels, considered to be approximately 1 ppm for mercury, the most prevalent contaminant on site. Alternative criteria were developed by EPA in response to field conditions in many of the areas. These are fully described in the Explanation of Significant Differences signed by the Regional Administrator on September 21, 1992 (Attachment 1).

A field sampling system was initiated to sample soil in remediated areas. Under this sampling program, a maximum of 300 samples were allocated; 275 were actually used. Samples were taken at the bottom and sides of excavation in remediated areas. Frequency and exact location of samples were based on field observation. Lab analysis included the following: mercury, arsenic, lead, chromium, and cadmium. If the test results showed

that any contamination was missed during the initial remediation, the contractor would be directed to return to those areas and remove additional soil. Additional samples were then taken as necessary. All sampling results are included in Appendix H of the "Contractor Quality Control Summary Report".

Quality Control on Other Critical Items

Compaction Testing of Bentonite Layer: The bentonite layer is a nearly impervious mixture of soil and clay which is located immediately beneath the high density plastic liner. Its purpose is to keep water from reaching the contamination in the event that the plastic liner is damaged or punctured. The contractor began this phase of work by lab testing samples of soil and bentonite clay in various ratios to determine the mixture with the lowest permeability. The objective was to achieve 1×10^{-8} cm/sec under lab conditions, and 1×10^{-7} cm/sec in field conditions. This mixture was then reproduced in large quantities on site, and test strips were placed with available compaction equipment. As a result the contractor was able to determine the optimal moisture content and standardize his compaction effort in order to achieve the desired low permeability. Test samples were then taken during placement. Control was performed by determining in place moisture content and densities, then plotting these values on a chart with line of equal permeability. The chart was derived from the lab samples. If any areas failed the in place permeability test, they were recompacted and/or replaced, then retested.

Seam Testing of High Density Polyethylene (HDPE) Liner: The HPDE liner for the landfill was constructed by heat welding together rolls of plastic to form one continuous sheet. The plastic was supplied and installed by the Gundle Lining Co. of Houston Texas. Their crews manhandled large rolls of plastic into place. These rolls were 420 feet long and 20 feet wide. Smaller pieces were cut as necessary. The sections were then fastened together using two different heating methods. Long straight seams were heat fused using a double seam method. Short sections were welded together using hot plastic extruded from a special gun-like device.

The double seams were tested by pumping the seams up with pressurized air, then recording the pressure loss over a given time period. The extrusion welds were tested with an electrically operated vacuum box that was placed over the weld. Any holes in the material could be quickly detected using either method.

After the entire system was complete, the contractor cut samples of the welds out of the finished product at randomly selected locations. These samples were then sent to a lab for strength analysis. QC samples were also tested, and duplicates were retained. The resulting holes were patched. The quality control program also included daily reports from the Gundle Co. which included work performed, results of testing, and a cumulative summary of material in place.

Installation and Development of Monitoring wells: The site contains 11 monitoring wells; 5 pairs and 1 lone well. These wells were installed by the Miller Engineering and Testing Company. Quality Control during installation was mostly concerned with material quality, workmanship, and record keeping. Of equal importance was the development of the wells. The development consisted of cleaning and flushing sediment from the wells, measuring the water levels, and chemical analysis of the water. Complete development reports were then provided to the Corps.

Water Samples: Periodic water samples were taken to ensure the cleanliness of water being discharged from the site due to construction activities. As with the soil sampling, tests were conducted for mercury, lead, cadmium, chromium, and arsenic.

Daily Air Monitoring: To help ensure worker safety, an industrial hygienist was on site each day during remediation and/or potentially hazardous work. His major responsibility was air monitoring; both time weighted average and real time testing were done. Each day levels of mercury vapor, respirable dust, and volatile organics were measured over an eight hour period and recorded. Dimethyl mercury was also checked during remediation activities. Measurements were taken upwind of the site, downwind of the site, and near any potential hot spots depending on the day's activities. Duplicate and QA samples were also taken. Except for dust, action levels were never reached. Dust became a problem near the rock crushing plant, so workers were required to wear respirators with proper filters. Also at periodic intervals during the day the industrial hygienist took real time readings for potential airborne hazards. The results of all testing were promptly reported to the government representatives. The results of this sampling are located in Appendices C, D, E and F of the "Contractor Quality Control Summary Report".

Contractor's Quality Control Plan

The contractor's quality control centered on their full time quality control officer. His major responsibilities included sample collection, material inspection, workmanship inspection, daily reports, submittals, and implementation of the Corps' three phase inspection system. As necessary he worked with and was assisted by the field engineer, the work crew superintendent, the safety officer, and the project manager. The system functioned quite well. The majority of the work was performed with no problems, and the government received all required reports and other information on time and in good order. The results of all quality control inspections, reports, etc. are included in Appendices A and B of the "Contractor Quality Control Summary Report".

IV. CONSTRUCTION ACTIVITIES

Site Preparation - The initial phases of work included work crew mobilization, office trailer and utility installation, clearing and grubbing the site, construction of haul roads, and erection of temporary fencing.

U

Pre-Remediation Work - Several items were completed before the contractor could begin placing contaminated material in the landfill. Landfill Cells were constructed as deposition areas for soils and sludges. These cells contained filter fabrics and a drainage system leading to an observation manhole. Originally three cells were to be built, but due to unforeseen problems, one large cell was built. (See below, Problems Encountered) Also, the groundwater interceptor trench was excavated at this time. A semicircular trench, about 25 feet deep, was blasted out of the bedrock on the upgradient side of the landfill cell. This effectively lowered the groundwater table in the cell area, which in turn kept the area drier. (Although rainwater would still fall onto the cells until the plastic liner was in place)

While the contractor was preparing the landfill cells and clearing other areas on the site, he discovered some 55 gallon drums with unknown contents. The EPA was notified, and they sent their Environmental Services Division to investigate, and to remove the drums. The drums contained a variety of chemical waste products, including nitrobenzene.

Partial Suspension of Work - In June of 1989, the Ashland Fire Department informed the Corps that they would no longer provide emergency response if there was an on site accident. They claimed they were not properly trained and did not have the proper Personnel Protection Equipment. The Army Corps had no choice but to suspend all work in "hot" zones on the site. Eventually the government arranged for the Firefighters to attend an EPA Health and Safety course and loaned the Ashland Fire Department the proper protective gear for the duration of the response action. The partial suspension continued into the total suspension due to dimethyl mercury, and both were lifted on March 19, 1990.

Temporary Shutdown - In summer, 1989, it was noted that the specifications contained some information from earlier site studies. These studies indicated that a substance known as dimethyl mercury might be present in some of the wetland areas on site. Inorganic mercury can be transformed into dimethyl mercury by bacteria in sediments. Airborne dimethyl mercury is a potentially dangerous inhalation hazard, and cannot be effectively filtered. Therefore, construction work was suspended in the source areas in June of 1989, and on 31 October 1989 all on site work was suspended.

Experts from several government agencies, including Oak Ridge National Laboratory, the Corps Research Laboratory, and EPA Laboratories, were called in to develop a dimethyl mercury testing program. As a result of their efforts, the contractor was directed to implement this dimethyl mercury testing program, and to place all workers involved with remediation in level B protective clothing. (Level B = supplied air, no filters) The contractor's consultants set up a three tiered system of detecting the dimethyl mercury, two real time methods and one time weighted average method. Eventually only one detection method proved reliable, and it was used throughout remediation. (The GC/MS method with 20 minute turnaround time on results.)

Remediation - With a dimethyl mercury detection system in operation and in level B protection, the contractor began to move contaminated soil and sludges from the source areas to the landfill cell. Areas C, N, M, J, L, O, P, G, I, and D were all remediated between May and November of 1990. Over 65,000 cubic yards of material was placed in the landfill cell. The work was performed with no major problems. Remediation of area E was delayed due to uncertainties in the actual location of contamination.

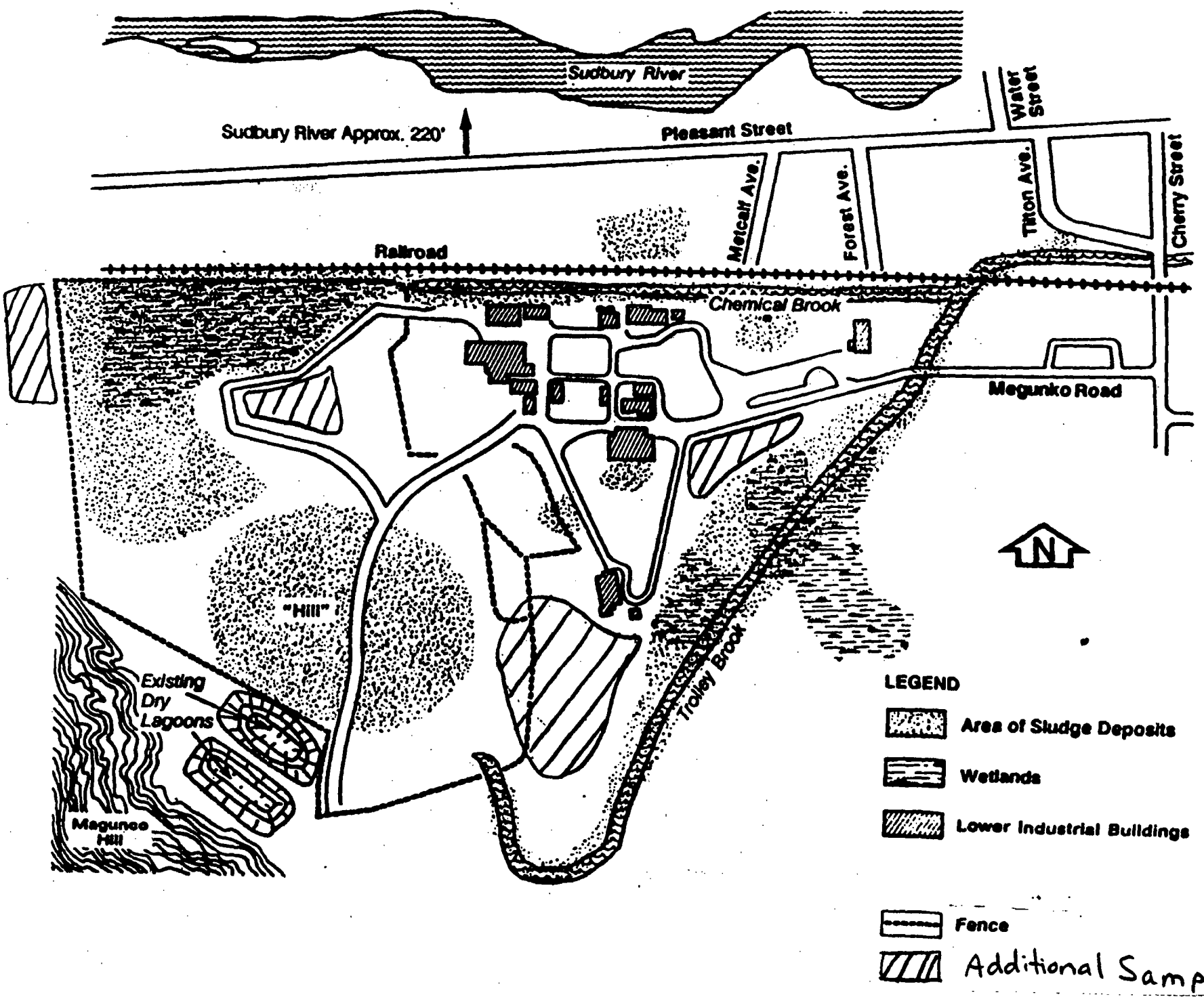
Site Work - With the majority of remediation complete, the contractor turned his attention to site work. A portable rock crushing plant was installed, and rock from the interceptor trench and boulders from all over the site were crushed and sorted by size. Small stone, 3/4" to 2", was placed aside to be used in the landfill cap layers. Larger stone, 2" to 5", was placed on hillsides throughout the site. This provided a good maintenance free substitute for grass. At this time the sedimentation pond was built, and its 200 foot long outlet pipe was installed.

Additional Testing - During the remediation discussed above, the verification samples revealed that the limits and depths of contamination were not as well defined as the contract drawings depicted them. This led the EPA to believe that some contamination "hot spots" might exist outside of the contractually specified source areas. The contractor was therefore requested to take soil samples in four additional areas (Figure 3). These samples were taken at approximately fifty foot intervals in both directions. Only two samples out of about two hundred showed high levels of contamination. The soil around these two spots was excavated and landfilled.

Additional Remediation - Two of the source areas still had problems, area E and area N. The work in area E had been suspended because the EPA Remedial Project Manager had recently obtained some aerial photos from the 1950's which showed liquid sludge in a slightly different area than the source area which was outlined on the drawings. Five additional soil samples backed up the photo, and therefore the limits of the source area were relocated 50' to the east. The contractor performed remediation based on these new work limits. Area N is the runoff channel along Conrail's tracks known as "Chemical Brook". Remediation was performed, as per contract specifications, to a depth of only about 6-12 inches. Verification samples revealed that high levels of organic contamination still existed below this level. However, if deeper excavation were attempted, it might undermine the adjacent railroad tracks. After consulting with EPA and Conrail, the Corps directed the contractor to line the channel with filter fabric and crushed stone. This solution would prevent any people from coming into physical contact with the contaminated material, and would also help prevent contamination from being carried downstream by flowing water (See Attachment 1).

Construction of Landfill Cap - Once all of the contaminated soil and sludge materials were in the landfill cell, construction of the cap could begin. The first step was to place common fill above the contamination to achieve the correct shape and elevation. The first

Figure 3


Sudbury River
Sudbury River Approx. 220'
Pleasant Street
Water Street
Metcalf Ave.
Forest Ave.
Tilton Ave.
Cherry Street
Railroad
Chemical Brook
Megunko Road
N
"Hill"
Existing Dry Lagoons
Megunco Hill
Trolley Brook
LEGEND
Area of Sludge Deposits
Wetlands
Lower Industrial Buildings
Fence
Additional Sampling

layer of the cap to be built was the gas collection layer. It is a 18" thick layer of 3/4" crushed stone which acts as a passageway for any gases to travel through and escape via gas vents which are located at high points on the cap. The next layer is the bentonite clay layer. As discussed in the Quality Control section, this layer is a nearly impervious barrier acting as a safety net should the plastic (HDPE) liner be damaged. Above the bentonite layer, the contractor installed the HDPE liner, an impervious barrier to water. Next came the sand drainage layer. This is a highly porous layer of sand and gravel through which precipitation will drain off of the cap's 13 acre surface. The final layer is the common fill/topsoil layer. This 1.5 foot thick layer acts as a protection layer against vehicular traffic, burrowing animals, and deep plant roots. Grass was planted on the surface, and will be maintained to prevent weeds and trees from growing. All of the layers are separated by geotextile fabrics. These fabrics protect the plastic liner, help filter any water, and prevent mixing of the different layers.

Reestablishment of Wetlands - Prior to remediation both areas G and C contained wetlands. The contract plan was to reestablish wetlands in these areas. After removing all contaminated material, the contractor brought in common fill, topsoil, and peat to bring these areas back to original grade. A survey was then conducted to calculate the expected water levels in the new wetlands. (The areas were kept dry during construction by a system of diversion trenches and pumping.) Based on expected water levels, the contractor planted cattails and bulrush by hand, and hydroseeded reed canary grass. The areas were then allowed to fill with water naturally. However, due to a temporary decision not to reopen a culvert adjacent to Area G, this wetland area has less water than originally planned. A different seed mix which includes plants that can grow in dryer conditions was used to reseed Area G.

Project Completion - During the final two or three months on site the contractor installed the guardrail, planted grass, removed temporary fencing, installed permanent fencing, corrected miscellaneous deficiencies, and cleaned up the site.

Problems encountered and lessons learned:

Cell construction - The original plan specified division of the cell into 3 separate areas, but this was abandoned in favor of one large cell. Originally cell 1 was to contain sludge, cell 2 to was to hold dry soils, and cell 3 would be for contaminated vegetation, primarily roots and stumps. As construction progressed, cell 1 was found to contain a pile of 55 gallon waste drums, and part of cell 2 included a sludge pit. The situation was studied by EPA and Camp, Dresser & McKee, the contractor used for remedial design. Their solution was to place all contaminated material in one large cell, but to place any vegetation in separate layers. Since sludge was being stabilized before being deposited, it could be mixed with the drier material.

Site Roads - The site contains a substantial number of access and haul roads. These roads have compacted gravel surfaces, and some are

fairly steep. During the final inspection by the Massachusetts Department of Environmental Protection (MA DEP), it was noted that some of these roads could be susceptible to erosion problems in the future. To prevent these problems, the design was modified to include some additional culverts and manholes to control runoff. On future designs it might be wise to minimize the number of unpaved roads, especially steep ones. Also, check for potential erosion problems during design reviews.

Site Security - Contract specifications required the contractor to provide 24 hour site security for the duration of the contract. On November 7, 1991, site security was discontinued by the contractor because the government was no longer paying for it. The following weekend the government and contractor office trailers were broken into and burglarized. All computers, calculators, copiers, radios, and telephone equipment were stolen. In the future any on site trailers should have 24 hour site security, and if this is not possible, all valuables should be removed daily. Another possible solution is burglar alarms connected to local police stations.

Dimethyl Mercury - Over a million dollars was spent developing and implementing a testing program for this chemical. Only trace amounts below all action levels were ever detected. In the future, if the presence of any dangerous chemicals is suspected, more thorough pre-site investigations should be performed. If dangerous chemicals are found, then specific testing requirements should be included in the specifications.

Local Fire Department - The site experienced a partial suspension of work because the local Fire Department claimed that they were not properly trained to respond to an emergency on a hazardous waste site. We recommend that on future contracts, written assurance of cooperation by local emergency response people be attained even before design is begun. EPA or State authorities should take responsibility for this.

Occupational Safety and Health Administration (OSHE) - Inspections were conducted by the area OSHA office after receipt of complaints by Site workers. The involvement of the Laborers International Union of North America (LIUNA) and the International Union of Operating Engineers (IUOE) resulted in Congressional inquiry and a number of meetings with both EPA and Army Corps management in Washington, D.C. A large team headed by the Corps fully investigated the allegations and produced a report. The incident revealed the need for clarification at the national level of the roles of EPA, the Army Corps, the contractor, and subcontractors in meeting Health and Safety requirements at Superfund cleanups. EPA Headquarters has subsequently issued such guidance and also established a management level workgroup including representatives of EPA, the Corps, and the national unions to foster a dialogue for issue resolution. EPA Region I and the Corps New England Division have also adopted an approach wherein contact will be made with the OSHA office before construction begins to seek interpretation of OSHA regulations as necessary.

Remediation Standards - The specifications delineating the excavation were developed based on extensive predesign sampling in an effort to reduce post excavation sampling to a minimum and thereby avoid remediation downtime. No specific guidance on what constituted "clean soil" outside the delineated areas was provided.

Problems arose in areas where contamination was evident outside the delineated areas. 300 new soil samples were added to the contract, and extensive communications between Corps personnel and the EPA site manager were required to establish the final excavation limits in each area, based on comparison with background levels or other criteria (Attachment 1).

Future contracts should be more specific in defining excavation criteria and should require more extensive, post-excavation soil testing.

Contract Flexibility - As currently written, Corps Information for Bid (IFB) announcements do not contain any optional provisions for either remedial investigation of removal type work which could become necessary due to unforeseen circumstances. This resulted in the need to have EPA Emergency Response personnel, rather than Tricil, deal with drums unearthed. This resulted in a host of coordination problems. In the future, the Corps should consider including in the IFB, line items for optional services such as sampling, lab services and drum removal.

Wetland Restoration - The specifications allowed wetland plant species to be planted in either spring or fall. The contractor planted them in late summer/early fall and migratory waterfowl ate the majority of them. The Corps recommends that future specifications require wetland plant species be planted only in spring, and that some sort of temporary protection be erected.

Fencing - The contract called for new fence around 3/4 of the project site. The other 25% of the site had an old fence around it which the designer considered still usable. A final inspection by the MA DEP rejected this old fence, and new fencing is being erected to replace it. Recommendation: put high quality new fencing around all Superfund sites.

Work by Independent EPA contractors and EPA Emergency Response Teams - Independent EPA contractors performed some site investigation work and the EPA Environmental Services Division removed some drums from the site while contract work was ongoing. Both groups left behind potentially hazardous materials for which the construction contractor was not responsible. These materials, mostly drums, impacted the contractor's use of available site space, and were still on site after contract work was complete. A separate contract was necessary to remove these materials. This situation should be avoided if at all possible on other sites by better coordination between EPA and the Army Corps.

Boundary Lines for Source Areas - Several source areas, namely M and J, had their remediation limits defined by property lines. The owners of adjacent property felt that these limits were somewhat suspicious, and wondered if parts of their land were contaminated. We used our soil samples to verify the cleanliness of our excavation limits. In the future it is recommended that the use of property lines as limits for remediation be avoided or sampling of adjacent properties be included to quell fears and suspicions.

Transfer of Site to State DEP - The MA DEP has currently refused to accept transfer of the facility for maintenance purposes until some unfinished items are completed. These items include fencing inprovements and the removal of drums from the Emergency Response Operations and Operable Unit II remedial investigations. The Corps recommends that the requirements and process for transfer of projects be better defined in the future and also that state officials voice their concerns with projects well before construction activities are nearing completion.

V. FINAL INSPECTION

Corps Inspection of Tricil Work

The Army Corps had an office trailer on site with a full time staff. This allowed the Corps to inspect all work as it progressed. A running list of deficiencies was kept on site and was reviewed periodically with the contractor. On October 17, 1991 a prefinal inspection was held with Army Corps and Tricil Quality Control representatives present. A punchlist was generated for the contractor (Attachment 2).

On October 29, 1991 a final inspection was held for Tricil Construction. Present were the Corps, Tricil, EPA, MA DEP, and MA DEP's contractor, Wehran Envirotech. At this time the punchlist was reviewed and a few additional minor items were noted. All construction deficiencies were subsequently resolved by the contractor (Attachment 3).

On May 27, 1992 an inspection was held for establishment of vegetation. Present at this meeting were the Corps, Tricil, Tricil's landscaping subcontractor, EPA, and MA DEP. A list of vegetation deficiencies was generated and subsequently corrected by Tricil and their subcontractor (Attachment 4).

Inspection of Work by State DEP prior to Transfer and Acceptance

The MA DEP along with their consultant Wehran Envirotech, made a separate inspection of the work and came up with a list of work items that were not part of the construction contract, but would require completion before the state would accept the project. EPA agreed to fund these additional items, and the Corps agreed to design and build

them under their IAG with EPA. These items included: removal of hazardous drums and soil left on site as a result of the RI/FS for operable unit II and the Emergency Removal Action and replacement of old low quality fencing (Attachment 5).

VI. OPERATIONAL AND FUNCTIONAL CERTIFICATION

The facility is operational and functional. The project was built according to the drawings and specifications, and work was done in a quality manner. Several checks have been made to verify the functionability. The level of ground water in every monitor well is lower than the lowest level of contamination placed in the landfill cell. A visual inspection of the groundwater interceptor trench reveals that water is freely flowing from the groundwater's upgradient side of the trench, but no flow is coming from the other side. Testing of the wells installed under this project will allow comparison with groundwater samples taken before the remediation. And finally, contamination has been removed from all outlying source areas and is no longer contributing to pollution problems in the Sudbury River or the groundwater. Based on this information, the Corps concludes that the Operable Unit is Operational and Functional.

VII. OPERATION AND MAINTENANCE

During the summer of 1992, maintenance has been limited to the reseeding of grass in thin areas and the replanting of some wetland vegetation by Tricil and its landscaping subcontractor. The MA DEP has entered into a cooperative agreement with EPA for funding of operation and maintenance costs for the first year following Certification of Completion of Construction by the Corps .

The major components of the operation and maintenance plan include:

-Periodic Inspections;
-Groundwater Sampling and Water Level Measurement;
-Surface Water Sampling;
-Air Monitoring;
-Routine Maintenance on fencing, cap, drainage system, roadways, vegetation, erosion control, side slope cover and stability and sediment removal.

VIII. SUMMARY OF PROJECT COSTS

Government Estimate	$12,884,658.00
Original CDM estimate	$14,531,340.00
Tricil Bid	$8,565,984.55
Additions due to mods	$5,268,980.57
Total Contract Cost	$13,834,965.12
Total Corps Costs	$686,323.70

The major contract modifications are discussed in the Explanation of Significant Differences (Attachment 1).

9/25/92
Date

Ira Nadelman
Division Superfund Coordinator
New England Division
U.S. Army Corps of Engineers

Attachment 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

EXPLANATION OF SIGNIFICANT DIFFERENCES
NYANZA CHEMICAL WASTE DUMP SUPERFUND SITE
ASHLAND, MASSACHUSETTS

I. INTRODUCTION

A. Site Name and Location

Site Name: Nyanza Chemical Waste Dump Superfund Site

Site Location: Town of Ashland, Middlesex County, Massachusetts

B. Lead and Support Agencies

Lead Agency: United States Environmental Protection Agency

Support Agency: Massachusetts Department of Environmental Protection

C. Legal Authority

Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601 et seq., (CERCLA), requires that, if any remedial or enforcement action is taken under Sections 104, 106 or 120 of CERCLA after adoption of a final remedial action plan, and such action differs in any significant respects from the final plan (i.e. in scope, performance or cost), the United States Environmental Protection Agency (EPA) shall publish an explanation of the significant differences (ESD) and the reasons such changes were made. In accordance with Section 117(d) of CERCLA, this ESD will become part of the Administrative Record which is available for public review at both the EPA Region I Record Center, 90 Canal Street, Boston, Massachusetts and the Ashland Public Library, Main Street, Ashland, Massachusetts.

II. SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, RESPONSE HISTORY AND SELECTED REMEDY

The Nyanza Chemical Waste Dump Superfund Site is located in the Town of Ashland, Middlesex County, Massachusetts. Ashland is located in the Metrowest area of eastern Massachusetts, bordered by Sherborn to the east, Southborough to the west and northwest, Framingham to the north, and Hopkinton and Holliston to the south. Ashland is 25 miles west-southwest of Boston, and 20 miles east-southeast of Worcester.

The "Site" for purposes of this memorandum, consists of (i) all areas in and adjacent to the Nyanza property which have been the subject of EPA removal and remedial actions to date, and (ii) all areas in and adjacent to the Nyanza property which continue to be sources of groundwater and river contamination. The "Nyanza property", which is a part of the Site, and which was the focus of Operable Unit I, consists of approximately 35 acres of land formerly owned by Nyanza, Inc. and includes several wetlands, the Megunko Hill area (the Hill), and the lower industrial area along Megunko Road. The Hill is located in the southern part of the property and was formerly used as a landfill/disposal area. The lower industrial area was formerly the location of dye manufacturing facilities, the wastewater treatment system and a series of settling lagoons south of Megunko Road. The areal extent of the Nyanza Property is approximately bounded by an active Conrail railroad line and Chemical Brook to the north, wetland areas and Cherry Street to the east, and undeveloped mixed hardwood forest land to the south, southeast, and west. The Sudbury River is approximately 700 feet north of the Nyanza property.

The Site is adjacent to a densely populated area. The center of Ashland Village is located less than one-half mile northeast of Nyanza. Stone Park (the town park) is located 1700 feet southeast of the Site and is heavily used during the summer months. Ashland Junior High School is located approximately 2000 feet south of the Site.

From 1917 through 1978, the Nyanza property was occupied by several manufacturing companies. Textile dyes and dye intermediates were produced on the Site until 1978 when Nyanza, Inc. apparently ceased operations. Products manufactured on the property in addition to those previously mentioned included inorganic colloidal solids and acrylic polymers. Starting in 1917, several types of chemical wastes were disposed of in various on-site locations with the majority of these wastes deposited on Megunko Hill, which was used as an unsecured landfill. The other disposal areas are referred to as satellite areas. Wastes included partially-treated process wastewater;

chemical sludge from the wastewater treatment process; solid process wastes (e.g., chemical precipitate and filter cakes); solvent recovery distillation residues; and off-specification products. Process chemicals that could not be recycled or reused (including phenol, nitrobenzene, and mercuric sulfate) were also disposed of on-site.

The satellite disposal areas included several wetland areas. The eastern wetland area received waste effluent discharge from various manufacturing operations in the area. The northwest wetland area at the headwater of Chemical Brook contained wastewater treatment sludge and possibly received overflow from an underground concrete wastewater vault that discharged into Chemical Brook.

Nyanza, Inc., which apparently ceased operations in Ashland in 1978, was the most recent dye manufacturing company to occupy the Site. The former plant grounds now are occupied by several industrial concerns, the largest of which is Nyacol Products, Inc. Nyanza, Inc. and its predecessors originally discharged the dye waste stream to a concrete "vault" or settling basin adjacent to the main process building. The vault was used as a central sump for the collection of wastewater from the entire Nyanza, Inc. operation, as well as for other generating tenants housed in the immediate vicinity. This vault was approximately 40 x 80 feet and approximately 10 feet deep. The liquid occasionally overflowed via a pipe into Chemical Brook which flowed into Trolley Brook and through a culvert to the raceway that entered the wetlands along the Sudbury River. The vault was taken out of service in the 1960's or 1970's and was subsequently filled with sludge and covered over with fill. As part of an ongoing effort to ease river pollution, the Massachusetts Division of Water Pollution Control (DWPC) ordered Nyanza, Inc. to install a pretreatment system for industrial process water and to discharge the treated waste to the Metropolitan District Commission (MDC) sewer collection system. Nyanza, Inc. connected to the MDC system in March 1970.

The first type of contamination linked to the Site was mercury, discovered in the Sudbury River in 1970, as part of an overall investigation of mercury problems in Massachusetts for the DWPC. A follow up study in 1972 focusing on Nyanza, Inc. revealed mercury contamination in the Sudbury River was caused by uncontrolled sludge and wastewater disposal at the Site. From 1972 until 1980, a number of investigations of the Site contamination were conducted by various parties under the direction of the Commonwealth of Massachusetts. In 1980, the Massachusetts Department of Environmental Quality Engineering (DEQE) released a Preliminary Site Assessment Report summarizing the Site history and findings of previous investigations at the Site (DEQE, 1980).

The U.S. Environmental Protection Agency (EPA) assumed lead agency status with respect to the Site in 1981 when the Site was proposed for inclusion on the National Priority List (NPL) of Superfund Sites. In 1984, EPA authorized NUS Corporation (NUS) to perform a Remedial Investigation/Feasibility Study.

The September 4, 1985 ROD divided the Agency's remedial response into Operable Units for the purpose of addressing distinct problems. The September 1985 ROD was designated Operable Unit I (OU I). The ROD selected sludge, soil, and wetland sediment excavation at nine satellite areas of contamination; solidification of water-bearing excavated sludge, sediments, and soil; and placement, capping and consolidation of those materials with material left in place on the "Hill" area in the southern part of the Site. A diversion trench was to be constructed on the side of Megunko Hill above and around the capped area to divert surface water flow and lower the groundwater table beneath the cap as part of OU I. Construction of the project began in early 1989 and will be completed in 1992. A more detailed description of the Site history can be found in Section 1.4 of the Remedial Investigation Report and in the Administrative Record.

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES

The remedy as constructed did not fundamentally alter the remedy selected in the ROD. The method for handling the waste remains as it was described in the ROD: waste consolidation and stabilization; RCRA capping; gas venting; diversion of groundwater and surface waters; and wetlands restoration. The significant differences relate to the volumes of materials excavated for consolidation with the "Hill" wastes and the criteria for excavation versus the ROD volume estimates and excavation performance criteria; the significant increase in the final cost compared to that estimated in the ROD; and the postponement of restoration of the Area G wetland pending the issuance of the ROD for the third operable unit.

A. Excavation Limits in ROD Compared to Subsequent Remedial Actions

1. ROD excavation criteria/estimated volumes

The intent of the ROD was to prescribe in as much detail as possible the depth of excavation in each of the satellite areas in order to minimize the need for extensive sampling and analysis in the field during construction. This approach was intended to minimize the excavation downtime and eliminate the need for extensive on-site laboratory capabilities. EPA implemented this approach by authorizing its contractor, Camp, Dresser, and McKee (CDM), to conduct additional field investigations during the pre-

design phase to further define the areal extent and depth of the sludge deposits in each of the satellite areas and also to profile the contamination levels in the soil beneath the sludge deposits. As indicated on Page 5 of the ROD, the results of this testing indicated that the metal concentrations in these underlying soils decreased markedly at depths of 1-2 feet below the sludge/soil interface and approached background levels at depths of 2-3 feet. After comparison of the soil profile results with available information on background levels for the contaminants of concern, the depths of excavation were selected and presented in Table 1 of the ROD. On page 25, the ROD called for excavation to the stated depth in each area, followed by confirmatory sampling and analysis to compare the residual soil contaminant levels to background. The ROD noted on page 25 that under the closure requirements of RCRA, which were considered to be relevant and appropriate to the decision, removal of contaminants to background levels would be required for all areas that would not be capped unless alternative residual levels were developed which would be protective of human health, welfare, and the environment. The background levels were never specifically set in the ROD.

The ROD also recognized on page 25 that excavation in wetland Areas C and G might have to be terminated prior to reaching background levels due to the difficulties of both excavation and in-situ testing below the water table.

2. Remedial action excavation volumes/criteria

During performance of the remedial action, the volumes of sludge and soil excavated in some of these satellite areas varied from the volumes estimated in the ROD, principally due to the finding that the areal extent and/or the depth of contaminated material differed from the preliminary ROD estimates. In general, larger volumes of waste were excavated. Alternatively, excavation was halted in a number of areas in addition to Areas C and G prior to reaching background concentrations when the water table was encountered, making further excavation impracticable. Finally, excavation was halted in other areas prior to reaching background concentrations after a finding was made that the residual levels present were adequately protective of human health, welfare, and the environment. The following discussion demonstrates that the ROD objectives to protect human health and the environment were achieved even though some aspects of the performance of the remedy were significantly changed during implementation.

The following paragraphs (i) list each of the "Areas" identified in the ROD in Figure 1-2 and Table 1, (ii) show the excavation depths and volumes for each area compared to the ROD estimates, and (iii) describe the field methodology used to determine the limits of excavation in each Area.

Area A was a "background" uncontaminated area according to the ROD. No excavation was carried out in this area during the remediation.

Area B, the north side of the Hill area, was capped in place in accordance with the ROD.

Area C, the ~~eastern~~ western wetland, was excavated beyond the two feet estimated in the ROD to depths of approximately 3.2 feet, based on the finding of contamination at greater depth. Approximately 33,469 cubic yards of materials were excavated from this Area, versus the ROD estimate of 19,790 cubic yards. Excavation was terminated when confirmation samples of the soil underlying the sludge deposits passed the RCRA EP-Toxicity test, which indicated a low potential for leaching. Since this area was to be brought to original grade with clean fill and loam and revegetated with wetland species, any potential for direct contact or surface runoff was precluded.

33,308
135
26
33,469

Area D, the remnants of a former lagoon adjacent to the two Nyacol waste treatment impoundments south of Megunko Road, was excavated to the water table at which point further excavation was abandoned due to impracticability. Depth of the excavation was approximately 9 feet as opposed to the 10 feet in the ROD. The volume of material excavated was approximately 2,108 cubic yards versus the ROD estimate of 2,180 cubic yards.

The parameters of excavation for Area E, an area of soil hot spots in the lower industrial area north of Megunko Road, were revised during construction to comport with certain aerial photos taken in 1966 for Nyanza, Inc. These photos were discovered in 1990 during the course of EPA information gathering for enforcement purposes. In conjunction with soil sampling results, these photos clarified the location of the contaminated soils in this area. Area E excavation was terminated upon encountering the water table, at a depth of approximately 4.5 feet versus the ROD estimate of 3 feet. The volume of soils excavated was 1,343 cubic yards versus the ROD estimate of 110 cubic yards.

Area F, also in the lower industrial area north of Megunko Road, was not excavated, in accordance with the ROD; the area at one time was suspected to contain metal sludges, but none were found during the RI/FS and other field studies.

Area G, a wetland area west of the abandoned Trolley bed, was excavated to a depth of 4 feet as stated in the ROD. However, since the areal extent of contamination was greater than originally anticipated, 12,398 cubic yards of material were excavated compared to the ROD estimate of 6,480 cubic yards.

Area H, the vault, was handled as an emergency removal during 1987-88. The ROD recognized that this area would be addressed as

a removal action rather than as part of the OU I remedial action.

Area I contained the lagoon area ~~north~~ South of the existing Nyacol Products, Inc. warehouse and the soils in a surface drainage path leading from the lagoon east to the Trolley Brook wetland. The lagoon was excavated to a depth of 8 feet as estimated in the ROD at which point the water table was encountered, making further excavation impracticable. However, the volume of soils excavated increased to 5,477 cubic yards versus the ROD estimate of 1,640 cubic yards. The increase was due to the finding that the surface drainage path contamination was more widespread than originally believed. Excavation was also halted at the northwest edge of Megunko Road due to concerns about the possible impacts of continued excavation on buried utilities and above-ground storage tanks. Residual soil contamination remains beneath the tank base.

Area J, the sediments of Trolley Brook and surface soils behind Tilton Avenue that had received brook overflow, was excavated and then re-excavated based on the presence of excessive levels of lead in the initial confirmation samples. Excavation was performed until either a residual level of 500 ppm of lead was reached or the watertable was encountered. This lead level was considered to be protective of human health based on an EPA policy entitled "Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites" (OSWER Directive #9355.4-02) dated September 1989. The average depth of excavation was 2-4 feet versus the ROD estimated depth of 1 foot. Approximately 2,458 cubic yards were excavated versus the ROD estimate of 1,120 cubic yards.

Area K, as indicated in the ROD, is a wetland/pond area east of the abandoned Trolley bed which will be addressed as part of Operable Unit III and not as part of this remedy. Therefore, no excavation occurred in this area as part of OU I.

Area L, a surface drainage path from the southeast area of the Hill landfill southeast to the Trolley Brook wetland (Area G), was excavated to a depth of approximately 1.5 feet in accordance with the ROD, but the areal extent was enlarged resulting in the excavation of 5,476 cubic yards versus the ROD estimate of 1,030 yards. The increased volume was a result of the discovery of two additional areas of contamination during Remedial Design. Sub-areas "O" and "P", which were added to Area L, consisted of a two pronged continuation of the drainage path L leading to Area G.

Area M, a low, wet area on the north side of the Conrail railroad tracks which received surface drainage from the Site, was excavated and then re-excavated due to confirmation samples showing excessive levels of lead. A residual level of 500 ppm of lead was used to set excavation limits, in accordance with the

2.299
254
255 3

aformentioned EPA policy on lead cleanup levels in residential areas. Approximately 2,553 cubic yards of soil were excavated versus the ROD estimate of 480 cubic yards.

Area N, which consisted of the sediments of Chemical Brook, was to be excavated to a depth of 1 foot according to the ROD. Confirmatory sampling showed contamination at greater depths and a shallow water table. Because of concerns about the potentially negative impact of deeper excavation on the structural stability of the Conrail railroad tracks, excavation was halted and a woven geotextile layer and a crushed stone layer were placed above the residual soil contamination to minimize the potential risks from direct contact or surface runoff of contaminants.

Even though these aspects of the remedy were significantly changed during implementation, the ROD objectives to protect human health and the environment have been achieved. The ROD, on page 11, stated 3 objectives : 1) to reduce the generation of contaminated leachate to mitigate future groundwater contamination; (2) to minimize surface runoff of contaminants and air transport from dust and volatilization; and (3) to minimize direct contact and environmental exposure to contaminated sediments. On page 17, the ROD stated that the (unacceptable) public health risks are due to the potential for direct contact/ingestion of soils, sludges, and sediments which are exposed. On page 18, the ROD stated that the environmental risks are posed by the potential for surface runoff into the wetlands and brooks that drain the site and lead into the Sudbury River, where sediments have been contaminated and the fish, as a result, are also contaminated. The changes listed above have not resulted in the failure to meet any of the objectives set forth in the ROD.

The first objective primarily concerns the Hill area to be capped in place. The ROD recognized that the Hill contains some organic wastes in addition to the metal sludges, and that leaching of these organic wastes has contributed to the Site groundwater contamination problem, which is primarily organics. Thus, this objective was to be met by capping the Hill wastes and diverting surface water and shallow groundwater around the capped wastes to minimize infiltration and thus reduce leachate generation. The method of accomplishing this objective during the remedial action was unchanged from the description in the ROD.

The second objective did apply to both the Hill wastes and the satellite waste deposits, since both areas contained exposed wastes amenable to erosion and surface runoff. In Area N (Chemical Brook), where excavation was halted prior to reaching background levels due to concerns about the impact of continued excavation on the stability of the railroad bed, this objective was met by placement of a woven geotextile fabric followed by crushed stone above the residual soil contamination, thus

precluding direct contact and minimizing the potential for surface runoff, as long as the area is not excavated in the future. Future excavation is not anticipated since the Brook is a wetland. In the small portion of Area I where excavation was halted due to the presence of underground utilities and aboveground tanks, the tank base will preclude direct contact and surface runoff as long as it remains in place. Should these tanks be removed in the future, additional investigation of the contaminant levels in the underlying soils should be performed. In the areas where the water table was encountered prior to reaching background concentration levels, (C,D,E,I), the objective was still met, since there is no potential for the residual contaminants below the water table to be exposed, unless future excavation occurs which involves dewatering. Such future excavation is not anticipated in Area C, a wetland, or in the other areas since the groundwater in these areas is contaminated and, even with the extraction and treatment called for in the ROD for the second operable unit, will remain contaminated for the forseeable future. EPA will reexamine these land use issues further during the 5 year reviews outlined in OSWER Directive 9355.7-02 to determine if the remedy remains protective.

The third objective, to minimize direct contact and environmental exposure to contaminated sediments, pertains to exposed contaminants. The potential for exposure has been virtually eliminated by the excavation, consolidation, and capping of the contaminated sediments followed by the backfilling of any residual contamination with clean fill. As stated above, EPA will reexamine the potential for future excavation in the areas where residual contamination was left in place during the 5 year reviews to determine if the remedy remains protective.

B. ROD Cost Estimate Compared to Final Cost

The ROD estimated the construction cost range of $5.6 to $9.8 million (in 1985 dollars). Prior to the issuance of the Invitation For Bids by the U.S Army Corps of Engineers on December 30, 1987, the Corps prepared a Government Estimate of Costs. This revised estimate put construction costs at $12,884,658. The project was awarded to TRICIL Environmental Response based on a bid of $8,565,984.55. The final construction cost, however, exclusive of Corps of Engineers administration costs, was approximately $14.0 million.

The reasons for the increase in estimated construction costs from the ROD estimate to the Government (Design) Estimate are speculative, since neither cost estimate was based on actual bid data. The probable causes are the impact of inflation from the 1985 ROD estimate to the 1987 Government Estimate and the increase in the estimated quantities for excavation from 33,000

cubic yards in the ROD to 42,018 cubic yards in the Government Estimate.

The escalation of costs from the original TRICIL bid to the final Contract cost are the result of change orders and contract modifications executed by the Army Corps of Engineers, EPA's construction manager, with EPA's approval. The following Table lists the major change orders or contract modifications during the actual construction phase, together with a description of the change, reasons for the change, and the additional cost.

Major Contract Modifications

Date	Change	Description/Reason	Cost ($1000's)
6/89	1	An additional gate was added to facilitate better traffic control	20
10/89	2	Boulder excavation (unanticipated)	709
10/89	6	Provision of additional security shack and guard due to community and area business concerns.	100
3/90	9	Overrun of ledge blasting in diversion trench (unanticipated)	605
3/90	17	Provision of personal protective equipment to Town Firemen to facilitate emergency response capability	67
3/90	18	Increased monitoring and laboratory support for di-methyl mercury monitoring in response to Union, OSHA and Town concerns	870
4/90	14	Partial suspension 6-89 to 11-89 due to lack of emergency response availability	403
4/90	16	Winter shutdown	57
6/90	23	Overrun of contaminated material handling due to finding of greater amounts of contaminated materials than estimated	371
6/90	29	Gas vent/cap redesign due to greater volumes of materials than anticipated	18

7/90	15	Total suspension of work 11/89 to 1/90 due to lack of emergency response	211
7/90	19	Additional air monitoring due to schedule delays	516
7/90	20	Upgrade in personal protective equipment to level B due to mercury concerns	1200
7/90	21	Time extension of security contract due to schedule delays	156
8/90	22	Additional soil sampling to ascertain extent of contamination and set excavation limits in newly discovered areas	114
8/90	24	Revision of di-methyl mercury monitoring methods	205
10/90	32	Remobilization to Areas M and J to conduct additional excavation of lead contaminated soils	38
11/90	33	On-site disposal of debris, including crushed, empty drums, used protective clothing, etc.	19
11/90	34	Exploratory soil sampling in suspect areas to ascertain extent of contamination and set excavation limits	137
11/90	36	Time extension for air monitoring due to schedule delays	51
12/90	38	Additional contaminated material handling, i.e. hauling, stabilization	90
12/90	39	Additional construction photos due to schedule delays	15
3/91	45	Time extension of perimeter air monitoring due to schedule delays	50
6/91	49	Off-site drum disposal prep	46
6/91	50	Additional borrow material (clean fill) imported from offsite to replace on-site fill found to be unacceptable	294

		(boulders)	
7/91	44	Additional air monitoring due to schedule delays	20
9/91	51	Chemical Brook crushed stone	16

C. Area G Wetland Restoration Postponement

The ROD called for the restoration of Wetland areas C and G after completion of the excavation of contaminated sediments. Area C was replanted with native wetland species in an attempt to restore the wetland to its original condition. However, Area G was not restored since water from Area K, a contaminated area which is being investigated as part of the third operable unit RI/FS, flowed directly into Area G. In order to dewater Area G to allow excavation to take place, the outlet channel from Area K which drains to Area G was plugged. Once excavation of Area G was completed, EPA decided to leave the temporary plug in place to avoid recontaminating Area G. Area G was then revegetated with grass rather than with wetland species. A final plan for restoration of the wetland will be made as part of the third operable unit ROD, which will address Area K as well as the Sudbury River.

IV. SUPPORT AGENCY COMMENTS

The Massachusetts Department of Environmental Protection, in a letter dated September 2, 1992 from Helen Waldorf, Federal Superfund Coordinator to Richard Cavagnero, MA I Superfund Section Chief, has indicated its concurrence with this Explanation of Significant Differences.

V. STATUTORY DETERMINATION

EPA believes that the OU I remedy, adjusted as described above, is protective of human health and the environment, complies with all Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective.

VI. PUBLIC INFORMATION

Information regarding these changes to the ROD is being disseminated by mailing this document to all parties on the Community Relations Mailing List and to all Potentially Responsible Parties and by publishing notice of this ESD in the Middlesex News. This document shall also be included in the Administrative Record.

DECLARATION FOR THE EXPLANATION OF SIGNIFICANT DIFFERENCES

SITE NAME AND LOCATION

Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

STATEMENT OF PURPOSE

This decision document sets forth the basis for the determination to issue the attached Explanation of Significant Differences (ESD) for the Nyanza Chemical Waste Dump Superfund Site (Site), Operable Unit I, in Ashland, Massachusetts.

STATUTORY BASIS FOR ISSUANCE OF ESD

Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601 et seq., (CERCLA), requires that, if any remedial or enforcement action is taken under Sections 104, 106 or 120 of CERCLA after adoption of a final remedial action plan, and such action differs in any significant respects from the final plan (i.e. in scope, performance or cost), the United States Environmental Protection Agency (EPA) shall publish an explanation of the significant differences (ESD) and the reasons such changes were made. Current EPA guidance (OSWER Directive 9355.3-02) further provides that issuance of an ESD is appropriate where the agency determines the need for changes to the ROD which are significant but which do not fundamentally alter the overall remedy. In the present case, because the required adjustments to the ROD do not fundamentally alter the selected remedy for the Site, this ESD is properly issued.

In accordance with Section 117(d) of CERCLA, this ESD will become part of the Administrative Record which is available for public review at both the EPA Region I Record Center, 90 Canal Street, Boston, Massachusetts and the Ashland Public Library, Ashland, Massachusetts.

OVERVIEW OF ESD

On September 4, 1985, EPA issued a final remedial action plan in the form of a Record of Decision (ROD) for Operable Unit 1. The ROD called for a Source Control Remedy which involves consolidating sediments and waste on Megunko Hill from satellite areas on-site, followed by capping the waste under an impermeable cap, and constructing an upgradient diversion trench to collect and divert groundwater and surface water flows away from the landfill.

The remedy as constructed did not fundamentally alter the remedy selected in the ROD. The method for handling the waste remained as it was described in the ROD: waste consolidation and stabilization; RCRA capping; gas venting; diversion of groundwater and surface waters; and wetlands restoration. The significant differences relate to the volumes of materials excavated for consolidation with the "Hill" wastes and the criteria for excavation versus the ROD volume estimates and excavation performance criteria; the significant increase in the final cost compared to that estimated in the ROD; and the postponement of the reestablishment of the Area G wetland pending the outcome of the ROD for the third operable unit. The ROD estimated that approximately 33,000 cubic yards of contaminated soil/sediment would need to be excavated from the satellite disposal areas to meet the specified cleanup goals. During the actual excavation, however, the extent of contamination was found to be both deeper and more widespread than prior studies had indicated, with the result that approximately 65,000 cubic yards of soils/sediments needed to be excavated. Alternatively, in some areas, excavation was halted prior to meeting background levels, where the water table was encountered or other Site conditions made further excavation of soils and sediments impracticable.

The ROD estimated the construction cost range of $5.6 to $9.8 million (in 1985 dollars). The final construction cost, however, exclusive of Corps of Engineers administration costs, was approximately $14.0 million. The escalation of costs is attributed to the increased volume of contaminated soils/sediments to be excavated and consolidated, schedule delays due to weather, unanticipated field conditions, lack of emergency response services, increased air monitoring to address health and safety concerns, and inflation.

Finally, the ROD called for the restoration of Area G as a wetland following the excavation of the contaminated soils in the Area. However, because the prime water source for Area G is an adjacent wetland also contaminated with mercury and other heavy metals, the reintroduction of this water to Area G could have resulted in the recontamination of the Area. Consequently, the flow from Area K to Area G was obstructed, and Area G was reseeded with grass rather than wetland plantings pending a decision on remediation of the adjacent wetland, which is currently under investigation as part of the third operable unit. A final decision on the restoration of the Area G wetland will be included in the ROD for the third operable unit.

This ESD is being issued to explain these alterations to the scope and cost of the remedy set forth in the ROD.

DECLARATION

For the foregoing reasons, by my signature below, EPA is issuing

this Explanation of Significant Differences for the Nyanza Chemical Waste Dump Superfund Site in Ashland, Massachusetts, and the changes stated therein.

Sept. 21, 1992
Date

Julie Belaga
Regional Administrator
U.S. EPA, Region I

Attachment 2

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254-9149

REPLY TO
ATTENTION OF

CENED-CD-NRO 17 October 1991

MEMORANDUM FOR THE RECORD

SUBJECT: Pre-Final Inspection Punchlist for Nyanza, Contract No. DACW45-89-C-0001

On this date, 17 October 1991, a pre-final inspection was conducted amongst N. Rosenberg, S. Preston & G. Shoueiry of TRICIL and C. Turek & S. Umbrell of CoE. The following punchlist was generated:

- Cleanout caps must be clamped.
- Once support area trailers are removed, blade area & place boulders atop the crest between the support zone and the adjacent side slope.
- Finish equipment storage building.
- Unclog stabilization pad manhole, place top grate, & locate on as-builts.
- Pick up big stones on side slopes & rough rake the ruts.
- Rake cap side slopes.
- Take care of MW barrels as dictated by test results.
- Complete fence.
- Complete guardrail.
- Regrade road after guardrail installation.
- Some areas of the cap have numerous stones at surface.
- Rough rake the ruts in cap surface.
- Remove debris in interceptor trench.
- Set permanent survey markers.
- Cover pipe coupling at perimeter drain outlet with stone.
- Pickup scrap fabric, liner & wood along drainage ditch & road to Area C.
- Replace existing fence at end of Area C.
- Pickup wood in sed. basin spillway.
- Pickup wood in swale from C to N.
- Remove fabric from Area P culvert.
- Remove bridging timbers from finger of I.
- Clean Nyacol walkway.
- Warning signs on perimeter fence.
- Repair existing fence behind decon.
- Remove all silt fence.
- Secure decon sump lid.
- Place tool for decon sump valves in equipment storage building.
- Cap all utility (water & electric) lines & locate on as-builts.
- Clean up Area M (scrap wood at outflow corner, scrap fabric & 2 trees must be removed).
- Remove wood from Area N, take out rebar & flagging, & clean up soil from fence post hole installation.
- Wipe gas vents clean.
- Fill depressions near gas vents with topsoil

- Remove large rocks from cap.
- Pick up stone on cap that exists in clusters.
- Remove surveying stakes from cap.
- Set permanent survey markers per contract.

A copy of this punchlist has been given to the contractor. The final inspection is scheduled for 29 October 1991. Representation is anticipated from CoE, EPA & MA DEP. It should be noted that MA DEP is hiring a consultant for the final inspection.

Christopher J. Turek

CHRISTOPHER J. TUREK
Actg. Resident Engineer

CF: TRICIL
Constr. Dir.
NCAO
[redacted]

Attachment 3A

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254-9149

REPLY TO ATTENTION OF

CENED-CD-NRO

30 October 1991

SUBJECT: Contract No. DACW45-89-C-0001, Nyanza Chemical Superfund Site, Ashland, Massachusetts

Ms. Pam Shields
Remedial Project Manager
U.S.E.P.A. (HRS-CAN 3)
J.F.K. Federal Building
Boston, MA 02203-2211

Dear Ms. Shields:

The final walk-through inspection of the subject project was conducted on this date, 29 October 1991. Besides yourself, the following people were present for the inspection: N. Rosenberg & S. Preston (TRICIL), J. McDowell, J. Morocco, I. Nadelman & C. Turek (CoE), C. Reinganum (MA DEP), & B. Siebecker (Wehran Envirotech - Consultant to MA DEP).

Immediately following the inspection, a preliminary punchlist was generated. The CoE contributed no items to this list, as we conducted a pre-final inspection on 17 October 1991. This pre-final inspection generated 37 items, most of which have already been rectified by the contractor. Be assured all of the items on the pre-final punchlist will be taken care of. Your satisfaction with the site was obvious, as you did not have any contributions to the punchlist. Although Ms. Reinganum also had no comments, her consultant Mr. Siebecker offered the following five (5) verbal punchlist items:

- The emergency spillway channel leaving the sedimentation basin must be reshaped to the design trapezoidal form.
- The channel leaving the west end of the groundwater interceptor trench must be reshaped to trapezoidal form.
- The stream bed in Area O appears to be erosion prone. The placement of small boulders in the stream bed should prevent future erosion.
- A runoff ditch should be placed outside of the southern fence line to prohibit erosion of the road in that area.
- The work haul road leaving the back (Trolley Brook) gate should be lowered to meet the surface of the interceptor trench floor or a culvert should be placed at that location with the road replaced as is.

In the afternoon of 29 October 1991, while escorting Ms. Reinganum and her future O&M contractor, Clean Harbors, Inc., around the site, Christopher Turek made the following points to Ms. Reinganum. A runoff ditch outside of the southern fence line was already in place. It is approx. five feet back into the woods and was not seen by Mr. Siebecker. Ms. Reinganum was taken to that location to verify the existence of the ditch. The last punchlist item was then discussed. Ms. Reinganum was informed that placing a culvert at the east end of the interceptor trench was a wish and not a contractual punchlist item. The road could be lowered in that section to meet the grade of the interceptor trench floor, but the proposed dip could not accomodate certain vehicles, such as a lo-boy trailer hauling heavy equipment, which is the reason why the DEP wanted the work haul road to remain in place. At that point, Ms. Reinganum reconsidered and stated that item was 'on hold' until further notice.

Ms. Reinganum stated that she would have more verbal comments from her consultant on 31 October 1991. She would telephone them to Mr. Turek at the Nyanza site. Mr. Turek informed her that verbal comments would not be acceptable due to the possibility of misunderstandings or reversals of decisions, such as the one described above. Mr. Turek stated that handwritten faxed comments would be acceptable, if they were a genuine contractual punchlist and not a 'wish list'. Ms. Reinganum then agreed to fax the comments on 31 October 1991. However, she also stated that she would not receive the full set of written comments from her consultant until 5 November 1991. It should be noted here that neither Ms. Reinganum nor her consultant had possession of the modified contract, but only the original document as it went out for bid. A copy of modifications P00001 through P00054 were handed to Ms. Reinganum immediately prior to the 29 October 1991 inspection.

As of the date of this letter, the contractor has rectified the first three items of the above punchlist. As was previously stated, the fourth item was already in place and therefore should not have been listed. The fifth item is still 'on hold'.

As always, if you have any questions, please contact Christopher Turek or Stephen Umbrell at 508-881-8339.

Sincerely,

JOHN I. WINMILL
Authorized Representative
of the Contracting Officer

CF: Constr. Dir.
NCAO
NRO
C. Reinganum, DEP

Attachment 3B

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection

William F. Weld
Governor
Daniel S. Greenbaum
Commissioner

November 12, 1991

Ms. Pamela Shields
Remedial Project Manager
U.S. EPA
HRS CAN3
JFK Federal Building
Boston, MA 02203-2211

RE: ASHLAND, Nyanza Chemical Waste Dump Site, OU I
10/29/91 Site Inspection
DEP Case No. 3-0216

Dear Ms. Shields:

This letter provides the Department of Environmental Protection's (the Department) formal comments on the October 29, 1991 site inspection of the completion of Tricil's contract at the Nyanza Chemical Waste Dump Site Remedial Construction Project (the Project). The Department's contractor, Wehran Engineering, Corp., provided technical assistance in reviewing the project for its conformance with the contract engineering plans and specifications. The attached letter from the Department's consultant comprises the Department's comments.

Please note that at the time of the inspection, Chris Turek of the Army Corps of Engineers requested a punchlist of deficiencies in the work. The Department provided a verbal punchlist and stated that additional time was required to complete the punchlist.

It is our understanding that Tricil addressed certain of the items on the completed punchlist prior to November 7.

In the near future, the Department shall submit a punchlist

for items within and outside the scope of Tricil's contract which require completion prior to the completion of the construction phase for the Project. The Project punchlist will take into account any work completed by Tricil after the October 29 site inspection. If you have any questions regarding these matters please contact Charla Reinganum of my staff at 292-5826.

Sincerely,

Jay Naparstek
Branch Chief, Federal Sites

Attachment
cc: J. Winmill, ACOE

WehranEnviroTech

Wehran Engineering Corporation
Andover Research Park
Six Riverside Drive, Suite 101
Andover, Massachusetts 01810-1121
Tel: 508-682-1980
Fax: 508-975-2065

November 8, 1991

Ms Charla Reinganum
Bureau of Waste Site Cleanup
Department of Environmental Protection
One Winter Street
Boston, Massachusetts 02108

RE: Nyanza, Determination of Contractor Completion
WE Project No. 57008.12

Dear Charla:

We have completed our review of the contract engineering plans and specifications to the extent possible without possession of "As Built" documents. Based upon this review and our site walkover on October 29, 1991 we have identified specific items which, in our opinion, do not conform to the contract. Finally, the contract provides for a maintenance period of one year for the vegetation. We feel this maintenance period provision is important to demonstrate the facility is fully operational.

The comments below reflect our interpretation of the contract documents and our observations during the site walkover. Much of the construction work is subsurface, and this part of the project could not be observed during a site walkover. Review of subsurface construction will be limited to review of as-built plans.

Site Walkover - 10/29/91

The site walkover identified several drainage, vegetation, and erosion control concerns. We consider these items, listed below, to be part of the closure contract. Some comments may not be relevant because the inspection was made prior to complete review of the documents.

1. The emergency spillway from the sedimentation pond should have a defined outlet channel, as shown in the engineering plans. The spillway is filled with rocks and there is no channel as shown on the plans.

   Specification: Engineering Plan Sheet 13 details a defined channel.

2. It was not apparent that Area C received appropriate wetlands restoration.

   Specification 02490 Wetlands and Vegetative Restoration.

3. The outlet swale from the north end of the groundwater control trench into the sedimentation pond should be a defined channel. Drainage swales relying on flow

through the stone for hydraulic capacity are not acceptable.

Specification 02150 - Erosion and Runoff Control
3.02 C Diversion ditches shall be constructed to convey runoff from sloped areas where erosion may result. (This is a general specification applicable anywhere on site.)

4. There should be an outlet at the southeast end of the groundwater control trench. This is an area of significant potential ponding, thus reducing the effectiveness of the trench to lower the groundwater table.

Specification: Engineering Plan Sheet 12 - Outlet shown on plan

5. The bottom of the groundwater control trench has not received topsoil and vegetation and should have such treatment.

Specification 02485-3.01A
All surfaces shall be treated with 6 inches of topsoil and seeded unless otherwise specified.

6. There is evidence of potential future erosion along the limits of the rockcrushing area and the roadway west and above the groundwater trench. While this road was not in the plans, and agreement has been reached with the contractor to leave it in place, (at a reduced cost to the contractor), the contractor is responsible to control potential erosion along this roadway.

Specification 02150 - Erosion and Runoff Control
3.02 C Diversion ditches shall be constructed to convey runoff from sloped areas where erosion may result. (This is a general specification applicable anywhere on site.)

7. The water course in Areas L and P, from the road near the southeast end of the groundwater trench down to where the water flows under the trolley road, will be subject to significant erosion. The upper portion should be further stabilized with erosion control matting. The lower portion should be stabilized with riprap, appropriately sized and placed so that the channel doesn't erode around the riprap. Use of geotextile under the riprap would be appropriate.

Specification 02150 - Erosion and Runoff Control
3.02 E Riprap lined waterways should be installed as required (interpretation - "as needed")

3.02 F Erosion control blankets shall be installed in all drainage swales.

8. Areas requiring restoration outside the work limits are:

- the northern roadway and adjacent northern embankment extending from the northern perimeter road around Area B down to the sedimentation pond and the Area C wetlands.

- the drainage swale along the south side of the Area C road extending down to the Area C outlet.

Specification 01010 - Summary of Work and General Conditions
2.03 C Restoration of Landscape Damage
This specification provides for restoration of the ground surface outside the contract limits in a manner suitable to the contracting officer (Army Corps.).

9. A statement was made during the walkover indicating no clover was used in the seed mix. Clover in the seed mix can reduce long term fertilizing requirements.

Specification 02485 - Topsoil and Seeding
2.01 D Seed mix includes 5% White Clover. A shop submittal for verification is needed.

The following items are identified as incomplete based on our interpretation of the information we have.

Specification 01700 - Project Closeout

3.10 The storage shed should be painted (not noted during walkover).
3.11 Groundwater monitoring wells should have final inspection and be properly labeled (not identified as completed during walkover).
3.12 A temporary drainage pipe is to be removed from Area C (not identified as completed during walkover).
3.13 As-built drawings are required.

Specification 02485 - Topsoil and Seeding

3.03 Maintenance and Final Acceptance

A Contractor is responsible for watering and maintenance of vegetation until final acceptance.

B The maintenance period ends October 30, 1992

C-F Maintenance issues

Change Order - P00036, 1/28/91
Aerial Photography is required for November 1991

We understand to some extent these comments may be subject to inclusion in the next phase of work to be agreed upon between DEP, EPA and the Army Corps of Engineers.

There are a few additional issues outside the scope of the Tricil Corp. contract, which we will present in our next submission. Should you have any questions, please call us.

Sincerely,

WEHRAN ENGINEERING CORPORATION

Benjamin G. Siebecker, P.E.
Task Manager

Joanne H. Perwak
SARSS Program Manager

BGS/JHP/wlm/069

Attachment 4

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254-9149

REPLY TO ATTENTION OF
CENED-CD-NPO

10 June 1992

SUBJECT: Contract No. DACW45-89-C-0001, Nyanza Chemical Superfund Site, Ashland, MA.

Tricil Environmental Response, Inc.
ATTN: Mr. Edward Walsh
P.O. Box 168
Mansfield, MA 02048-0002

Dear Mr. Walsh:

This letter is in response to our 27 May 1992 site visit to the Nyanza Superfund Site. During that visit we made a review of the condition of the site's grass and wetland vegetation. Also present were Dan Malloy of Westview Landscaping, and representatives of the EPA and State DEP.

Our review of the site's grass showed that some areas will require additional seeding. These areas were noted on a sketch which was given to you at the conclusion of the inspection. Mr. Malloy then asked if he could use the 'State Slope and Shoulder Mix' for any reseeding, and whether or not he could eliminate the copolymer requirement in the specifications? Since this work falls under warranty and maintenance, he may incorporate these variations if he feels it will improve his chances for meeting the specified grass requirements.

Our inspection also included a review of the wetlands vegetation in areas 'C' and 'G'. Cattails and bulrush were planted in these two areas in August/September of 1991. Area 'C' currently shows no sign of cattails or bulrush, and will require replanting. (See our attached recommendation) Area 'G' has a few remaining cattail plants, but will also require some replanting. We recommended replanting this area with some cattail plants along with some reed canary grass due to lower than expected water table. (See our attached recommendation)

It was brought to the Corps' attention that one of the red maples in area 'J' - Don Weld's yard - is dead, and will require replacement.

Please insure that all areas requiring revegetation are corrected as soon as possible. If you have any questions please call Stephen Umbrell at (508) 772-0148.

Sincerely,

John I. Winmill
Authorized Representative
of the Contracting Officer

CF: Const. Dir.
NCRO
NPO
P. Shields, EPA
C. Reinganum, DEP

RECOMMENDATIONS

Wetland A (Area C)

The mudflat area should be reseeded with a mixture of reed canary grass (20 lbs/acre) and millet (10 lbs per acre) as soon as possible in June. The reed canarygrass seed should be certified as having a germination rate of at least 70 %. Seed should planted as recommended in the original specifications. No further soil amendments are required. The millet is intended to serve as a nurse crop to protect the slower growing reed canarygrass. Use of seed mixtures containing other, more desirable, wetland species was considered, but given the wide water level fluctuations at the site, their use is not recommended. Seeding reed canarygrass in June is not normally recommended because adequate soil moisture may be lacking. In this instance, however, fall planting is not an attractive option due to likelihood of heavy grazing by migrating geese. With adequate rainfall, there is a reasonable chance that reed canarygrass will become established, and be somewhat resistant to grazing by fall. Site conditions should be be closely monitored after seeding. If the reed canary grass grows well, but substantial grazing by the resident goose population occurs, installation of fencing to protect the site should be considered. If poor growth occurs it will be necessary to reseed in early September, and erect fences to protect against grazing.

We also recommend replanting a 20 ft. wide band of cattail around about 75 percent of pond shoreline. The band should extend from 5 ft. above to 15 foot below the water line at the time of planting, with adjustments to insure that cattail is planted in no more than 6" of water. Material should be planted on two foot centers as proposed in the original specifications. Either seedlings or rhizomes can be used. Quality of planting material should be closely checked by NED. Last year the contractor obtained planting material from Kesters Wild Game Farms Inc. This material is very low in cost, and is sometimes of poor quality (Mike Penko, pers. obser.). There is no need to reapply fertilizer, mulch, or other soil amendments. In order to prevent grazing by resident geese we recommend placement of a simple fence around the planted area (see attached plan). This low cost design has worked well elsewhere to protect newly planted emergent vegetation from geese.

We recommend against replanting bulrush. Bulrush rhizome systems grow relatively slowly, and is likely that plantings would be susceptible to grazing by geese even after the first growing season.

Wetland B (Area C)

Cattails should be planted at 2 foot centers within the ditch. Plantings should be protected by a fence similar to that used at Area A. The low area should be seeded with the reed canary grass/millet mix used at Area A. Replanting cattails in the low area is not recommended since the area will probably be too dry during the summer to sustain cattail.

SUBJECT

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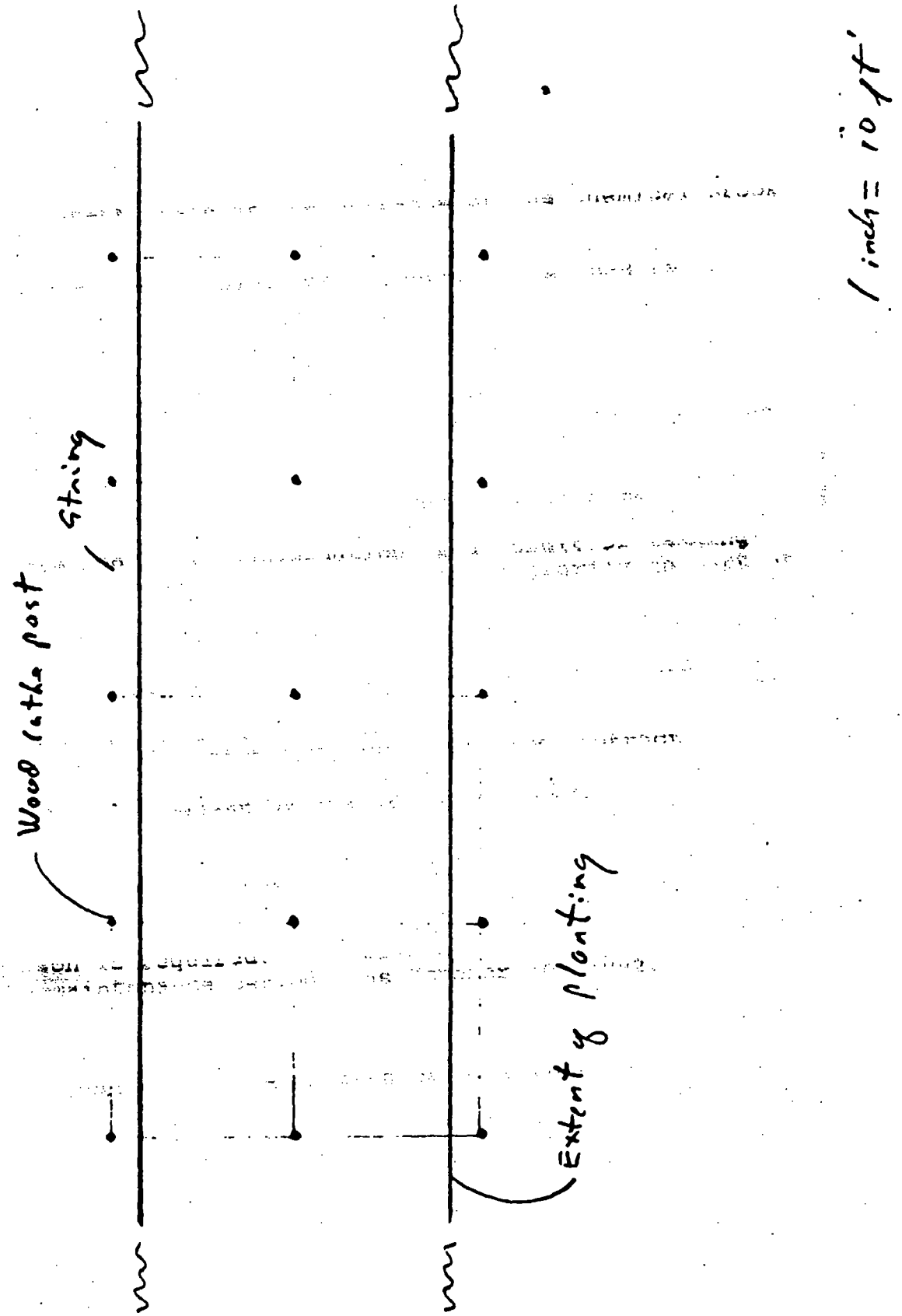

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NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U. S. ARMY

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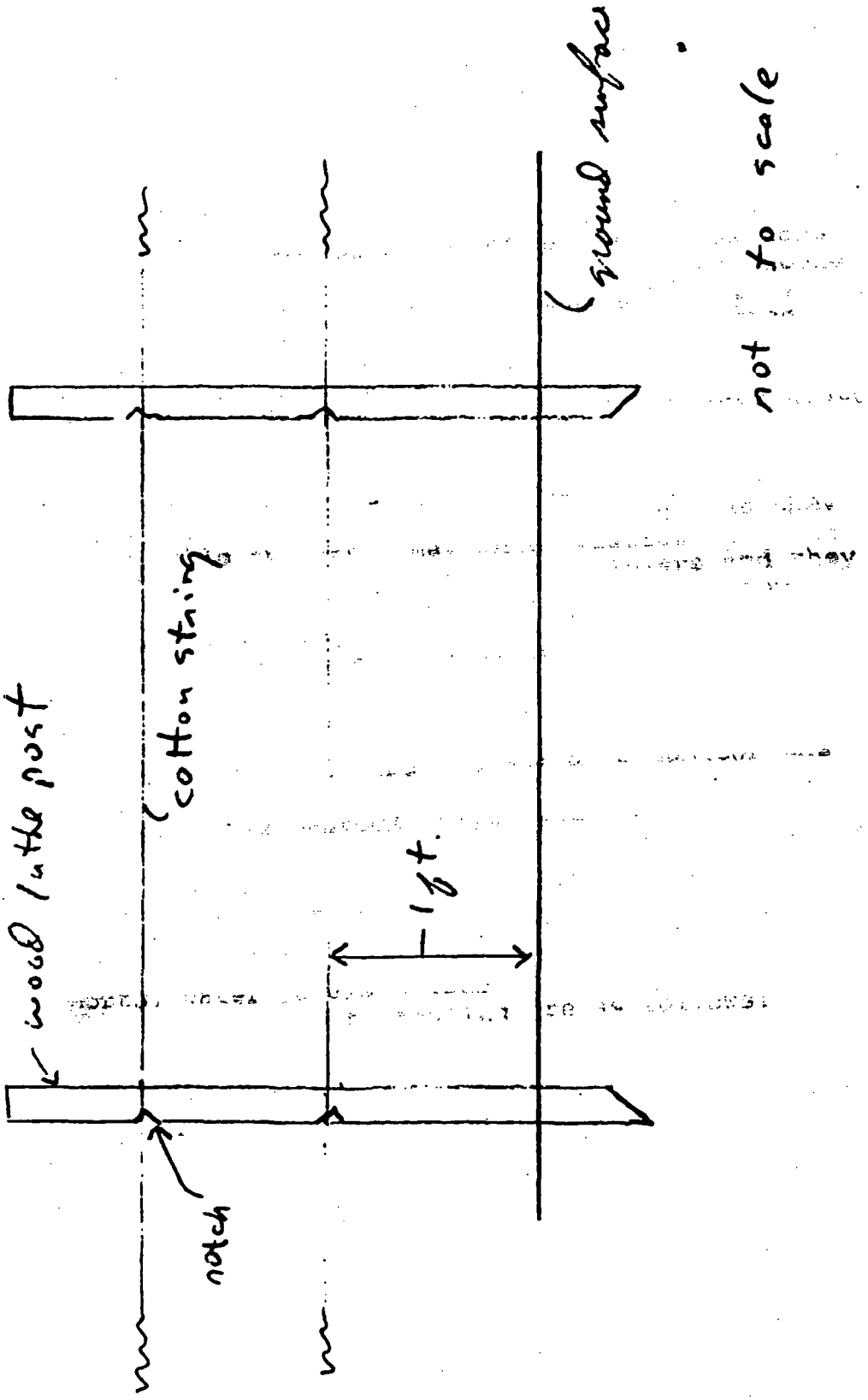

Attachment 5A

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection

William F. Weld
Governor
Daniel S. Greenbaum
Commissioner

December 12, 1991

Ms. Pamela Shields
Remedial Project Manager
U.S. EPA
HRS CAN3
JFK Federal Building
Boston, MA 02203-2211

RE: ASHLAND, Nyanza Chemical Waste Dump Site, OU One Requirements for Construction Completion
DEP Case No. 3-0216-01

Dear Ms. Shields:

The Department has reviewed the work completed on the Operable Unit One Remedial Construction Project (the Project) at the Nyanza Chemical Waste Dump Site, Ashland, Massachusetts. The purpose of the review is to determine if the remedy was constructed in accordance with the Record of Decision, remedial design, and construction engineering specifications.

This letter provides two lists. The first itemizes tasks which need to be completed in order for the Department to concur that the construction phase of the Project is complete and that the Startup Period of Operation and Maintenance should commence. The second contains tasks which require additional observation before the Department can concur that these tasks have been completed in accordance with the Project objectives. This observation period can occur simultaneously with the Startup Period.

The Department requested Wehran Engineering to provide technical assistance in the review. The following documents were reviewed:

- 1985 Record of Decision
- Draft Final Design Analysis Report
- Contract Specifications, Plans, and Change Orders
- Operation and Maintenance Plan
- Preliminary Monitoring Well Data

As-built drawings have been requested from the Army Corps of Engineers in order to complete the review. To date, neither draft or final As-built drawings have been made available.

Previously the Department provided comment on the October 29, 1991 site inspection of the completion of Tricil's contract for the Project (letter from J. Naparstek to P. Shields, 11/12/91). Several of the deficiencies identified in the above correspondence have been partially or fully corrected. Any item not reconciled has been included in the list of additional construction requirements.

Additional Construction Requirements

1a) An outlet at the southeast end of the groundwater interceptor trench should be constructed. Due to the decision to leave in place the road which connects the Trolley Brook access road to the cap perimeter road, this end of the trench is prone to significant potential ponding which may reduce the effectiveness of the trench in lowering the groundwater table. In addition, such a culvert will help minimize future erosion of the existing road.

1b) The water course in Areas L and P, from the road near the southeast end of the groundwater interceptor trench down to where the water flows under the Trolley Brook embankment is potentially subject to significant erosion. The upper portion will need to be further stabilized by a defined stream channel once the blockage of the groundwater interceptor trench is removed. The lower portion recently was stabilized with riprap. As noted in our correspondence of November 12, the Department requests the placement of geotextile under the riprap to prevent washout of soils from under the rocks.

1c) Erosion control measures recently implemented on the perimeter work haul road (located between the exterior edge of the groundwater interceptor trench and the perimeter fence) consisted of constructing a swale outside the perimeter fence along the uphill side of the road. The southeastern end of the swale stops at the Trolley Brook access road. Both the access road and the swale may erode if left in this condition. The swale should be evaluated (slope and flow velocity determined) for riprap requirements. A culvert should be placed under the road.

1d) The following two areas require hydroseeding in order to prevent erosion:
- the roadway and adjacent northern embankment extending from the northern perimeter road around Area B down to the sedimentation pond and the Area C wetlands; and
- the drainage swale along the south side of the Area C road extending down to the Area C outlet.

In consideration of seasonal constraints on seeding, the Department will accept this work being completed during the Startup Period provided that a committment is made by EPA to ensure its undertaking.

1e) A survey of newly installed monitoring well locations and elevations is required.

1f) Several sections of the perimeter fence have damaged barb wire or no barb wire at all. In order to ensure security at the site, the Department believes that the entire perimeter fence should have barb wire to discourage trespassers. As was noted in my correspondence to you of October 10, 1991, the Department believes repairing and upgrading existing fence was within the Contract Specifications for the Project.

1g) All drums located in the drum staging area need to be removed.

1h) A permanent grate at the entrance of the Chemical Brook culvert needs to be installed. Currently there is no control measure in place to prevent debris from entering and clogging the culvert. This measure is needed to ensure proper Site drainage.

1i) Concerns raised by the Town of Ashland in their correspondence of October 22, 1991 (B. Montenegro to J. Winmill) need to be resolved. The Town claims that the Project created drainage problems in the Chemical Brook culvert and along Megunko Road near A-Body Shop.

1j) The areal extent of nitrobenzene contaminated soil located behind the decon facility needs to be determined. The contamination is a result of leaking overpack drums which were stored temporarily as part of the 1989 EPA removal action. All contaminated soils must be removed and the area restored as appropriate.

1k) Several parcels of land were not restored to Contract Specifications. Notification to property owners of the restoration status of their land is necessary for properties on which any deviation from Contract Specifications is due to reasons other than a documented request by the property owner.

1l) Section 02485 of the Contract Specifications states that the "Contractor is responsible for watering and maintenance of vegetation until final acceptance". Additionally a maintenance period of one full growing season is required. As applied to Project conditions, the maintenance period ends October 30, 1992. Clarification of the Contractor's responsibility under this Section is needed. The Operation and Maintenance Plan requires mowing of the grass in June and September. Will the Contractor perform this work in 1992? If not, how will work performed by Department during the Startup Period affect the Contractor's responsibility to establish the seed?

1m) Remediation in several areas deviated from the Contract Specifications. Excavation boundaries were extended both horizontally and vertically, the location of areas to be excavated were moved, and, in a few locations, elevated contaminant levels were left in place due to structural considerations. Documentation in a report

format of all post-remedial design sampling is necessary to establish a record of site conditions at the completion of construction. This report should include a map identifying all sampling locations and the depths from which the samples were collected.

1n) The draft perimeter monitoring well develop and sampling reports do not indicate that recovery tests were performed as required by Paragraph 3.01 (I) of Section 02670 of the Contract Specifications. The Department had requested to review the monitoring well reports during the October 29 inspection, but they were not available at that time. This omission has been discussed with the Army Corps of Engineers and they are currently in the process of determining whether recovery tests were performed. If they were not, then this work needs to be undertaken.

Items Requiring Additional Observation

2a) The perimeter wells were installed to monitor the effectiveness of the cap and the groundwater diversion system. The six bedrock wells were installed 15.5' into bedrock without consideration of actual groundwater conditions encountered. The Department is concerned that some of these wells may become seasonally dry. Each bedrock well contains a 10' screen at the bottom of the well. Based upon the preliminary sampling reports, water levels measured from the bottom of the wells at the time of sampling are as follows:

MW-501B (upgradient) - 12.4';
MW -502B (between trench and cap) - 7.5';
MW-503B - 4.1';
MW-504B - 25.1';
MW-505B - 11.0';
MW-506B - 10.7'.

It is premature to determine whether the bedrock wells are screened at sufficient depth to monitor groundwater levels and characterize groundwater quality in the bedrock. The Department will defer its determination on whether the perimeter monitoring well network achieves the objectives of the Record of Decision until additional data is collected.

2b) All seeded areas require one full growing season prior to their final acceptance by the Army Corps of Engineers (Section 02485 of Contract Specifications). The Department defers evaluating whether the seeded areas achieve the Project objectives until after October 30, 1992.

2c) Areas requiring wetland restoration require one full growing season prior to their final acceptance by the Army Corps of Engineers (Section 02490 of Contract Specifications). The Department defers evaluating whether the wetland restoration effort achieves the Record of Decision objectives until after October 30, 1992.

In order to expedite completion of the Project's construction phase, we would like to meet with you and representatives from the Army Corps of Engineers soon to discuss the issues raised in this letter. Charla Reinganum of my staff will be calling you shortly to arrange the meeting. If you have any questions, please contact her directly at (617)-292-5826.

Sincerely,

Jay Naparstek

Jay Naparstek
Federal Sites, Branch Chief
Bureau of Waste Site Cleanup

cc: John Winmill, ACOE
Chris Turek, ACOE
Rich Cavagnero, EPA
Don Nagle, DEP OGC
Charla Reinganum, DEP BWSC RR

Attachment 5B

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

JAN 23 1992

Helen Waldorf
Federal Superfund Coordinator
Commonwealth of Massachusetts
Department of Environmental Protection
One Winter Street
Boston, MA 02108

Re: Nyanza Chemical Waste Dump

Dear Ms. Waldorf:

EPA has completed its review of your letter of November 5, 1991 and I provide herein responses to the four(4) issues raised: date of completion of construction, duration of start-up period, functional and operational determination process, and failed remedy provision. However, I must first remind you that the State Superfund Contract (SSC) was signed by the Commissioner on December 31, 1987, whereas the NCP language you frequently cite in your letter wasn't promulgated until March 8, 1990. The SSC was negotiated in good faith and signed and executed by the appropriate representatives of EPA and the Commonwealth and is controlling in all the areas it addresses. EPA would only look to the new NCP for guidance were there areas not addressed by the SSC, which I do not believe to be the case.

I would also like to note that EPA believes it is very important for the Department to assume the O&M responsibilities immediately upon completion of construction so that questions and problems which arise can be discussed with the EPA, Corps, TRICIL, and CDM personnel who worked on the project during the design and construction phases while those personnel are still in the employ of those parties. The SSC was written to reflect this belief.

Date of Construction Completion

The SSC defines the completion of construction as the date of certification by the Corps that the activities specified in the SSC SOW are completed. The Department participated in the final inspection with the Corps and EPA of TRICIL's work. EPA has met with the Department to discuss your views on "punch list" items that needed to be completed by TRICIL and we also indicated that EPA is prepared to discuss any other items in the SSC SOW that you believe have not been adequately completed. We agreed to keep open the IAG with the Corps in anticipation of the possible need to contract for the completion of these additional items, pending receipt of such a list from the Department. RPM Pamela Shields has been working with the DEP's Charla Reinganum and the Corps to address the list of items in your follow-up letter of December 12, 1991.

EPA plans to ask the Corps for a certification of completion as soon as the following tasks have been completed:

- repair and/or replacement of damaged or unstable sections of the perimeter fence including barbed wire;
- removal of all drums remaining at the staging area; and
- removal of nitrobenzene contaminated soil in the vicinity of the decon pad and restoration of this area after removal.

In addition to the above tasks, EPA will also address the following items under the existing IAG with the Corps of Engineers:

- a culvert under the Trolley Brook access road at the southeastern end of the ground water interceptor trench;
- tie in of the drainage swale from the exterior edge of the ground water interceptor trench to the culvert to be constructed under the Trolley Brook access road;
- evaluation and implementation of additional erosion controls needed to control erosion in Areas L and P;
- a grate at the entrance to Chemical Brook culvert;
- correction of the drainage problems at the mixing pad;
- reseeding of areas that didn't take in the original seeding by TRICIL or areas that were missed in this first round; and
- maintenance and correction of seeding or wetland restoration problems.

EPA considers certain of these tasks to be maintenance to be conducted by Tricil as part of their contract warranty. The others represent improvements on the original work requested by the State. EPA believes that these tasks are the responsibility of the State under its O&M obligations. However, since EPA plans to fund 90% of the first year O&M under a Cooperative Agreement, the relative cost share for these items would be 90/10 regardless of whether EPA or the State performed them. Since the Cooperative Agreement has not yet been processed, and EPA is interested in ensuring the timely completion of these tasks, we have agreed to address them under the IAG. The State will, accordingly, be billed for its 10% share under the SSC. If you prefer to perform these tasks under State direction, let us know immediately. It is the Agency's position that these additional items are minor in nature, do not materially affect the operation and maintenance of the remedy, and thus, will not cause EPA to delay its request to the Corps for a certification of completion of the remedy.

Duration of start-up period

EPA disagrees with your interpretation of Paragraph K (5) of the SSC. Section 104(c)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA") requires that the Department assure all future maintenance of any remedial action as a prerequisite to Federal funding of such action. Paragraph K.1. of the SSC restates this assurance. The need for maintenance begins immediately upon completion of the remedial action construction, not a year later. Paragraph K.5 of the "Maintenance" section of the SSC states that "EPA agrees to share...in the costs associated with ensuring that the Project is functional and operational, incurred in the first year following the construction phase." Paragraph 6 adds that the State's obligation to fund O&M begins one (1) year after the completion of construction. When read together, these provisions clearly establish a one-year start-up period after which the State's obligation to fund O&M begins.

Functional and Operational Determination

EPA believes that the Department has given its assurance, as legally required, that it will maintain the remedy once constructed and rejects your statement that "the Department will only accept responsibility for the Project after the one year, post construction, or start-up period if and when the Project is considered to be functional and operational."

Again, I must reiterate that this SSC preceded the current NCP by over 2 years. Lacking any definitive language in the then current NCP about the transition from Construction to Operation and Maintenance, the Department and EPA negotiated the Contract provisions. As stated previously, the Definitions Section of the SSC indicates that the Construction phase ends when the Army COE certifies completion of the activities specified in the Statement of Work. There is nothing in the SSC which requires a determination that the cap is functional and operational before the State's obligation to provide O&M begins.

Remedy failure

Paragraph P. of the SSC provides for periodic review of the remedy and also provides that EPA may, as a result of such reviews, determine that a response is appropriate in accordance with Sections 104 or 106 of CERCLA. Again, I must point out that this language was the result of a negotiated effort by EPA and the Department to address this issue, in the absence of any definitive language in the then current NCP or in any guidance documents. Considerable effort was spent by EPA and the Department on the Contracts for both the Nyanza and Charles

George NPL sites to come up with a workable definition of remedy failure, resulting in the wording in Paragraph P. To the extent that the Department has a new proposal for dealing with such an eventuality, EPA requests that you submit it to us, and I assure you we will give it our full consideration.

Other issues

While I support the efforts by your staff and your contractors to fully discuss many of the field decisions made with EPA and the Corps to ensure an adequate understanding of exactly what was done in order to better perform the State's O&M responsibilities, it appears to me that an inordinate amount of second guessing is taking place. Thus, I want to assert EPA's position on the roles of EPA, the State, and the Corps on a Fund lead project where EPA is the lead Agency, as defined in the NCP. EPA sought the full participation of the Department in the reviews of all Remedial Design documents which were to translate the conceptual remedy outlined in the ROD into a set of Plans and Specifications suitable for bidding. Both Department personnel and the Department's contractors were used in this review process. The Agency and the Corps also worked closely with the Department during the actual construction process and discussed all problems, progress, change orders, and modifications with the State to the extent that time allowed and State personnel were available for consultation. It must be recognized, however, that any construction project involves numerous field decisions to translate a set of plans and specifications into a finished product and that change orders and project modifications are a normal occurrence, particularly on complex projects with many unknowns, e.g. Superfund sites.

While EPA and its construction manager, the Army Corps of Engineers, have and will continue to endeavor to discuss all proposed changes to the initial plans and specifications with the State on this and other Superfund projects, EPA must be empowered to make the necessary field decisions on a timely basis in order to efficiently manage the construction contract. This prerogative is clearly reflected in the NCP definitions of "lead agency" and "support agency". Thus, I believe that many of the questions being raised by the State and its contractors are very inopportune, particularly since many of them were previously discussed with previous DEP representatives.

In response to your stated intentions to request modifications to the O&M Plan, which I understand primarily concern the schedule of monitoring activities, the language of Section 2.0 of the O&M Plan, on page 5, indicates that all decisions relative to monitoring activities, including but not limited to, frequency and number of samples, siting, and evaluation of results are to be made by the DEQE (now DEP) in consultation with EPA. Thus, I believe that the existing SSC already provides the Department

with the lead agency role in determining and adjusting the level of monitoring necessary over time.

Sincerely,

Richard Cavagnero, Chief
MA I Superfund Section

cc: Gerry Levy
Joan Miles
Pam Shields
Paula Fitzsimmons
Ira Nadelman - COE

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254-9149

REPLY TO
ATTENTION OF

December 15, 1992

CENED-CD-NCRO

SUBJECT: Contract No. DACW33-92-C-0059, Nyanza Chemical Superfund Site Final Closeout - OU#1 (Phase 1), Ashland, MA.

Ms. Pamela Shields
Remedial Project Manager
U.S. EPA
HRS CAN3
JFK Federal Building
Boston, MA 02203-2211

Dear Ms. Shields:

This letter is to inform you that our contractor, Webster Engineering, has substantially completed the work under this contract as of 11 December 1992. Eighty-two drums were removed from the site; new high grade chain-link fence is continuous around the site; and the nitrobenzene contaminated soil has been removed and disposed of off site. Test results, copies of hazardous waste manifests, and other administrative items will be sent to you under separate cover.

If you have any questions, please contact Stephen Umbrell at (508) 772-0148.

Sincerely,

James A. Morocco

James A. Morocco
Resident Engineer
North Central Resident Office

CF: Const Dir
NCRO
NRO
C. Reinganum, DEP