Edward Allen Landfill
Site No. 851001

RECORD OF DECISION
March 1992

Prepared by:
New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation

FILE COPY

Declaration Statement - Record of Decision

Edward Allen Landfill
Corning, New York
Site No. 851001

STATEMENT OF PURPOSE:

This Record of Decision (ROD) sets forth the selected Remedial Action Plan (RAP) for the Edward Allen Landfill site. This RAP was developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the New York State Environmental Conservation Law (ECL). The selected remedial plan complies to the maximum extent practicable with the National Oil and Hazardous Substance Pollution Contingency Plan, 40 CFR Part 300, of 1985 as revised in 1990.

STATEMENT OF BASIS:

This decision is based upon the Record of the New York State Department of Environmental Conservation (NYSDEC) for the Edward Allen Landfill Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A copy of all the pertinent documents is on file at the Corning Public Library, Denison Parkway East (Rt. 17), Corning, New York and at the offices of the NYSDEC, 6274 East Avon-Lima Road, Avon, New York and 50 Wolf Road, Albany, New York. A bibliography of the documents included as part of the record is attached in the Executive Summary.

DESCRIPTION OF SELECTED REMEDY:

The selected RAP will control the off-site migration of contaminants from the site and will provide for the protection of public health and the environment. It is technically feasible and it complies with statutory requirements. Briefly, the selected RAP includes the following:

- Implementation of a landfill closure in accordance with Part 360 regulations. This will include installation of an impermeable cap, leachate collection and management, a gas venting layer, grading to engineer minimum and maximum slopes, site fencing and long-term monitoring to evaluate closure effectiveness.

- An area of arsenic contamination in a wetland near the site, which is above Division of Fish and Wildlife (DFW) sediment criteria, will be excavated and placed under the cap.

- An area of elevated radiation consisting of glass makers waste will be incorporated under the cap.

- Exempted Construction and Demolition (C&D) material will be utilized to develop minimum and maximum slopes.

- Administrative controls will include deed restrictions, site

fencing and a long-term monitoring and maintenance program.

DECLARATION:

The selected RAP is protective of human health and the environment. The remedy selected will meet the substantive requirements of the Federal and State laws, regulations and standards that are applicable or relevant and appropriate to the remedial action. The remedy will satisfy the statutory preference for remedies that employ treatment that reduce toxicity, mobility or volume as a principal element. This statutory preference will be met by eliminating the mobility of contaminants with a direct pathway of migration to Bailey creek; and by treating contaminated leachate to reduce the toxicity. The long term health risk associated with contact with the surface soils will be eliminated by the installation of the 360 closure. NYSDOH is in concurrence with the RAP.

3-2-92
Date

Edward O. Sullivan

EXECUTIVE SUMMARY/REMEDIAL ACTION PLAN

Statement of Purpose: This document describes the remedial alternatives considered for the Edward Allen Landfill and identifies the New York State Department of Environmental Conservation's (NYSDEC) remedial alternative, developed in accordance with the New York State Environmental Conservation Law (ECL), and consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC Section 9601, etc., seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The documents that comprise the Administrative Record for the site and includes the final Remedial Investigation and Feasibility Study (RI/FS) reports, the Proposed Remedial Action Plan and the Responsiveness Summary. The documents in the Administrative Record are the basis for the remedial action.

This document provides some background information on the Edward Allen Landfill, briefly describes the alternatives which were considered to remediate the site and presents the Department's Remedial Action Plan (RAP) For a detailed description and evaluation of the alternatives considered, the RI/FS report mentioned above should be consulted.

Site Name and Location:
Edward Allen Landfill
Town of South Corning
Steuben County, New York
Site Code: 851001
Funding Source: Responsible Parties

Assessment of the Site: Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action described in this Remedial Action Plan (RAP), present a current or potential threat to public health, welfare, and the environment.

Statement of Basis: This proposal is based upon the administrative record for the Edward Allen Landfill. A copy of the record is available for public review and/or copying at the following locations:

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation: David A. Crosby
50 Wolf Road, Albany, NY 12233-7010
Hours: 8:30 a.m. - 4:45 p.m. Monday-Friday 518-457-3373

Corning Public Library: Reference Library
Denison Parkway East (Rt. 17)
Corning, New York 14830
Hours: Monday - Thursday 9:30 - 9:00
Friday 9:30 - 6:00
Saturday 9:30 - 5:00
Sunday 2:00 - 5:00

Documents are also available for public review at the NYSDEC Regional Office at 6274 East Avon-Lima Road, Avon, NY. The office is open from 8:30 to 4:30 Monday through Friday, contact Andy Norton at 716/226-2466.

The following documents are the primary components of the administrative record:

NYSDEC, "Proposed Remedial Action Plan - Edward Allen Landfill," January 1992

NYSDEC, "Responsiveness Summary - Edward Allen Landfill," February 1992.

O'Brien & Gere Engineers, Inc. "Allen Landfill Feasibility Study." October 1991.

O'Brien & Gere Engineers, Inc. "Allen Landfill Remedial Investigation." November 1990.

O'Brien & Gere Engineers, Inc. "Edward Allen Landfill Site; Addendum to the Revised Remedial Investigation Report." April 29, 1991.

O'Brien & Gere Engineers, Inc. "Quality Assurance Project Plan; Edward Allen Landfill; Corning, New York." November 1987(b).

O'Brien & Gere Engineers, Inc. "Work Plan; Additional Field Investigation; Edward Allen Landfill; Corning, New York." January 1991.

O'Brien & Gere Engineers, Inc. "Work Plan; Remedial Investigation/Feasibility Study (RI/FS) for the Edward Allen Landfill; Corning, New York." July 1987

Recra Research, Inc. "Edward Allen Landfill; New York State Superfund Phase I Summary Report; FINAL." November 18, 1983.

Recra Research, Inc. "Engineering Investigation at Inactive Hazardous Waste Sites; Phase II Investigation; Edward Allen Landfill; Town of Corning; County of Steuben; Site No. 8-51-001." August 1985.

Summary of Government's RAP: The remedy for the Edward Allen Landfill, Alternative 2, consists of a landfill cap and closure in accordance with 6 NYCRR Part 360, New York State's Solid Waste Management Facility regulations, effective December 31, 1988, as well as institutional controls. The landfill cap will cover the area where waste is known to have been disposed, approximately 25 acres. The landfill cap will consist of a properly graded multi-layered cover system including a gas venting layer, a low permeability soil layer or impermeable geosynetic membrane, a protective barrier layer, and topsoil to be seeded, fertilized, and maintained. A leachate collection system will be installed with the cap. Any leachate collected will be properly stored in a tank on-site, and either periodically trucked off-site for treatment at a local Publicly-Owned Treatment Works (POTW) or treated on-site by a system which meets applicable state regulations. It is anticipated that the collection

of leachate would be short-term, as the landfill cap will eliminate infiltration through the landfill, thereby greatly reducing or eliminating leachate generation.

The site will be fenced and will have deed restrictions to prevent future uses of the site that would interfere with the remedial measures. Exempt construction and demolition debris will be utilized to develop minimum and maximum slopes to allow for proper drainage and slope stability. Groundwater and surface water in the vicinity of the site will be monitored for 30 years. If the long term monitoring program indicates increases in site specific contamination at levels of concern, then additional investigation will be initiated and, if warranted, corrective actions will be undertaken. The total present worth cost of the proposed remedy, including 30 years of operation and maintenance is estimated to be between $8,770,000 to $10,510,000 depending on the method of leachate management.

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South Corning, Steuben County, New York
Site No. 08-51-001

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Section 1: **SITE LOCATION AND DESCRIPTION**

The Edward Allen Landfill is located in a sparsely populated rural area in the Town of Corning, Steuben County, New York (Figure 1). The site was named after Mr. Edward Allen, operator of the site during its active years from 1953 to 1979. During those years, municipal and industrial waste were received from several generators.

Site Topography: As mentioned, the site is in a sparsely populated area about 3 miles southeast of the City of Corning. The land surrounding the site is heavily wooded and hilly with an average slope of 4 degrees. The landfill area is about 25 acres of about 89 acres reportedly owned by Mr. Edward Allen. The landfill is generally flat and level in a hilly area and is U-shaped like a horseshoe with the open end facing northwest (Figure 2). The outside perimeter of the landfill area is mounded with steep side slopes ranging from about 15 to 50 degrees. The central part of the horseshoe is a depression dug into native soil. It appears to have been formed when soil was excavated and moved outward, probably to cover landfill material. This depression usually contains ponded water.

The limits of the landfill are shown in Figure 2. The depth of fill is estimated between 10 to 35 feet. The surface area of the fill is about 25 acres. About 25 percent of the landfill surface is covered by exposed wastes such as broken glass, scrap metal, construction debris, and empty drums. About 50 percent of the landfill surface is covered with grasses up to 2 feet tall with some sparse growth of shrubs and small trees while the remainder is unvegetated. Slopes on the northwest and western side of the landfill are excessive with slope between 35-50^{o}.The surrounding area is characterized ecologically by hemlock - northern hardwood forest, emergent marsh, successional old field, and fill material.

Surface Water: Two small, unnamed creeks drain surface water from the site. One of these creeks is on the western side of the site between Bailey Creek Road to the west and the steep slope of the western side of the landfill. The other begins in the northeastern side of the site in a swampy area. Ultimately, surface water from the site drains to the northwest towards Bailey Creek, about 1500 feet from the landfill. Bailey Creek flows into the Chemung River, about 4 miles from the site. Bailey Creek is a Class D water resource. There are no designated wetlands, critical habitats of endangered species, or wildlife refuges in the vicinity.

Local Ground Water Use: Within a 3 mile radius of the landfill, approximately 16,000 people use ground water from private and public wells. The closest is the Allen residence, about 600 feet northwest of the fill area. Several private residents in the vicinity of the landfill utilize groundwater for drinking purposes.

Section 2: **Site History**

The Edward Allen Landfill received industrial wastes from Westinghouse Electric Corporation and Corning Glass Works. Municipal generators included the City of Corning.

Westinghouse reportedly disposed of about 100,000 gallons/year of industrial liquid, sludge, slurry, and powder waste between 1973 and 1979. These wastes included calcium fluoride sludge, copper hydroxide sludge, zinc sulfide, phosphors, graphite, insoluble hydrated lime, liquid epoxy resin, liquid emulsions of acrylic resins, phosphor powder, and barium, calcium, and strontium carbonate. Although Westinghouse did generate listed and characteristic hazardous waste, it could not be determined how much of these wastes were disposed of at the Edward Allen Landfill by Westinghouse.

Materials that were reportedly disposed by Corning included wastes containing lead, arsenic, cadmium, barium, cobalt, selenium, antimony, and strontium from off-specification glass batches, tank cleaning wastes, floor sweepings, and possibly calcium fluoride sludge from television glass manufacturing processes. The quantities of waste that were disposed and the year that Corning began hauling to the site are unknown. Corning ceased using the site in 1972. Although Corning did generate listed and characteristic hazardous waste, it could not be determined how much of these wastes were disposed of at the Edward Allen Landfill by Corning.

Between 1954 and 1969, the City of Corning operated a municipal waste incinerator and during that period incinerator ash was taken to the Allen Landfill. After 1969, the City closed their incinerator and placed municipal waste in the Allen Landfill. The City reportedly did not collect industrial waste.

The United States Army Corps of Engineers dumped various debris at the site after the 1972 flood of the Chemung River. It was reported that approximately 320 trucks working 24 hours a day brought in more material in one month than had been received in the previous year. Reportedly, included in this debris was an unspecified number of propane tanks.

The NYS Department of Health initiated closure of the Allen Landfill in 1968, however, the disposal facility continued operation until 1979. Final closure of the landfill was not performed, although some of the waste was covered with a layer of soil.

Subsequently, NYSDEC conducted a Phase I and Phase II investigation of the site in 1983 and 1985 respectively. Based on these studies and Hazard Ranking Scores, it was decided that a Remedial Investigation/Feasibility Study (RI/FS) was to be done. Corning and Westinghouse took the opportunity to sponsor the RI/FS. Consequently, NYSDEC, Corning, and Westinghouse signed a Consent Order for performance of an RI/FS. The Consent Order was signed by NYSDEC, Corning, and Westinghouse on September 24, August 6, and August 25, 1987, respectively.

Some previous investigation of the Allen Landfill was done before this RI/FS. The earliest investigations on record include sampling and analysis of surface water, leachate, and soil in 1978, 1980, and 1981. This sampling and analysis was followed by Phase I and II investigations done for NYSDEC by Recra Research. These previous investigations are discussed in more detail below.

Investigations Prior to the Phase I Investigation: According to the NYSDEC Phase I Report, surface water was sampled on three occasions: 9/17/78 by

the engineering firm Gowdy and Hunt, 5/7/80 by NYSDEC, and 2/24/81 by NYSDEC and Corning. During the September 17, 1978 sampling, only surface water in Bailey Creek was tested. It was found to have ammonia in excess of surface water standards. However, the location and ammonia concentration were not specified.

Surface water and leachate samples were collected from the roadside ditch on the western side of the landfill on May 7, 1980, both upstream and downstream of the point where leachate was entering the ditch. These samples were collected by NYSDEC. Calcium, magnesium, and ammonia concentrations were found in excess of surface water standards.

Surface water and leachate samples were collected from the southern ditch and split between NYSDEC and Corning on February 24, 1981. Apparently, 3 samples (collectively) were found to exceed surface water standards for fluoride, arsenic, iron, lead, and zinc. Lindane, alpha-endosulfan, chloroethene, ethylbenzene, and methylene chloride were also found.

In February 1983, 3 soil samples were collected by NYSDEC for a radioactivity analysis. Two samples were found to have activities higher than a background sample. However, it was concluded at that time that the radioactive material in its present form and location did not pose an imminent health hazard. A discussion of additional radiation investigations is presented later in section three.

Phase I Investigation

A Phase I Investigation report was prepared by Recra Research, Inc. The final report was dated November 18, 1983. As part of the Phase I investigation, a preliminary Hazard Ranking Score (HRS) was calculated. The preliminary HRS was 31.4 and indicated that further investigation was necessary.

Phase II Investigation

Phase II investigations were conducted for NYSDEC in June, 1984 by Recra Research, Inc. Phase II activities included air sampling, determination of lateral and vertical extents of the landfill, locating possible contaminant plumes, and investigation of the area geology. The study also included determination of the overall site topography, investigation of soil, groundwater, and surface water quality and revision of the preliminary HRS done in the Phase I investigation.

Following are some of the significant findings of the Phase II investigation.

Air Sampling: Prior to starting Phase II field work, overall air quality at the site was monitored with an HNU photoionizer. A grid system was used for selecting sampling locations. In addition, areas of concern, such as leachate seeps, were also screened with the HNU. Readings recorded during air monitoring were within acceptable limits.

Geophysical Investigation: Results of the geophysical investigation are shown in the Phase II report. Estimated fill/base soil thickness may

exceed 35 feet in the western part of the landfill and may range from 10 to 15 feet in much of the remainder of the area except for a high conductivity zone in the northeast where fill may be as thick as 25 feet.

Groundwater Investigation: Four monitoring wells were installed as part of the Phase II investigation: MW1 to MW4. They are shown on Figure 2 and are essentially at the north, south, east, and west corners of the landfill area. Wells were placed near the fill but not through it. MW1 is upgradient and on the eastern corner of the landfill.

Analytical results from sampling of the 4 groundwater wells in June 1984 indicated that MW2 (northern corner of landfill, near OBG-7S and OBG-7D) had elevated concentrations of chloride and total organic carbon. MW4 (western corner of landfill, near OBG-4S and OBG-4D) had an elevated level of arsenic.

Surface Water Investigation: Eight surface water samples were collected in June 1984, including a background sample. Barium was present in six of the samples, including the background sample SW7. Elevated concentrations of barium, as compared to the background value, were found at the pond in center of landfill.

RI/FS Work Plan and Support Documents

Subsequent to the findings of the Phase 1 and 2 investigations, Corning and Westinghouse contracted the services of O'Brien & Gere to conduct an Remedial Investigation/Feasibility Study (RI/FS). O'Brien & Gere prepared an RI/FS Work Plan consistent with current State and Federal guidance. After discussion, negotiation, and revision, the Work Plan was approved by NYSDEC.

In addition, a detailed Health and Safety Plan (HASP) and Quality Assurance Project Plan (QAPP) were prepared according to existing guidance. The QAPP was approved by NYSDEC on December 4, 1987 while the HASP was accepted by NYSDEC on March 25, 1988.

During the Remedial Investigation (RI), some minor changes were made to the approved RI/FS Work Plan and HASP as a result of data collected and analyzed before the completion of the RI. Changes to the Work Plan and HASP were discussed with and approved by NYSDEC. These changes had a positive effect in that they resulted in better characterization of the site.

Section 3: Current Status

Remedial Investigation

The field work for the Remedial Investigation was initiated in the Spring of 1988. Field work was performed by O'Brien & Gere following the 1987 work plan. The study included radiation survey, magnetometer survey, sampling of surface water and sampling of sediments. The investigation also included a groundwater investigation, private well sampling and leachate sampling.

The various matrices were analyzed for different parameters, according to the suspected constituents. Parameters analyzed for at the site included gross alpha radiation, gross beta radiation, element-specific gamma radiation, inorganics, volatile organics, semi-volatile organics, pesticides, and PCBs. A detailed summary of the RI is contained in the November 1990 RI Report and the April 1991 Addendum to the Revised RI Report.

The groundwater investigation revealed the presence of antimony, iron, manganese and sodium in shallow wells and arsenic, manganese and sodium in intermediate well at concentrations in excess of groundwater standards. Chlorinated organic contamination (trichloroethylene and chloroform) was detected in one well cluster (OGB7-S &D) to the east of the landfill in excess of groundwater standards. The extent of this groundwater contamination was further evaluated in the additional investigation.

The RI also noted an area of arsenic contamination in surface sediments in a wetland to the east of the landfill at location L-4 (see Figure 2). The bulk concentration of arsenic of 45 mg/kg exceeded the NYS sediment criteria of 33 mg/kg.

Surface water indicated the presence of aluminum, barium, iron, manganese which are elevated above background concentrations and appear to be related to leachate outbreaks. Of these inorganic constituents only iron was above surface water standards.

In conclusion, the RI investigation revealed the presence of inorganics (metals) in landfill leachate, surface water and groundwater. It is the position of the NYSDEC that the landfill is influencing the local groundwater and surface water with regards to manganese, barium, arsenic, and iron. However, the contamination appears to be associated with leachate seeps and is localized to the area immediately adjacent to the landfill. Additionally, there is an area of chlorinated organic contamination in excess of State groundwater standards in the wetland east of the site. This area also appears to be associated with a leachate seep and appears to be localized to the immediate landfill area.

Radiation Investigation: Because radiation had been found at the site; it was decided that a radiation survey of the entire site surface be done as part of the RI. One area of the site was found to be above background levels. This area is at the end of the site access road. It is labeled on Figure 2 as the "Radiation Area". At the time of this discovery, the highest readings from the Geiger counter were 2 to 3 mR/hr.

In February 1988, a more detailed investigation of the radiation area was carried out using 4 different radiation meters. The highest radiation was found to be 7.5 to 8.0 mR/hr. This area, indicated as "RAD-1" on Figure 2. With the exception of the radiation area, no areas or material above 2 mR/hour were encountered anywhere on-site or near the site during well installation, groundwater surface water, sediment, or leachate sampling.

During the RI, water, soil, sediment and groundwater samples were submitted for a gross alpha and gross beta scan. One soil sample was collected at the location of the highest radiation level. This location is

plotted on Figure 2 as RAD-1. After sample RAD-1 was collected, a 1-ft layer of clean soil was placed on the radiation area. This reduced the surface radiation readings at the location of the highest radiation to 0.2 - 0.3 mR/hr on the Geiger counter.

Of the samples collected, only one sample was found to be significantly above background levels for radioactivity; the soil sample collected on March 18, 1988 at the point of the highest radiation (RAD-1). Isotopes identified included thorium-234, actinium-228, lead-212, thallium-208, and potassium-40.

It is concluded that the Allen Landfill has been adequately surveyed with respect to radiation concerns. Results indicate that:

1. There is only one radioactive area on the site.

2. Radiation from this area is not migrating.

3. A one foot layer of clean soil over the radioactive area reduced the radiation by over an order of magnitude. This resulted in a level that approached background radiation levels.

Additional Investigation: At a meeting on September 11, 1990 between representatives of Corning, Westinghouse, O'Brien & Gere, NYSDEC, and NYSDOH, it was agreed that additional field activities would be conducted at the site. The additional activities were conducted in April and May 1991 and included groundwater monitoring well installation, sampling of groundwater both upgradient and downgradient of the landfill, and a source investigation in the vicinity of the existing monitoring well nest OBG-7. The additional work also included an ecological evaluation, collection of two sediment samples for total organic carbon analysis, and a methane gas investigation.

At this meeting, it was also agreed that evaluation of the no action alternative would not be actively pursued as a preferred alternative and that the alternatives to be evaluated in this Feasibility Study (FS) would include, at a minimum, a cap which meets the technical requirements of 6 NYCRR Part 360, the New York State Regulations for Solid Waste Facility Management. Other requirements of the Part 360 regulations would be evaluated as necessary, based on the technical issues specific to the site. Because of the agreement to conduct additional investigatory activities and evaluate capping as the minimal remedial alternative, NYSDEC agreed to not require a Health Based Risk Assessment for the site.

The additional investigation concluded that the area of chlorinated organic contamination had no definable source which could be mitigated. Further, a well placed downgradient of the contaminated well show no contamination. Therefore, the source of the contamination may be from leachate entering the landfill and the contamination appears to be localized to the area immediately adjacent to the landfill.

The ecological investigation concluded that no rare, threatened, or endangered plant or animal species or significant habitats were identified by the Natural Heritage Program of NYSDEC as being present on the study site. The study site consists of a mosaic of several different ecological

communities which provide the life requirements of many species of wildlife. Individually, the highest quality terrestrial wildlife habitat is found in the second growth hardwood and conifer stand communities surrounding the landfill. The aquatic communities of the site support a variety of amphibians, reptiles, and birds, but because of low flows, shallow depths, and lack of fish, the aquatic communities are considered to be poor aquatic habitats for shore birds and mammals. However, the presence of the communities as water sources to wildlife is important to the overall habitat quality of the site. Collectively, the interspersion of the different ecological communities enhances the habitat value of the site and increases the ability of the site to support a more diversified wildlife community. The mosaic of mast producing trees, open fields, water sources, and coniferous woods provides food, cover, roosting, and breeding habitats for a variety of terrestrial wildlife including important game species such as white-tailed dear, wild turkey, ruffed grouse, and American woodcock.

Section 4: **Enforcement Status**

The following is a chronology of enforcement action at the Edward Allen Landfill site:

1953-1978	Landfill in operation.
1972	Disposal of flood debris.
1981	NYSDEC initial sampling of landfill leachate.
1982	Site listed on the NYS Registry of Inactive Hazardous Waste Sites.
1983	NYSDEC complete Phase I Study.
1985	NYSDEC complete Phase II Study.
1985	NYSDEC referred the site to the USEPA for inclusion of the Federal National Priority List but the site was denied listing.
1987	DEC negotiated with PRPs identified for the site, Corning Glass and Westinghouse Electric to conduct a Remedial Investigation/Feasibility Study.
September 1987	The PRPs signs a Consent Order with the Department to conduct a RI/FS.
1987-88	RI Field Investigation.
August 1989	PRP submits RI Report.
July 1990	Due to discrepancies in the RI report the Department requests additional investigation of groundwater, a possible source area and an ecological study. An agreement is reached with the PRP to conduct the additional work. As part of the agreement, the PRP

would, at a minimum, close the landfill utilizing NYS Solid Waste Regulations (Part 360) and the DEC would not require a health based risk assessment would not be required.

March 1991 The PRPs consultant conducts the Additional Field Work.

June 1991 The PRP consultant revised the RI report which is approved by the Department.

August 1991 The PRP submits the Feasibility Study.

January 1992 The Department presents the Proposed Remedial Action Plan

February 3, 1992 The Department holds a public meeting on the PRAP.

Section 5: GOALS FOR THE REMEDIAL ACTIONS

The remedial alternative chosen for the site by the Department was developed in accordance with the New York State Environmental Conservation Law (ECL) and is consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC Section 9601, etc., seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The criteria used in evaluating the potential remedial alternatives can be summarized as follows:

1. Compliance with Applicable or Relevant and Appropriate New York State Standards, Criteria and Guidelines (SCGs) -- SCGs are divided into the categories of chemical-specific (e.g., groundwater standards), action-specific (e.g., design of a landfill), and location-specific (e.g., protection of wetlands). A listing of ARARs is presented in Table 11.

2. Protection of Human Health and the Environment --This criterion is an overall and final evaluation of the health and environmental impacts to assess whether each alternative is protective. This is based upon a composite of factors assessed under other criteria, especially short/long-term effectiveness and compliance with ARARs.

3. Short-term Impacts and Effectiveness -- The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment is evaluated. The length of time needed to achieve the remedial objectives is estimated and compared with other alternatives.

4. Long-term Effectiveness and Permanence -- If wastes or residuals will remain at the site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude and nature of the risk presented by the remaining wastes; 2) the adequacy of the controls intended to limit the risk to protective levels; and 3) the reliability of these controls.

5. Reduction of Toxicity, Mobility, and Volume -- Department policy is to give preference to alternatives that permanently and significantly reduce the toxicity, mobility, and volume of the wastes at the site. This includes assessing the fate of the residues generated from treating the wastes at the site.

6. Implementability -- The technical and administrative feasibility of implementing the alternative is evaluated. Technically, this includes the difficulties associated with the construction and operation of the alternative, the reliability of the technology, and the ability to effectively monitor the effectiveness of the remedy. Administratively, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining special permits, rights-of-way for construction, etc.

7. Cost -- Capital and operation and maintenance costs are estimated for the alternatives and compared on a present worth basis. Although cost is the last criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, lower costs can be used as the basis for final selection.

The overall objective of the remediation is to reduce the concentrations of contaminants and the routes of exposure to levels which are protective of human health and the environment. The site-specific goals for remediating the site can be summarized in general as follows:

- Reduce, control, or eliminate the contamination present in the shallow saturated zone (leachate water) within the fill mass.

- Reduce or eliminate the mobility of the organic contamination in the fill area and in the leachate collection area east of the fill mass.

- Reduce or eliminate the threat to surface waters and the associated wetlands by containing any future leaching from the fill mass.

- Eliminate the potential for direct human or animal contact with the waste mass, leachate seeps, and sediments in the wetland area.

The following site-specific remedial action objectives were established for the FS:

1) Minimize the migration of constituents in the landfill materials to ground water and surface water such that excursions above ARARs would not result.

2) Minimize the potential for ingestion of ground water containing TCE at concentrations exceeding Class GA standards and manganese at concentrations exceeding Class GA standards and background concentrations.

3) Restore concentrations of TCE in ground water to Class GA standards and concentrations of manganese in ground water to background levels.

4) Remediate sediments containing arsenic in the vicinity of SED-3 to a concentration of 12 mg/kg. This represents the background concentration of arsenic in New York State soils as determined by NYSDEC Division of Fish and Wildlife. If the exposed sediments exceed this concentration, 12 inches of clean fill soil will be placed over the newly excavated area.

Section 6: DESCRIPTION AND EVALUATION OF THE ALTERNATIVES

This step starts with identification of potentially applicable remedial technology types and process options for each general response action. Process options were screened on the basis of technical implementability. The technical implementability of each identified process option was evaluated with respect to site contaminant information, site physical characteristics, and areas and volumes of affected media. Technologies and process options identified for the site were described and screened for technical implementability in Tables 1, 2, 3, and 4. Process options which were viewed as lacking feasibility were not considered further. A discussion of the results of the screening and descriptions of process options which remained after the screening follows.

Landfill Materials: A summary of the screening of technologies and process options relative to the landfill material is presented in Table 1. Each of the remedial technologies associated with the institutional general response action passed the preliminary screening. These technologies included access restrictions and monitoring.

The remedial technology associated with the removal general response action was excavation. Excavation was considered infeasible due to the potential hazards associated with buried gas cylinders and propane tanks. The feasibility of removing the radioactive materials was also considered infeasible due to the possibility of encountering buried gas cylinders. This, combined with the dangers of over-the-road transportation of such material, represents an unnecessary risk to the public and environment. Extensive sampling and analysis efforts at the site have shown that radiation has not migrated from the one area where it was detected. These considerations, coupled with the fact that there is an extreme shortage of mixed waste TSD capacity nation-wide, indicate that removal of the material is inappropriate. Containment of the material, coupled with fencing of the area, will prevent both migration and disturbance of the material.

Two remedial technologies associated with the containment general response action, capping and land disposal, were considered. Process options for capping included clay and vegetated soil cap and multimedia cap; these were considered to be potentially applicable for the site. Both of the land disposal process options, on-site landfill and commercial landfill, were considered to not be applicable for the site due to the excessive volume and nature of waste at the site and the potential excavation and transportation hazards.

The remedial technologies associated with treatment of the landfill material included thermal treatment, chemical/physical treatment, and biological treatment. Examination of the various process options for the treatment technologies for the landfill material led to the conclusion that

none were applicable for the site. This conclusion was primarily due to the physical characteristics and content of the landfill material and the potential hazards associated with excavation. Landfill material includes a mixture of industrial and municipal wastes, as well as buried propane tanks and gas cylinders, as discussed previously. A list of the remedial technology process options for the landfill material which passed the technology screening phase follows.

- o Deed Restrictions
- o Fencing
- o Groundwater Monitoring
- o Surface Water Monitoring
- o Clay and Vegetated Soil cap
- o Multimedia Cap
- o Leachate Management

Leachate Management: The remedial technologies associated with leachate management are presented in Table 2 and included physical treatment, chemical treatment, biological treatment, and thermal treatment. Examination of the various process options for the physical and chemical treatment technologies for leachate led to the conclusion that each was applicable for certain constituents at the site. Process options for the biological and thermal treatment technologies were found to be not applicable for site leachate due to the low concentrations of organic constituents in leachate relative to typical concentrations treated by these process options.

Remedial technology process options for the leachate discharge general response action included one which was to follow treatment and those which did not involve treatment. Each of the discharge process options was found to be potentially applicable for leachate at the site.

- o Interceptor Trenches
- o Reverse Osmosis
- o Stripping
- o Carbon Adsorption
- o Ion Exchange
- o Oxidation
- o Precipitation
- o Surface Water Discharge - Must meet water quality limits
- o Publicly Owned Treatment Works
- o Commercial Treatment Facility

Ground Water: A summary of the screening of technologies and process options relative to ground water is presented in Table 3. Remedial technologies identified for institutional general response action relative to ground water were access restrictions, alternate water supply, and monitoring. As a result of this screening step, development of an alternate water supply was eliminated from consideration since the most recent ground water sampling event indicated there are no constituents of concern above current MCL's in downgradient private wells with the exception of barium. Further, with proper landfill closure and administrative controls, it is expected that off-site groundwater will remain below standards with the possible exception of barium. However, barium levels are below the revised federal MCL of 2,000 ppb, effective

January 1, 1993 (Federal Register, July 1, 1991). Barium concentrations detected in the groundwater appear to be due to natural conditions because, 1) barium concentrations at the landfill perimeter are well below the MCL (90-129 ppb), 2) upgradient wells not impacted by the landfill show barium at similar levels (65 ppb) and 3) an upgradient and deep bedrock well shows barium as high as 2,200 ppb indicative of a naturally elevated barium level in wells placed in the bedrock. The only other area of concern is a detection of chlorinated organics above the MCL in the wetland to the east of the landfill. However, a series of wells placed downgradient of this location show no contamination indicating that the chlorinated organics are not migrating. Also the levels of contamination have decreased with time possibly indicating natural degradation. Therefore, the ground water institutional general response remedial technologies remaining after this screening step were access restrictions and monitoring. The remedial technology process options which passed the technology screening phase were deed restrictions and ground water monitoring.

Sediment: A summary of the screening of technologies and process options relative to sediment is presented in Table 4. Each of the remedial technologies associated with the institutional general response action passed the preliminary screening. These technologies included access restrictions and monitoring.

The remedial technology associated with the removal general response action was excavation. Excavation was considered potentially applicable for the sediment. Two remedial technologies associated with the containment general response action, capping and land disposal, were considered. Process options for capping included clay and vegetated soil cap and multimedia cap; these were considered to be potentially applicable for the sediment. Both of the land disposal process options, on-site landfill and commercial landfill, were considered to be potentially applicable for the sediment.

The remedial technologies associated with the general response action for treatment of the sediment included thermal treatment and chemical/physical treatment. Examination of the various process options for the treatment technologies for the sediment led to the conclusion that, rotary kiln incineration and fluidized bed incineration are inappropriate for treatment of metal constituents. A discussion of the remedial technology process options for the sediment which passed the technology screening phase follows.

- Excavation
- On-site Landfill
- Off-site Commercial Landfill
- In-Situ Vitrification
- Stabilization
- Soil Washing

Evaluation of Process Options

The process options remaining after the initial screening were evaluated further according to the criteria of effectiveness, implementability, and cost. Based on the evaluation, the most favorable process options of each technology type were chosen as representative

process options. A summary of the evaluation of process options and selected representative process options are presented on Tables 5, 6, 7, and 8.

Representative process options selected for the landfill material were: deed restrictions, fencing, ground water and surface water monitoring, and multimedia cap. The multimedia cap was chosen as the representative capping process option because it is the least susceptible to cracking and because clay does not appear to be readily available locally based on preliminary inquiries into its availability. Representative process options selected for leachate were: interceptor trenches, precipitation, carbon adsorption, surface water discharge, and POTW discharge. Discharge to a POTW was preferred as the representative discharge without treatment process option due to its availability, implementability, and lower cost. If, however, discharge to POTW proves not to be possible, the leachate would be treated on-site and discharged to surface water. Deed restrictions and ground water monitoring were selected as representative process options for ground water. Representative process options chosen for sediment were: excavation and on-site landfill. These process options were selected for the sediment due to the ease of implementability with capping of the landfill.

EVALUATION OF ALTERNATIVES

Assembly of Remedial Alternatives

Three alternatives were developed for the site. A summary of the alternatives and their components is presented in Table 9. A description of each alternative follows:

Alternative 1

Alternative 1 is the no action alternative. The no action alternative is required by the NCP and serves as a benchmark for the evaluation of action alternatives. This alternative would provide for an assessment of the environmental conditions if no remedial actions are implemented. The no action alternative would require implementation of ground water and surface water monitoring. This would be used to provide a data base for future remedial actions should they be required. Five-year reviews would be conducted as required by the National Contingency Plan (NCP) due to the fact that the landfilled material would remain on-site. The purpose of the five-year review is to evaluate the site in regards to the protection of human health and the environment.

Ground water monitoring would consist of quarterly sampling for the first year and semiannual thereafter of well nests OBG-4, 7, 10, 11, 12, 13, 14, and 15 and analysis for volatile organic compounds and NYS Hazardous Substance List (HSL) metals. The Allen, Rarrick and Farnham residential wells would also be included in the monitoring program. Surface water monitoring would be performed to observe the water quality of the surface water on-site. Surface water monitoring would consist of semiannual sampling at one upgradient location and two downgradient location and analysis for volatile organic compounds and NYS HSL metals. Selected parameters to evaluate radiation migration will be monitored at appropriate locations.

Alternative 2

Alternative 2 includes deed restrictions, fencing, ground water monitoring, surface water monitoring, placement of a multimedia cap over the landfill in its present horseshoe configuration, leachate collection utilizing an interceptor trench, discharge of collected leachate to a POTW, and excavation and placement of contaminated sediment on top of the landfill material for inclusion under the cap. If treatment of leachate at a POTW proves infeasible, leachate would be treated on-site utilizing precipitation and carbon adsorption. Five-year reviews would be conducted as required by the NCP due to the fact that the landfill material would remain on-site. The purpose of the five-year review is to evaluate whether adequate protection of human health and the environment is maintained.

Deed restrictions would include land use restrictions which would preclude the conduct of activities which would expose contaminated materials or impair the integrity of the cap. Deed restrictions would also include restrictions prohibiting the installation of potable wells at the site until Class GA standards for TCE and manganese are attained. A fence would be installed around the cap to discourage trespassing and minimize disturbance of the cap.

Monitoring of ground water would be performed to evaluate the effectiveness of the cap and to monitor for degradation and potential migration of current ground water constituents. Natural degradation processes which may be currently active in the aquifers would be expected to continue to reduce the concentrations of the organic constituents in the ground water. A ground water monitoring program would consist of quarterly sampling for the first year and semiannually thereafter of well nests OBG-4, 7, 10, 11, 12, 13, 14, and 15 and analysis for volatile organic compounds and NYS HSL metals. The Allen, Rarrick and Farnham residential wells would also be included in the monitoring program. Monitoring of surface water would be performed to evaluate the effectiveness of the cap and to observe the water quality of the surface water on-site. A surface water monitoring program would consist of semiannual sampling at one upgradient location and two downgradient location and analysis for volatile organic compounds and NYS HSL metals. Selected parameters to evaluate radiation migration will be monitored at appropriate locations.

Sediment with concentrations of arsenic exceeding 12 mg/kg in the vicinity of sample SED-3 in the wetland area northeast of the landfill would be excavated and placed on top of the landfill material for inclusion under the cap. A multimedia cap would be installed over the landfill material in its present horseshoe configuration. The landfill material would be regraded as necessary prior to installation of the cap to establish slopes which would encourage runoff and minimize erosion. If additional fill material is required to achieve final grades, either fill soil or exempt construction and demolition (C&D) material as defined in subpart 360-7.1(b)(1)(i) would be used. If possible, these C&D materials would be generated from sources within Steuben County. The cap would contain the landfill material and minimize infiltration of precipitation into the landfill material. Gas vents would be installed at a rate of one per acre of cap. These vents would prevent the possible build-up of landfill gasses under the cap. These vents would be sampled following

completion of the cap so as to determine if any control measures are required.

A leachate collection system would be installed in conjunction with the cap. An interceptor trench consisting of installation of a perforated pipe with crushed gravel backfilled around the pipe would be constructed along the toe of the landfill. The bottom of the trench would be located above the ground water table. Collected leachate would be transported to the City of Corning or other POTW for treatment. If treatment of leachate at the POTW proves infeasible, leachate would be treated on-site through precipitation and carbon adsorption. Treated effluent would be discharged to Bailey Creek.

It is not anticipated at this time that upgradient ground water diversion is required. However, in the event that leachate generation rates do not decrease subsequent to capping, upgradient ground water diversion may be implemented. This would force ground water to flow around the landfill, thereby isolating the landfill material and preventing possible interaction between the landfill material and ground water.

Improvements to surface water drainage at the site would include the construction of surface water diversion berms upgradient of the landfill, prevention of Bailey Creek Road run-off from entering West Creek, and deepening of West Creek. The latter, in addition to improving surface water management at the site would serve to lower the ground water in the vicinity of OBG-4, thereby allowing proper placement of the leachate collection pipes in that area. Surface water run-off in the vicinity of SED-3 would be managed so as to maintain the adequate flow of water to the wetland area near SED-3.

Operation and maintenance activities for Alternative 2 would include periodic mowing and inspections of the cap and leachate collection system. Transportation of leachate to the POTW would also be a periodic activity. If leachate is treated on-site, disposal of precipitation sludge and replacement of regenerating of carbon would need to be performed periodically, as well as effluent discharge sampling.

Alternative 3

Alternative 3 is similar to Alternative 2 except the capping would be in a mound configuration. Capping in this configuration would involve the development of a cell in the interior of the "horseshoe" of the landfill for placement of standard construction and demolition (C&D) material. Development of a C&D cell in the interior of the landfill would involve installation of a bottom liner consisting of 2 ft of soil with a permeability no greater than 1×10^{-5} cm/sec or other materials which are designed to be protective of groundwater quality and a leachate collection system consisting of 1 ft of sand and perforated piping. Leachate collected in the C&D cell's leachate collection system would be treated by the same processes discussed in alternative #2. The landfill material and C&D material would be regraded as necessary prior to installation of the cap to establish slopes which would encourage runoff and minimize erosion. If additional fill is required to achieve final grades on the south, east, or west sides of the landfill, either fill soil or exempt C&D materials (as

defined in subpart 360-7.1(b)(1)(i)) would be used. If possible, these C&D materials would be generated from sources within Steuben County.

DETAILED ANALYSIS OF ALTERNATIVES

The objective of the detailed analysis of alternatives was to analyze and present sufficient information to allow the alternatives to be compared and a remedy selected. The analysis consisted of an assessment of the alternatives with respect to nine evaluation criteria that encompass statutory requirements and include other gauges of the overall feasibility and acceptability of remedial alternatives. The detailed analysis of alternatives also included a comparative evaluation designed to determine the relative performance of the alternatives and identify major trade-offs among them. The nine evaluation criteria are:

-Overall protection of human health and the environment
-Compliance with ARARs
-Long-term effectiveness and permanence
-Reduction of toxicity, mobility, or volume through treatment
-Short-term effectiveness
-Implementability
-State acceptance
-Community acceptance, and
-Cost

The results of the analysis of alternatives is presented in Table 10. A detail summary of the analysis is available in the feasibility study. The following is a brief discussion of the criteria.

Overall Protection of Human Health and the Environment: Both Alternative 2 and 3 include capping and containment of landfill constituents and therefore meeting the criteria. However, alternative 3 would result in an 11 month delay in implementation of the remedy. Alternative 1 does not meet the criteria because leachate would continue to impact on local groundwater.

Compliance with Applicable or Relevant and Appropriate Requirement (ARARs): Alternative 2 and 3 would meet the site specific ARARs identified on Table 11 and therefore meet the criteria. Alternative 1 would likely not meet ambient water quality standards or groundwater standards because leachate would continue to be released from the site.

Long-term Effectiveness and Permanence: Alternative 2 and 3 with capping, leachate management and administrative controls would comply with the criteria. Alternative 1 would provide no active remediation. Therefore, without capping and controlling leachate generation, alternative 1 fails this criteria.

Reduction of Toxicity, Mobility, or Volume Through Treatment: Alternative 2 and 3 would include management of leachate. Complete reduction in toxicity of the leachate would be expected. A cap and leachate collection system would reduce mobility of contaminants from the landfill. Therefore, alternative 2 and 3 meets the criteria. Alternative 1, with no active remedial program would not meet the criteria.

Shorterm Effectiveness: Alternative 2 has some effects on the local community and the environment when implemented, however, engineering controls can minimize the effects. Alternative 3 would involve the placement 170,000 cubic yards of C&D material and would take approximately 10 months to complete. This would delay the construction of the leachate collection system. Alternative 1 would have little impact on present site conditions and it is unlikely the criteria would be met.

Implementability: All three alternatives are implementable.

State Acceptance: The state accepts alternative 2 and 3 because it fulfills the criteria evaluate. However, the State has concerns with alternative 3 because of the 11 month delay implementation of the remedy and concerns with the use of non-exempt C&D material. Further, the impact on local residents due to the operation of a landfill accepting 170,000 tons of waste in only 10 months is likely to be significant. The State does not accept Alternative 1 as it includes no active remediation. This would allow for uncontrolled release of leachate to surface waters and groundwater.

Community Acceptance: Overall, the community responded favorably to the proposed remedial action plan. Attachment Number 2 is the Responsiveness Summary.

Cost: Alternative 2 has the highest present worth of $8,770,000 to $10,510,000 depending on the method of leachate management. Alternative 3 is slightly less ranging from $8,000,000 to $9,670,000, however, this estimate is sensitive to incoming rate of C&D material and the market rate. Alternative 1 with a present worth of $470,000 is the least expensive.

Section 7: SUMMARY OF GOVERNMENT'S DECISION - Conceptual Design

Three remedial alternatives are assembled in this Remedial Action Plan (RAP). An individual detailed analysis and a comparative analysis were performed on the three alternatives. The detailed analysis of alternatives indicated favorable evaluations with respect to the evaluation criteria for Alternatives 2 and 3. Alternative 2 is the alternative which provides the best balance of the evaluation criteria. Although Alternative 2 is the most expensive alternative, it meets the remedial objectives in the most efficient manner.

Alternative 2 is that alternative which provides the best balance of the evaluation criteria. This alternative includes capping the landfill in its existing configuration utilizing fill soil or exempt C&D material to achieve final grades, leachate collection, transportation of leachate to the City of Corning or other POTW for treatment, excavation of contaminated sediments in the vicinity of sample SED-3 in the wetland area northeast of the landfill and consolidation under the cap, deed restrictions, fencing, ground water monitoring, and surface water monitoring. If leachate treatment at a POTW was infeasible, leachate would be treated on-site utilizing precipitation and carbon adsorption.

Construction activities would be initiated by clearing the site and installing site fencing, which would consist of six foot high chain link industrial fencing which would be installed around the entire site. Sediment with concentrations of arsenic exceeding 12 mg/kg in the vicinity of sample location SED-3 in the wetland area northeast of the site would be

excavated and placed on top of the landfill material. Common fill or exempt C&D material would be brought on-site to achieve proper grades on the landfill. Side slopes would be no greater than 33 percent and top surface slopes would be no less than 4 percent. The West Creek drainage channel would be deepened to improve surface water runoff and lower the ground water table in that area. Upgradient surface water diversion berms would be constructed to prevent surface water run-on to the cap. During these construction activities, either landfill materials would be moved off the location of the Texas Eastern Petroleum Pipeline Company's propane line on the southeastern side of the site, or the propane line would be redirected around the landfill material. The determination as to which action would be performed relative to the propane line would be made during the design phase.

Construction of the multimedia cap will then begin on the perimeter of the landfill. The cap will include the radiation area identified in the remedial investigation. Gas vents would be installed first; the gravel gas venting layer would be placed next; and a filter fabric layer would be placed over the gravel. The FML would be placed over the filter fabric; drainage laterals would be placed on top of the FML; and another layer of filter fabric would then be placed. The edge of the FML would be keyed into the leachate collection trench to prevent surface water runoff from entering the leachate collection system. The soil protective layer would be placed next, followed by the topsoil layer. The topsoil layer will be seeded and mulched to prevent erosion and provide for rapid growth of vegetation.

The leachate collection system around the perimeter of the cap will be installed during construction of the cap. The trench would be constructed of gravel, piping, and filter fabric. Leachate would be pumped to a storage tank, to be stored until pickup and transport to the City of Corning or other POTW. If leachate treatment at a POTW is infeasible, leachate will be treated on-site utilizing precipitation and carbon adsorption.

The impact to site surface waters from increased runoff would be evaluated during the remedial design phase, and as necessary, drainage control measures such as the construction of retention basins would be implemented during construction activities. Precipitation runoff and surface water management design considerations would include maintenance of water flow into the wetland area located on the northern portion of the site. Rodents or other potential vectors were not observed during the ecological investigation performed as part of the additional investigatory activities. The need for control of vectors would be further evaluated during the remedial design phase, and if it was determined to be necessary, control measures would be implemented during construction activities. Evaluation of air control requirements would include sampling of gas vents following construction of the cap and compare these results to appropriate air guidances to determine if gas mitigation measures are necessary.

Deed restrictions may be imposed at any point during implementation of the remedy. The deed restrictions would include measures to prevent the installation of potable wells in the immediate vicinity of the landfill and to restrict activities which could damage the integrity of the cap. The monitoring program would be initiated upon completion of closure

activities. The monitoring program would provide data to evaluate the effectiveness of the remedial effort over time. If the long term monitoring programs indicates increases in site specific contamination at levels of concern, then additional investigation will be initiated and, if warranted, corrective actions will be undertaken. Five-year reviews would be conducted in accordance with the NCP.

The estimated cost for implementation is present on Page 8 of Table 10. The present worth of the preferred alternative is $8,770,000 with leachate treatment at a local POTW or $10,510,000 utilizing on-site treatment. The ultimate determination of the leachate management method will be determined in the design phase of the project.

ATTACHMENT 1

FIGURE 1

EDWARD ALLEN LANDFILL
CORNING, NEW YORK

SITE LOCATION MAP

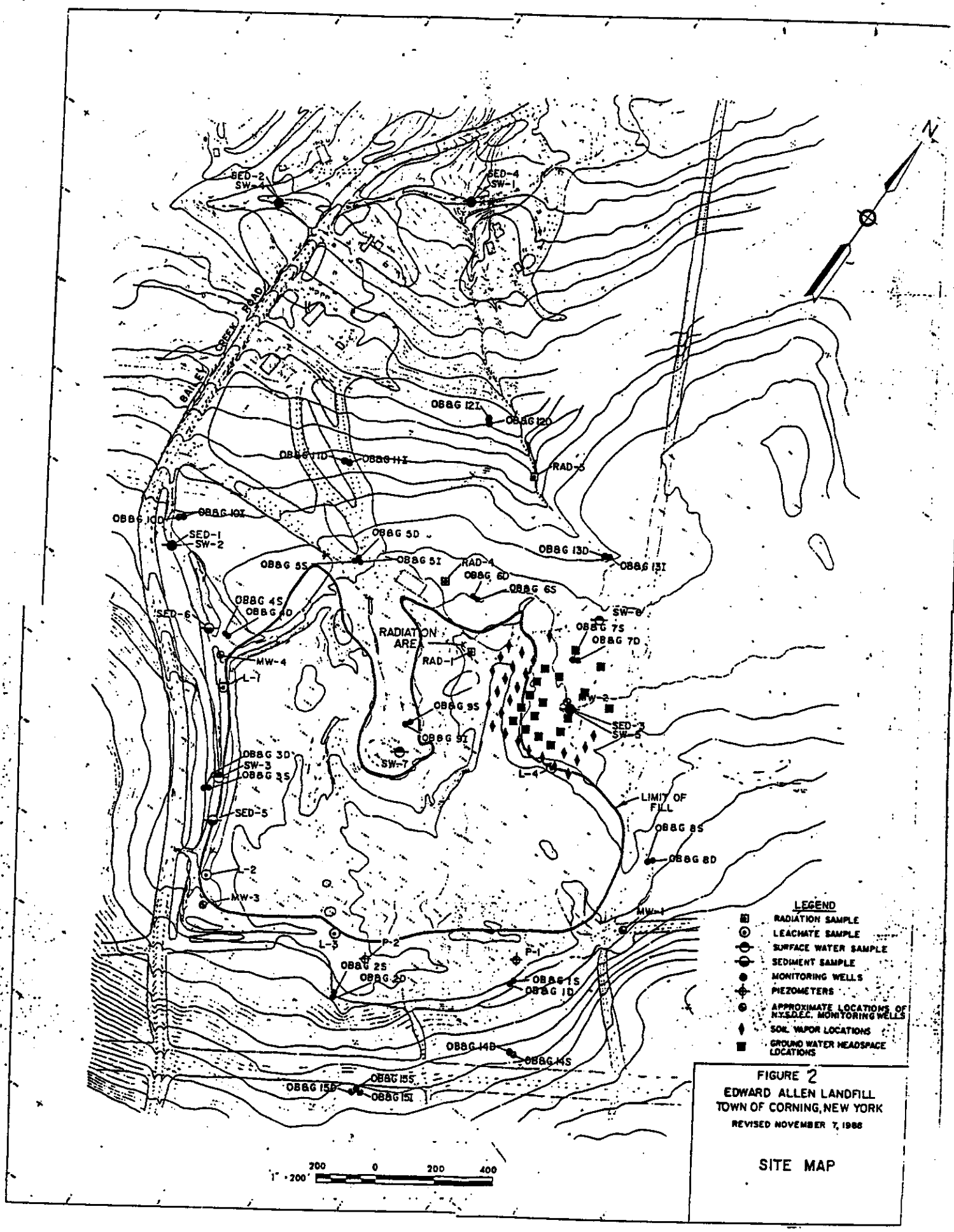
N
SED-2
SW-4
SED-4
SW-1
BAILEY CREEK ROAD
OBBG 12I
OBBG 12D
OBBG 11D
OBBG 11I
RAD-3
OBBG 10D
OBBG 10I
SED-1
SW-2
OBBG 5D
OBBG 5S
OBBG 5I
RAD-4
OBBG 6D
OBBG 6S
OBBG 13D
OBBG 13I
SW-6
OBBG 7S
OBBG 7D
SED-6
OBBG 4S
OBBG 4D
RADIATION AREA
RAD-1
MW-4
L-1
MW-2
OBBG 9S
OBBG 9I
SED-3
SW-5
SW-7
OBBG 3D
SW-3
OBBG 3S
L-4
LIMIT OF FILL
SED-5
OBBG 8S
OBBG 8D
L-2
MW-3
MW-1
L-3
P-2
P-1
OBBG 2S
OBBG 2D
OBBG 1S
OBBG 1D
OBBG 14D
OBBG 14S
OBBG 15S
OBBG 15D
OBBG 15I
LEGEND
RADIATION SAMPLE
LEACHATE SAMPLE
SURFACE WATER SAMPLE
SEDIMENT SAMPLE
MONITORING WELLS
PIEZOMETERS
APPROXIMATE LOCATIONS OF N.Y.S.D.E.C. MONITORING WELLS
SOIL VAPOR LOCATIONS
GROUND WATER HEADSPACE LOCATIONS
200 0 200 400
1" = 200'
FIGURE 2
EDWARD ALLEN LANDFILL
TOWN OF CORNING, NEW YORK
REVISED NOVEMBER 7, 1988
SITE MAP

TABLE 1

SCREENING OF TECHNOLOGIES AND PROCESS OPTIONS
LANDFILL MATERIAL

feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Description	Screening Comments
INSTITUTIONAL ACTIONS	Access Restrictions	Deed Restrictions	Land use restrictions for fill area.	Potentially applicable.
		Fencing	Installation of a fence surrounding the fill area.	Potentially applicable.
	Monitoring	Ground Water Monitoring	Monitoring of site ground water quality.	Required by NYSDEC for Site. (NYSDEC, 1990)
		Surface Water Monitoring	Monitoring of site surface water quality.	Potentially applicable.
REMOVAL ACTION	Removal Action	Excavation	Removal of fill material using applicable construction equipment such as: backhoes, cranes, front-end loaders.	Not applicable due to excessive volume of fill material and potential excavation hazards associated with buried gas cylinders and and propane tanks.
CONTAINMENT ACTIONS	Cap	Clay and Vegetated Soil	Compacted clay and vegetated soil covering landfill area.	Potentially applicable.
		Multimedia	A synthetic membrane covered with a protective layer of soil.	Potentially applicable.
	Land Disposal	On-Site Landfill	Placement of fill material in an on-site landfill or consolidation of fill on site.	Not applicable due to excessive volume of fill material and potential excavation hazards.
		Commercial Landfill	Placement of fill material in an off-site landfill.	Not applicable due to excessive volume of fill material and potential excavation hazards.

TABLE 1

SCREENING OF TECHNOLOGIES AND PROCESS OPTIONS
LANDFILL MATERIAL

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Description	Screening Comments
TREATMENT ACTIONS	Thermal Treatment	Rotary Kiln	Combustion of fill material in a rotating horizontal cylinder.	Infeasible for the site due to the nature of the fill material.
		Fluidized Bed	Combustion of fill material in a hot sand bed.	Infeasible for the site due to the nature of the fill material.
		In Situ Vitrification	Vitrification of fill material in place.	Infeasible due to the presence of metal objects in the fill material which would short-circuit the process.
	Chemical/Physical Treatment	Stabilization	Solidification of fill material.	Infeasible for the site due to the size of much of the fill material and infeasibility of excavation.
		Water/Solvent Wash	Extraction of constituents from the fill material.	Infeasible for the site due to the nature of the fill material.
	Biological Treatment	Aerobic	Degradation of organic constituents by aerobic microorganisms.	Infeasible for typical contents of sanitary landfills.
		Anaerobic	Degradation of organic constituents by anaerobic microorganisms.	Infeasible for typical contents of sanitary landfills.

TABLE 2

SCREENING OF TECHNOLOGIES AND PROCESS OPTIONS
LEACHATE

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Description	Screening Comments
COLLECTION ACTIONS	Extraction	Interceptor Trenches	Perforated pipes in trenches backfilled with porous media to collect leachate.	Potentially applicable.
TREATMENT ACTIONS	Physical Treatment	Reverse Osmosis	Use of high pressure to force water through a membrane, filtering out constituents.	Potentially applicable for some site constituents.
		Stripping	Contact of large volumes of air or steam with water to promote the transfer of volatile organics.	Potentially applicable for VOCs although metals pretreatment may be required.
		Carbon Adsorption	Adsorption of organic constituents onto activated carbon.	Potentially applicable for organics although metals pretreatment may be required.
	Chemical Treatment	Ion Exchange	Exchange of ions between ion exchange resin and leachate.	Only applicable to some inorganic constituents.
		Oxidation	Destruction of organic constituents by oxidation-reduction reactions.	Potentially applicable for organics although metals pretreatment may be required.
		Precipitation	Alteration of chemical equilibria to reduce metal constituent solubility.	Potentially applicable to inorganic constituents.
	Biological Treatment	Aerobic	Degradation of organic constituents by aerobic microorganisms.	Infeasible for leachate due to dilute organic levels.
		Anaerobic	Degradation of organic constituents by anaerobic organisms.	Infeasible for leachate due to dilute organic levels.
	Thermal Treatment	Rotary Kiln	Combustion of leachate in rotating horizontal cylinder.	Infeasible for leachate due to dilute organic levels.
		Fluidized Bed	Combustion of leachate in a hot sand bed.	Infeasible for leachate due to dilute organic levels.

TABLE 2

SCREENING OF TECHNOLOGIES AND PROCESS OPTIONS
LEACHATE

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Description	Screening Comments
DISCHARGE ACTIONS	With Treatment	Surface Water	Discharge of treated effluent to a nearby body of water.	Potentially applicable.
	Without Treatment	Publicly Owned Treatment Works	Discharge of untreated leachate to an off-site POTW.	Potentially applicable.
		Commercial Facility	Discharge to a commercial facility for treatment and/or disposal.	Potentially applicable.

TABLE 3

SCREENING OF TECHNOLOGIES AND PROCESS OPTIONS
GROUND WATER

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Description	Screening Comments
INSTITUTIONAL ACTIONS	Access Restrictions	Deed Restrictions	Well restrictions for localized ground water contamination.	Potentially applicable.
	Alternate Water Supply	Municipal Water Supply	Extension of municipal water supply to area of influence.	Not applicable at this time.
		New Community Well	New uncontaminated well in area of influence.	Not applicable at this time.
	Monitoring	Ground Water Monitoring	Monitoring of wells.	Required by NYSDEC for Site. (NYSDEC, 1990)

TABLE 4

SCREENING OF TECHNOLOGIES AND PROCESS OPTIONS
SEDIMENT

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Description	Screening Comments
INSTITUTIONAL ACTIONS	Access Restrictions	Deed Restrictions	Land use restrictions for area of contamination.	Potentially applicable.
		Fencing	Installation of a fence surrounding the area of contamination.	Potentially applicable.
REMOVAL ACTION	Excavation	Excavation	Removal of sediments using applicable construction equipment such as: backhoes, cranes, front-end loaders.	Potentially applicable.
CONTAINMENT ACTIONS	Cap	Clay and Vegetated Soil	Compacted clay and vegetated soil covering sediments.	Potentially applicable.
		Multimedia	A synthetic membrane and protective soil covering the sediments.	Potentially applicable.
	Land Disposal	On-Site Landfill	Inclusion of sediments under landfill cap.	Potentially applicable.
		Commercial Landfill	Placement of sediments in an off-site landfill.	Potentially applicable.

TABLE 4

SCREENING OF TECHNOLOGIES AND PROCESS OPTIONS
SEDIMENTS

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Description	Screening Comments
TREATMENT ACTIONS	Thermal Treatment	Rotary Kiln	Combustion of sediment in a rotating horizontal cylinder.	Not applicable for metals.
		Fluidized Bed	Combustion of sediment in a hot sand bed.	Not applicable for metals.
		In Situ Vitrification	Vitrification of sediment in place.	Potentially applicable.
	Chemical/Physical Treatment	Stabilization	Solidification of sediment.	Potentially applicable.
		Soil Washing	Extraction of constituents from the sediments.	Potentially applicable.

TABLE 5

EVALUATION OF PROCESS OPTIONS
LANDFILL MATERIAL

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Effectiveness	Implementability	Cost
INSTITUTIONAL ACTIONS	Access Restriction	Deed Restrictions*	Effectiveness depends on continued implementation. Does not reduce contamination or prevent migration.	Readily implementable.	Low capital No O & M
		Fencing*	Limits damage to any waste containment system by discouraging tresspassing.	Readily implementable.	Low capital Very low O & M
	Monitoring	Ground Water Monitoring*	Useful for documenting conditions. Does not eliminate contamination.	Readily implementable.	Low capital Medium O & M
		Surface Water Monitoring*	Useful for documenting conditions. Does not eliminate contamination.	Readily implementable.	No capital. Medium O & M
CONTAINMENT ACTIONS	Cap	Clay and Vegetated Soil	Prevents migration of contaminants. Does not eliminate contamination. May crack, but can self heal.	Implementability dependent on availability of clay.	Medium capital Low O & M
		Multimedia*	Effectively prevents migration of contaminants. Is least susceptible to cracking and weathering.	Readily implementable.	Medium capital Low O & M

* Representative Process Option

TABLE 6

EVALUATION OF PROCESS OPTIONS
LEACHATE

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Effectiveness	Implementability	Cost
COLLECTION ACTIONS	Extraction	Interceptor* Trenches	Effective for interception of leachate flow and maintenance of cap integrity.	Readily implementable.	Medium capital Low O & M
TREATMENT ACTIONS	Physical Treatment	Reverse Osmosis	Effective treatment for large organic molecules and some metals. Ineffective for smaller molecules.	Readily implementable.	Medium capital Medium O & M
		Carbon Adsorption*	Effective treatment for most organic constituents. Carbon regeneration or disposal required.	Readily implementable.	Medium capital Medium O & M
		Stripping	Effective treatment for volatile organic constituents. Air pollution control may be required.	Readily implementable; attainment of air quality limits required.	Medium capital Low O & M
	Chemical Treatment	Ion Exchange	Effective removal for ionic species including metals and inorganic anions. Regenerant requires disposal.	Readily implementable.	Medium capital Medium O & M
		Oxidation	Research indicates variable effectiveness in organic reduction. Treatability study required to determine effectiveness. UV/Ozone oxidation considered to be an innovative technology.	Readily implementable.	Medium capital Low O & M
		Precipitation*	Effective for removal of metals; sludge disposal required.	Readily implementable.	Medium capital Medium O & M

* Representative Process Options

TABLE 6

EVALUATION OF PROCESS OPTIONS
LEACHATE

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Effectiveness	Implementability	Cost
DISCHARGE ACTIONS	With Treatment	Surface Water*	Effective discharge method.	Attainment of discharge limits required.	Low capital Very Low O & M
	Without Treatment	Commercial Facility	Effective discharge method for treatment and/or disposal.	Implementability depends upon availability of facility services. Transportation required.	No capital High O & M
		POTW*	Effective discharge method for treatment and disposal.	Dependent on availability of capacity. Attainment of pretreatment standards required. Transportation or piping to sewer required.	Low capital Medium O & M

* Representative Process Option

TABLE 7

EVALUATION OF PROCESS OPTIONS
GROUND WATER

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Effectiveness	Implementability	Cost
INSTITUTIONAL ACTIONS	Access Restrictions	Deed Restrictions*	Effectiveness depends on continued implementation. Does not reduce constituent concentrations or prevent migration.	Readily implementable.	Low capital No O & M
	Monitoring	Ground Water Monitoring*	Useful for documenting conditions. Does not reduce constituent concentrations.	Readily implementable.	Low capital Medium O & M

*Representative Process Options

TABLE 8

EVALUATION OF PROCESS OPTIONS
SEDIMENT

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Effectiveness	Implementability	Cost
INSTITUTIONAL ACTIONS	Access Restriction	Deed Restrictions	Effectiveness depends on continued implementation. Does not reduce contamination.	Readily implementable.	Low capital No O & M
		Fencing	Discourages trespassing.	Readily implementable.	Low capital Very low O & M
REMOVAL ACTIONS	Excavation	Excavation*	Effective removal method.	Readily implementable.	Medium capital. No O & M
CONTAINMENT ACTIONS	Cap	Clay and Vegetated Soil	Effectively prevents constituent migration. May crack but can self heal.	Implementability dependent on availability of clay.	Medium capital Low O & M
		Multimedia	Effectively prevents migration of constituents. Is least susceptible to cracking and weathering.	Readily implementable.	Medium capital Low O & M
	Land Disposal	On-Site Landfill*	Effectively prevents constituent migration.	Readily implementable.	Low capital Low O & M
		Commercial Landfill	Effectively prevents constituent migration.	Readily implementable.	High capital No O & M

* Representative Process Option

TABLE 8

EVALUATION OF PROCESS OPTIONS
SEDIMENT

Feasibility Study
Edward Allen Landfill Site

General Response Action	Remedial Technology	Process Options	Effectiveness	Implementability	Cost
TREATMENT ACTIONS	Thermal Treatment	In Situ Vitrification	Effective for reducing mobility of inorganics. Wetness of soil may limit efficiency of process.	Readily implementable.	Medium capital No O & M
	Physical/ Chemical Treatment	Stabilization	Effective for reducing mobility of inorganics.	Readily implementable.	Medium capital No O & M
		Soil Washing	Effective for treatment of inorganics.	Readily implementable. Disposal of wash water required.	Medium capital No O & M

* Representative Process Option

TABLE 9

REMEDIAL ALTERNATIVES

Feasibility Study
Edward Allen Landfill Site

General Response Action	**Technology** (*Process Option*)	**Alt 1**	**Alt 2**	**Alt 3**
Institutional Actions	Monitoring (*Ground Water and Surface Water*)	x	x	x
	Access Restrictions (*Deed Restrictions & Fencing*)		x	x
Institutional Actions	Capping - Existing Configuration (*Multimedia*)		x	
	Capping - Mound Configuration (*Multimedia*)			x
Leachate Removal Action	Extraction (*Interceptor Trenches*)		x	x
Leachate Treatment Actions	Physical Treatment (*Carbon Adsorption*)		x*	x*
	Chemical Treatment (*Precipitation*)		x*	x*
Leachate Discharge Actions	With Treatment (*Surface Water*)		x*	x*
	Without Treatment (*POTW*)		x	x
Sediment Removal Actions	Excavation		x	x
Sediment Containment Actions	Land Disposal (*On-Site Landfill*)		x	x

• *To be implemented only if discharge to POTW is infeasible.*

TABLE 10

DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Feasibility Study
Edward Allen Landfill Site

	ALTERNATIVE 1 Ground water and surface water monitoring.	ALTERNATIVE 2 Deed restrictions, fencing, ground water and surface water monitoring, multimedia cap - existing configuration, leachate collection, discharge to POTW, and sediment excavation and placement on top of landfill under cap. If treatment of leachate at POTW infeasible, treatment of leachate on-site.	ALTERNATIVE 3 Deed restrictions, fencing, ground water and surface water monitoring, multimedia cap - mound configuration, leachate collection, discharge to POTW, and sediment excavation and placement on top of landfill under cap. If treatment of leachate at POTW infeasible, treatment of leachate on-site.
OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT			
Protection of Human Health	Ground water and surface monitoring would not serve to protect human health other than to monitor existing conditions.	Capping and leachate collection and treatment would contain landfill materials. Fencing and deed restrictions would prohibit cap disturbance and potable ground water use. Natural attenuation would restore ground water to Class GA or background levels.	Capping and leachate collection and treatment would contain landfill materials. Fencing and deed restrictions would prohibit cap disturbance and potable ground water use. Natural attenuation would restore ground water to Class GA or background levels.
Protection of Environment	Ground water and surface water monitoring would not serve to protect the environment other than to monitor existing conditions.	Capping and leachate collection would minimize constituent migration to other media. Deed restrictions and fencing would minimize cap disturbance. Natural attenuation would improve ground water quality. Sediment excavation would address contamination.	Capping and leachate collection would minimize constituent migration to other media. Deed restrictions and fencing would minimize cap disturbance. Natural attenuation would improve ground water quality. Sediment excavation would address contamination. Capping of the landfill would be delayed during filling of the C&D cell.

TABLE 10

DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

Feasibility Study
Edward Allen Landfill Site

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COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)			
Chemical-Specific ARARs	Uncertain whether Class GA standards would be achieved for ground water or ambient water quality standards would be achieved for surface water.	Class GA standard for TCE and background levels for manganese would be attained through natural attenuation processes. Iron surface water concentrations would return to background levels with capping and leachate collection.	Class GA standard for TCE and background levels for manganese would be attained through natural attenuation processes. Iron surface water concentrations would return to background levels with capping and leachate collection.
Location-Specific ARARs	None.	Would comply with USEPA's Wetlands Protection Policy.	Would comply with USEPA's Wetlands Protection Policy.
Action-Specific ARARs	Would comply with analytical requirements of 40 CFR Part 136.	Would comply with Part 360 capping requirements. Would comply with NAAQS for particulates. Would comply with analytical requirements of 40 CFR Part 136. Would comply with applicable sewer use ordinances for POTW used (not ARARs because an off-site action). If necessary, on-site leachate treatment would comply with SPDES requirements.	Would comply with Part 360 capping requirements. Would comply with C&D regulations. Would comply with NAAQS for particulates. Would comply with analytical requirements of 40 CFR Part 136. Would comply with applicable sewer use ordinances for POTW used (not ARARs because an off-site action). If necessary, on-site leachate treatment would comply with SPDES requirements.

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LONG-TERM EFFECTIVENESS AND PERMANENCE			
Magnitude of Residual Risk	Unknown risk. Landfill material and sediment would not be contained. Ground water quality improvements uncertain without management of leachate.	Minimal residual risk. Landfill material and sediment would be contained. Ground water quality would improve through management of leachate and natural attenuation.	Minimal residual risk. Landfill material and sediment would be contained. Ground water quality would improve through management of leachate and natural attenuation.
Adequacy and Reliability of Controls	Ground water and surface water monitoring would be adequate and reliable methods of evaluating long-term ground water and surface water quality.	Capping, with maintenance, and leachate collection would be adequate and reliable in minimizing migration of constituents from fill material to other environmental media. Fencing and deed restrictions would be adequate and reliable methods of minimizing access to the site, disturbance of the cap, and potable use of ground water. Discharge to a POTW would be an adequate and reliable control for leachate. Ground water and surface water monitoring would be adequate and reliable methods of evaluating the long-term effectiveness and permanence. If on-site leachate treatment is required, precipitation and carbon adsorption would be adequate and reliable treatment methods for leachate.	Capping, with maintenance, and leachate collection would be adequate and reliable in minimizing migration of constituents from fill material to other environmental media. Fencing and deed restrictions would be adequate and reliable methods of minimizing access to the site, disturbance of the cap, and potable use of ground water. Discharge to a POTW would be an adequate and reliable control for leachate. Ground water and surface water monitoring would be adequate and reliable methods of evaluating the long-term effectiveness and permanence. If on-site leachate treatment is required, precipitation and carbon adsorption would be adequate and reliable treatment methods for leachate.

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REDUCTION OF TOXICITY, MOBILITY, AND VOLUME THROUGH TREATMENT			
Treatment Process Used and Materials Treated	No treatment process used.	Leachate treatment at the City of Corning or other POTW with primary and secondary biological treatment. If this is infeasible, leachate treatment would be by precipitation and carbon adsorption.	Leachate treatment at the City of Corning or other POTW with primary and secondary biological treatment. If this is infeasible, leachate treatment would be by precipitation and carbon adsorption.
Amount of Hazardous Materials Destroyed or Treated	None.	Nearly complete removal of constituents from leachate through either treatment method.	Nearly complete removal of constituents from leachate through either treatment method.
Degree of Expected Reductions in Toxicity, Mobility, or Volume	No reduction in toxicity, mobility, or volume of leachate. Reduction in toxicity of ground water uncertain without proper leachate management.	Nearly complete reduction in toxicity of leachate with treatment. Reduction of toxicity and mobility of ground water constituents with natural attenuation. Nearly complete reduction in mobility of fill material constituents with capping and leachate collection.	Nearly complete reduction in toxicity of leachate with treatment. Reduction of toxicity and mobility of ground water constituents with natural attenuation. Nearly complete reduction in mobility of fill material constituents with capping and leachate collection.
Degree to Which Treatment is Irreversible	Not applicable.	POTW treatment is irreversible. If on-site treatment of leachate is required, precipitation and carbon adsorption are irreversible.	POTW treatment is irreversible. If on-site treatment of leachate is required, precipitation and carbon adsorption are irreversible.
Type and Quantity of Residuals Remaining After Treatment	Not applicable.	Sludge resulting from biological treatment would likely be minimal relative to that which is regularly managed at the POTW. If leachate is treated on-site, precipitation sludge and spent carbon would require management.	Sludge resulting from biological treatment would likely be minimal relative to that which is regularly managed at the POTW. If leachate is treated on-site, precipitation sludge and spent carbon would require management.

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DETAILED ANALYSIS OF ALTERNATIVES SUMMARY

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Edward Allen Landfill Site

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SHORT-TERM EFFECTIVENESS			
Protection of Community During Remedial Actions	No remedial actions will be undertaken.	Potential (minimal) risk due to transport of leachate to POTW. If leachate is treated on-site, potential (minimal) risk due to transportation of precipitation sludge.	Potential (minimal) risk due to transport of leachate to POTW. Potential (minimal) risk due to increased truck traffic on Bailey Creek Road due to increased truck traffic during filling of the C&D cell. Placement of C&D material at the site involves the potential, though minimal, risk of aggravating existing environmental conditions at the site. If leachate is treated on-site, potential (minimal) risk due to transportation of precipitation sludge.
Protection of Workers During Remedial Actions	Appropriate protective equipment and measures would be used during sampling.	Appropriate protective equipment and measures would be used during remedial activities.	Appropriate protective equipment and measures would be used during remedial activities.
Environmental Impacts	No additional impacts would be created.	Constituent transport during construction would be minimized through appropriate engineering controls.	Constituent transport during construction would be minimized through appropriate engineering controls.
Time Until Remedial Objectives Are Achieved	Alternative 1 would not minimize ingestion of ground water nor migration of landfill material constituents. Sediments would not be remediated.	Minimization of constituent migration and remediation of sediments would be achieved following cap and leachate collection system installation. Minimization of ground water ingestion would be achieved with implementation of deed restrictions. Restoration of ground water would be achieved over the long-term.	Minimization of constituent migration and remediation of sediments would be achieved following cap and leachate collection system installation. Minimization of ground water ingestion would be achieved with implementation of deed restrictions. Restoration of ground water would be achieved over the long-term. Construction and filling of the C&D cell would delay capping of the landfill.

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IMPLEMENTABILITY			
Ability to Construct and Operate the Technology	Ground water and surface water monitoring readily implementable.	Cap and leachate collection system readily constructed and maintained. Fencing readily constructed. Ground water and surface water monitoring program and deed restrictions readily implementable. If necessary, leachate treatment system readily installed and operated.	Cap, C&D cell, and leachate collection systems readily constructed and maintained. Fencing readily constructed. Ground water and surface water monitoring program and deed restrictions readily implementable. Market for C&D disposal expected. If necessary, leachate treatment system readily installed and operated.
Reliability of the Technology	Monitoring reliable for evaluation of ground water and surface water quality.	Cap and leachate collection system reliable. POTW treatment reliable. If necessary, precipitation and carbon adsorption are reliable. Fencing and deed restrictions reliable for limiting site access and protecting cap integrity. Monitoring reliable for evaluation of effectiveness.	Cap, C&D cell, and leachate collection system reliable. POTW treatment reliable. If necessary, precipitation and carbon adsorption are reliable. Fencing and deed restrictions reliable for limiting site access and protecting cap integrity. Monitoring reliable for evaluation of effectiveness.
Ease of Undertaking Additional Remedial Actions, If Necessary	Any future required remedial actions could be easily implemented.	Future remedial action not likely necessary with source containment. If necessary, upgradient ground water diversion would be easily implemented.	Future remedial action not likely necessary with source containment. If necessary, upgradient ground water diversion would be easily implemented.
Ability to Monitor Effectiveness of Remedy	Ground water monitoring would indicate changes in aquifer conditions. Surface water monitoring would indicate changes in surface water conditions.	Ground water monitoring would indicate changes in aquifer conditions. Surface water monitoring would indicate changes in surface water conditions.	Ground water monitoring would indicate changes in aquifer conditions. Surface water monitoring would indicate changes in surface water conditions.

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IMPLEMENTABILITY (Continued)			
Coordination With Other Agencies	None required.	Coordination with local government necessary to implement deed restrictions.	Coordination with local government necessary to implement deed restrictions. Coordination with NYSDEC necessary to implement C&D cell.
Availability of Off-site Treatment, Storage, and Disposal Services and Capacity	None required.	Capacity expected to be available at City of Corning or other POTW. If on-site leachate treatment is employed, capacity likely available at a commercial landfill for precipitation sludge disposal.	Capacity expected to be available at City of Corning or other POTW. If on-site leachate treatment is employed, capacity likely available at a commercial landfill for precipitation sludge disposal.
Availability of Necessary Equipment and Specialists	Labor, sampling equipment, sampling personnel, and analytical laboratory facilities readily available.	Fencing materials and labor, sampling equipment, sampling personnel, analytical laboratory, construction equipment, cap materials, trench materials, and, if necessary, treatment equipment readily available.	Fencing materials and labor, sampling equipment, sampling personnel, analytical laboratory, construction equipment, cap materials, C&D cell materials, trench materials, and, if necessary, treatment equipment readily available.
Availability of Prospective Technologies	Sampling and analytical technologies readily available.	Capping and leachate collection technologies readily available. If required, precipitation and carbon adsorption technologies readily available.	Capping, C&D cell and leachate collection technologies readily available. If required, precipitation and carbon adsorption technologies readily available.

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Feasibility Study
Edward Allen Landfill Site

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COST					
		Leachate Treatment at POTW	Leachate Treatment On-site	Leachate Treatment at POTW	Leachate Treatment On-site
Capital Costs	$0	$5,820,000	$6,710,000	$4,920,000	$5,810,000
Annual Operation and Maintenance Costs	$39,000	$440,000	$330,000	$470,000	$330,000
Present Worth Cost	$470,000	$8,770,000	$10,510,000	$8,000,000	$9,670,000
STATE ACCEPTANCE	To be assessed in Record of Decision following comment period.				
COMMUNITY ACCEPTANCE	To be assessed in Record of Decision following comment period.				

TABLE 11

POTENTIAL ARARS

Feasibility Study
Edward Allen Landfill Site; Corning, NY

POTENTIAL CHEMICAL-SPECIFIC ARARS		
MEDIUM	**REQUIREMENTS**	**CITATION**
Ground Water	Ground water must meet NYS Class GA ground water standards. These standards are the most stringent of: - Standards for Class GA Ground Water - NYS MCLs for Public Water Supplies - MCLs promulgated under the Safe Drinking Water Act - NYS Standards of Raw Water Quality	6 NYCRR Part 703 6 NYCRR Part 703.5 10 NYCRR Subpart 5-1 40 CFR Part 141 10 NYCRR Part 170
Surface Water	Surface water at the Site must meet NYS Ambient Water Quality Standards for Class D water bodies.	6 NYCRR Part 701.14
POTENTIAL LOCATION-SPECIFIC ARARS		
LOCATION	**REQUIREMENTS**	**CITATION**
Wetlands	Activities must be conducted to avoid, to the extent possible, long-term and short-term adverse impacts associated with the destruction or modifications of wetlands.	40 CFR Part 6, Subpart A

POTENTIAL ARARS

Feasibility Study
Edward Allen Landfill Site; Corning, NY

POTENTIAL ACTION-SPECIFIC ARARS		
ACTION	REQUIREMENTS	CITATION
Capping	At a minimum, a cap must consist of a layered system with: - The bottom layer being a barrier soil layer with a compacted thickness of 18 inches and a maximum permeability of 1×10^{-7} cm/sec. Alternatively, a flexible membrane liner (FML) 40 mil thick and having a maximum permeability of 1×10^{-12} cm/sec may be used. - A 24 inch barrier protection layer consisting of soil. - A 6 inch topsoil layer.	6 NYCRR Part 360-2.15
Excavation or Capping	Site air quality during remedial activities must meet the National Ambient Air Quality Standard (NAAQS) for particulate matter.	40 CFR Part 50
C&D Cell Construction	Requirements for Construction and Demolition Debris Landfills	6 NYCRR Part 360-7
Discharge of Treated Leachate	Effluent from the on-site leachate treatment system must meet the standards outlined in the State Pollutant Discharge Elimination System (SPDES) program.	6 NYCRR Parts 750-758
Ground Water and Surface Water Monitoring	Guidelines establishing test procedures for the analysis of pollutants.	40 CFR Part 136

TABLE 11

POTENTIAL ARARS

Feasibility Study
Edward Allen Landfill Site; Corning, NY

POTENTIAL REQUIREMENTS FOR OFF-SITE ACTIONS	
ACTION	REQUIREMENTS
Discharge of Leachate to POTW	Applicable sewer use ordinances for the POTW used.

ATTACHMENT 2

Department of Environmental Conservation
Responsiveness Summary
for
Proposed Remedial Action Plan
Edward Allen Landfill
Site No. 851001
Corning, New York

A public meeting was held by the New York State Department of Environmental Conservation (NYSDEC) on February 3, 1992 at Corning Town Hall to discuss the Proposed Remedial Action Plan (PRAP) for the Edward Allen Landfill inactive hazardous waste site located on Bailey Creek Road of the property owned by Mr. Edward Allen. The purpose of this attachment is to summarize the meeting and provide a response to the questions posed by the public.

The Feasibility Study (FS) Report of the Edward Allen Landfill site was prepared by O'Brien and Gere Engineers, consultant for Corning Inc. and Westinghouse Electric who are Potentially Responsible Parties (PRPs) for this site. At the meeting representatives of the NYSDEC and NYSDOH made a presentation of the activities mentioned below:

1. Discussed the PRAP procedure, public comment period, Record of Decision (ROD) procedure, tentative schedule.

2. Provided a brief description of the site, history of the site, description of past investigations conducted at the site, brief description of the Remedial Investigation (RI) conducted during 1988-90.

3. Discussed the Health Risk Assessment of the site.

4. Discussed the various remedial alternatives evaluated for the remediation of the site.

5. Discussed the recommended remedial action alternative of the site.

Written comments on the PRAP were received during the public comment period which ended on February 21, 1992. The following is a review and further response to the comments received during the comment period:

Q. Mentioned treatment of leachate could be on-site or off-site. Is there any plan as to where off-site it would be taken? Does Steuben County have a facility to treat it?

A. At this time, it hasn't been determined which of the options described in the Feasibility Study the PRPs wish to take. The method of leachate treatment will be determined in design phase. One of the options is to use a POTW in the area.

Q. I live right by Bailey Creek (on Caton Road). The last meeting you said the (contamination) doesn't come down Bailey Creek as far as Caton Road. Your material said you don't know how deep the dump is.

A. That's true. We think the landfill ranges in depth from about 10 feet at the top of the hill to about 35-40 feet at the bottom of the landfill. There are monitoring wells installed, much deeper than the fill. They go down into the bedrock. They would pick up contamination coming from the fill.

Q. I'm directly down from the landfill. Every time we dig, even four or five feet, there's always water there. I'm concerned that that water is coming down from the landfill. I have a cistern in my cellar. I though maybe I should have that tested. It was explained to me that the cistern works on underground streams. When you have a torrential rain all this water comes into my cellar.

A. You probably have a very shallow groundwater table there. Just a few feet below your basement. A heavy rain elevates the groundwater. The data from the RI/FS indicates that site contamination has not migrated far from the site. I would not expect any impacts to the water in your basement.

Q. Have you've done sampling of Bailey Creek down near where I live? I've been telling kids not to swim in the creek because of PCBs.

A. We have not tested down near the bridge because we did not find enough contamination near the landfill to justify testing that far down.

Q. Would you say the kids could go wading in the creek. Do you think that's safe?

A. Yes. As far as what's coming from the landfill, yes.

Q. You mentioned that it was 40,000 gallons a week of leachate. Does the dryness or wetness of the summer (precipitation) affect the amount of leachate?

A. The amount of rainfall will definitely affect the amount of leachate. It's very common for leachate seeps at landfills to dry up over the summer. This hasn't happened at this site. Not even in 1988, a very dry year. This landfill is like having a layer of concrete with a

pile of sand on it. Water goes down through and is expressed out of the sides. Also, the landfill holds a lot of water because of its 25 acres in size. The PRPs consultant has estimated leachate seeps will dry up in one to two years after construction of the cap.

Q. I live on Caton Road near Bailey Creek. When it rains up at the landfill, pieces of rock & sediment are washed down Bailey Creek. Shouldn't you test down by our house, because you don't really know (what might have washed down)?

A. Some of these metals, such as barium found in private wells, are naturally occurring. As for surface water and sediment, it's true some sediments will be washed down. But our sampling downstream from the landfill showed levels lower than the landfill area and at or below background levels..

Q. Are you going to dig this landfill up? You don't know how deep this landfill is. Are you going to keep digging until you decide to stop?

A. Only sediments with high level of arsenic will be excavated and placed on top of the landfill and sealed off with the cap. We will not dig the landfill out, it would be too expensive and impractical.

Q. If you did find contamination in Bailey Creek, would you still proceed with the same (proposed plan)? This plan, once it's in place, should stop (contamination from entering Bailey Creek). Will you just try to do it (cap the landfill) faster if there were a serious problem of contamination in Bailey Creek? Next week, if you found a problem in Bailey Creek, would the plan be changed or would that be all the more reason to get this cap on there?

A. It would depend on what was found. If the site was a health threat, the DOH can pressure DEC to do an Interim Remedial Measure or speed up the design and construction of the landfill. However, even if serious problem were encountered, it would not have changed the landfill closure.

Q. Are you still testing Bailey Creek?

A. The Department tested the creek last summer. We will also do a full round of testing prior to closure, which would make it 1993. There will also be monitoring of Bailey Creek as part of the long-term monitoring program.

Q. How often?

A. Proposal is twice a year.

Q. Part of the purpose of this process is to solicit, comment from the public. Not being an engineer or a chemist, I'm not qualified to comment on the technical aspects, what kind of input would you expect to get from the public that might change the way something like this is done?

A. We're giving you the opportunity to voice questions, concerns, comments that don't necessarily have to be directed at the proposed plan. Maybe you have concerns about things that you'd like to see done that we didn't look at. Also, maybe there are some subjects we've considered internally, but have not written down in the formal document for your review. Your questions make us think of things we may have overlooked.

Q. It seems like there's enough question in people's minds that it would pay to test Bailey Creek a little more frequently. And maybe in a few additional spots a little further down. As far down as the bridge. It seems to me that would be money well spent. How much does it cost to do a sample of water from Bailey Creek?

A. Depends on what you're looking for, but at this site we are looking for mostly inorganics, probably $200. There's also a different layer of analytical work that we need to do that backs up the numbers called Quality Control/Quality Assurance.. That can sometimes bump up the numbers to $400 or so.

Q. Still, we're talking about millions of dollars to fix this whole thing. It seems like a few extra tests at a few hundred dollars each would be reasoning to me, my peace of mind.

A. Right now, we don't think testing the entire length of Bailey Creek is warranted. If you reach a point where there's no contamination downstream, there's little likelihood that contamination could be below that point. But we could definitely consider doing some more analytical work on Bailey Creek.

Q. What time of year are you testing the wells and Bailey Creek? When the water table is high or low?

A. During the Remedial Investigation, we sampled wells at various times of the year.

Q. How far down Bailey Creek did you sample?

A. I believe it was below the Farnham residence. That was the last sampling point.

Q. It was my understanding that a cap was suppose to be good for 30 years.

A. That is correct.

Q. Is there a plan to manage the landfill after those 30 years are up? Will this stuff still be leaking out?

A. Administratively, my task is to look at this closure for 30 years. Intuitively, since the landfill contains hazardous and industrial wastes, I can see the Department never letting this landfill cap be disturbed and I can see the closure going well beyond 30 years.

Q. I'm Edward Allen. At what point will we be able to segregate our home and a few acres from this site. Is there a point down the road when we can get an answer to that?

A. There are three steps to the design: (1) Preliminary Design Report, (2) 50-Percent Design & Specification Documents, and (3) a final design. By that time, the fence line and structures will be pretty well delineated. The determination on the site boundaries may be 6-9 mos into the design phase. At the present schedule, sometime the end of this year.

Q. You said the land was 25 acres?

A. Approximately.

Q. In 1988 in one of your study reports, you said it was 35 acres. In October of 1991 it was 27 acres. Now it's 25 acres. Where do all these acres disappear to?

A. The 35 acres was contained in a very preliminary report. The RI then outlined an area of approximately 27 acres. Since that time, we've found out the center of the horseshoe doesn't contain wastes. As the investigations progressed, the estimates of the size of the landfill got a little better.

Q. I paid close attention to everything that was said during the February 3, 1992 meetings in the Corning Town Hall about the matter concerning the Allen Landfill. It seems to me that the answers to the questions about draining off its leachate were evasive. I also agree with the other people that brought it up during the meeting, that more and complete tests should be done <u>further down along</u> the Bailey Creek, if nothing else to reassure the several people that remained unconvinced about the effectiveness of the tests that have already taken place.

A. The Department will conduct additional sampling of Bailey Creek in the Summer of 1992 and extend the sampling further downstream from the original locations. The data will be presented to the public in the next fact sheet.