RECORD OF DECISION
COLESVILLE LANDFILL SITE
TOWN OF COLESVILLE
BROOME COUNTY, NEW YORK

SITE #704010
FILABLE-YES

PREPARED BY THE
U.S. ENVIRONMENTAL PROTECTION AGENCY
MARCH 1991

DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Colesville Landfill site
Town of Colesville, Broome County, New York

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Colesville Landfill site (the "Site"), located in the Town of Colesville, Broome County, New York, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document explains the factual and legal basis for selecting the remedy for the Site.

The State of New York concurs with the selected remedy. The information supporting this remedial action decision is contained in the administrative record for the Site. The administrative record index is attached.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present a current or potential threat to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

This operable unit is the final action for the Site. The selected remedy will provide containment through the installation of a cap over the landfill material and leachate collection, which will eliminate the potential for direct human or animal contact with the leachate seeps discharging to the North and South Streams. Contaminated groundwater underlying the Site will be restored to levels consistent with state and federal requirements by pumping at and downgradient from the landfill and by treating the extracted groundwater by using air stripping. In addition, the human health risks from potable use of contaminated groundwater will be controlled under the existing quarterly residential well monitoring program along with the temporary water supply and carbon filtration program for the affected residences until a new water supply is in operation. Also included in the selected remedy are groundwater monitoring, fencing, and deed restrictions. Five-year reviews will be conducted as required by the NCP due to the fact that waste will remain on-site. The purpose of the five-year review is to ensure that the remedy continues to provide adequate protection of human health and the environment.

The landfill will be regraded as necessary prior to installation of the cap to establish slopes which will encourage runoff and minimize erosion. The cap will contain the landfill material and minimize infiltration of precipitation into the landfill material. This will minimize the potential for future contamination of the groundwater.

The major components of the selected remedy include the following:

- Cutting the existing sides of the landfill to slopes of no greater than approximately 33%. The top surfaces of the landfills would be regraded to slopes of no less than 4% to provide for proper drainage.

- Construction of lined (filter fabric) leachate collection trenches.

- Installation of a multimedia cap over the landfill material. Water infiltrating through the vegetative and protective layers of the cap will be intercepted by the impermeable flexible membrane layer and conveyed away from the landfill material.

- Installation of a gravel gas venting layer, with a filter fabric layer placed over the gravel. The flexible membrane liner (FML) will be placed over the filter fabric, and another layer of filter fabric will be placed on top of the FML.

- Seeding and mulching of the top soil layer to prevent erosion and provide for rapid growth of vegetation.

- Pumping the contaminated groundwater beneath and downgradient of the landfill.

- Treatment of the extracted groundwater, using metals treatment and air stripping.

- Discharge of the treated water to surface water.

- Construction of a new water supply system for the present and future affected residences (with the continuation of existing quarterly residential well monitoring and temporary water supply and carbon filtration programs until the new water supply is in operation). It is contemplated that the new water supply system will utilize a new well or wells northwest of the affected area.

- Fencing to further protect the integrity of the caps by restricting access to the Site.

- Periodic inspection of the cap and maintenance as necessary

will provide for long-term effectiveness and permanence of the alternative.

- Imposition of property deed restrictions, if necessary. The deed restrictions will include measures to prevent the installation of drinking water wells at the Site and restrict activities which could affect the integrity of the cap.

- Initiation of a monitoring program upon completion of the closure activities. The monitoring program will provide data to evaluate the effectiveness of the remedial effort over time.

The groundwater treatment will continue until federal maximum contaminant levels (MCLs) and state groundwater and drinking water standards for the organics have been achieved in the groundwater. The goal of this remedial action is to restore groundwater to its beneficial use, which is, at this site, a drinking water source. Based on information obtained during the field investigations and on an analysis of all remedial alternatives, EPA and NYSDEC believe that the selected remedy involves using the best available and most appropriate technology to achieve this goal. It may become apparent, during the operation of the groundwater extraction system that, at a certain point, contaminant levels have ceased to decline and are remaining constant at levels higher than the remediation goal. In such a case, the system performance standards and/or the remedy will be reevaluated.

The selected remedy will include groundwater extraction and treatment for at least 4 years, during which the system's performance will be carefully monitored on a regular basis and adjusted as warranted by the performance data collected during operation.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The contaminated groundwater and leachate is being treated, addressing the statutory preference for treatment as a principal element of the remedy. However, the size of the landfill and the fact that there are no identified on-site "hot spots" that represent the major sources of contamination preclude a remedy in which the landfilled material could be excavated and treated effectively.

Because this remedy will result in hazardous substances remaining on-site, a review will be conducted no later than five years after completion of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Constantine Sidamon-Eristoff
Regional Administrator

3/29/91
Date

ROD FACT SHEET

SITE

Name:	Colesville Landfill
Location/State:	Town of Colesville, Broome County, New York
EPA Region:	II
HRS Score (date):	30.26 (June 86)
NPL Rank (date):	984 (February 91)

ROD

Date Signed:

Selected Remedy

Containments:	A multi-media cap complying with New York State Part 360 Solid Waste Regulations with leachate collection and treatment
Groundwater:	Pumping at landfill and downgradient, groundwater treatment, and new water supply for affected residents
Capital Cost:	$4,273,000
O & M:	$250,000/yr
Present Worth:	$5,135,000

LEAD

State Enforcement
Primary Contact (phone): Eduardo Gonzalez (212) 264-5714
Secondary Contact (phone): Sharon E. Kivowitz (212) 264-2211

WASTE

Type:	Groundwater - 1,1 dichloroethane, 1,1,1 trichloroethane, trichloroethene, trans-1,2-dichloroethene, and benzene. Sediments - low levels of benzene, chlorobenzene, 1,1-dichloroethane, 1,1-dichloroethene, and trichloroethene.
Medium:	Sediments and groundwater
Origin:	Pollution originated as a result of disposal of industrial wastes at the landfill. Drums and liquid wastes were dumped into trenches.

DECISION SUMMARY

COLESVILLE LANDFILL SITE
TOWN OF COLESVILLE
BROOME COUNTY, NEW YORK

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

NEW YORK, NEW YORK

MARCH 1991

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ATTACHMENTS

SITE NAME, LOCATION, AND DESCRIPTION

The Site, which is located in the Town of Colesville, Broome County, New York (see Figure 1), is characterized as very rural, and includes large tracts of undeveloped woodlands, as well as large-scale agricultural tracts and scattered residential parcels. Of the 113 acres on which the landfill is situated, the site occupies approximately 35 acres that have been used for waste disposal. The largest and nearest residential development is Doraville, just south of the Site.

Topography at the Site ranges from approximately 1,400 feet above mean sea level in the eastern portion of the study area, to about 970 feet above mean sea level in the west. The Susquehanna River lowland valley is at an elevation of approximately 940 feet.

Surface water in the area drains to the Susquehanna River. (see Figure 2). However, the terrace upon which the landfill has been developed is dissected by streams on the north, east, and south. Drainage in the vicinity of the Site is via two unnamed tributaries of the Susquehanna River . Tributary SR-120, the North Stream, is located north of the Site and flows westerly to the Susquehanna River. To the east and south is Tributary SR-119A, the South Stream, which flows to the south-southwest into a low-lying wet area. Both tributaries join the Susquehanna River approximately 0.5 miles above Doraville.

The Susquehanna River is classified as Class B surface water in the vicinity of the Site. Class B waters are suitable for both primary[1] and secondary[2] contact recreation, as well as for fish propagation. Tributaries SR-120 and SR-119A are Class C and D waters, respectively. These waters are suitable for secondary contact recreation and fish propagation only.

Existing flood insurance maps (Federal Emergency Management Agency, 1983) indicate that no portions of the Site are located in either the 100- or 500-year flood zone.

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[1] Primary Contact Recreation--recreational activities where the human body may come in direct contact with raw water to the point of complete body submergence (i.e., swimming, diving, water sports, and surfing).

[2] Secondary Contact Recreation--recreational activities where contact with of water is minimum and where ingestion of water is not probable (i.e., fishing and boating).

During the field investigation, three small wetland areas in the vicinity of the Site were encountered. These areas were all less than one acre in size and appear to be connected to surface drainage swales in the area.

Vegetation patterns at the Site are a mixture of herbaceous field, weed, and grass species. Both open field and forest habitats characterize the surrounding area. These habitats support a large variety of avian and mammalian species. No New York State Department Environmental Conservation (NYSDEC) Significant Habitat Areas are found on-site, although the Site is located within the range of several migratory endangered or threatened species. The predominant aquatic species found in the Susquehanna River include small mouth bass, rock bass, and white suckers.

Many of the residents of the Town of Colesville use private water supply wells to obtain domestic water supplies. These wells utilize groundwater from both shallow and deep aquifer systems. Other homes utilize groundwater obtained from springs.

The nearest homes to the landfill are located to the west and southwest along East Windsor Road. The home closest to the landfill is at distance of approximately 380 feet, and is separated from the landfill by a steep-sided ravine with a small steam flowing through it. Another home, which is not separated by a ravine or stream, is at a distance of 500 feet. Two other homes are at a distance of 640 feet from landfill.

The Town of Colesville has a population of 4,965 persons. The estimated population within a one-mile radius of the Site is 191 persons; 754 persons within two miles; and 1,921 persons within three miles.

SITE HISTORY

Waste disposal operations at the landfill commenced in 1969. The landfill was owned and operated by the Town of Colesville between 1969 and 1971. Broome County took ownership of the landfill in 1971, operating the landfill from 1971 to 1984. The landfill has been closed since 1984.

The trench method of sanitary landfilling was primarily utilized for waste disposal purposes. The area method was used to a limited extent. The Site was primarily used for the disposal of municipal solid waste, although drummed industrial wastes from various sources were also disposed of between 1973 to 1975. Operational records indicate that these drummed wastes consisted of aqueous dye waste and organic solvent waste. Known waste constituents included benzene, cyclohexane, acetone isopropyl alcohol, methanol, ethanol, n-hexane, toluene, xylene, methyl cellosolve, dimethyl ether, zinc, aluminum, iron, tin sulfate,

and chloride. In practice, drummed wastes were randomly codisposed with the municipal solid wastes and disposed of in segregated areas. These drums were either buried intact, or were punctured and crushed prior to burial.

Approximately 468,000 cubic yards of wastes was disposed within three trenches and the area landfill. Nearly 93 percent of the waste was placed within the trenches.

In 1983, samples collected from residential wells in the vicinity of the Site by the Broome County Health Department indicated that the Colesville Landfill was contaminating the groundwater beneath and in the immediate vicinity of the Site. The samples results prompted the Broome County Department of Public Works to provide temporary water supply and carbon filters with a quarterly residential well monitoring program for the affected residences, and to perform two investigative studies of the Colesville Landfill. These studies were performed by Wehran Engineering (Wehran) in 1983 and 1984.

Wehran's 1983 study indicated that the groundwater quality in the vicinity of the Colesville Landfill demonstrated a strong indication of contamination by landfill leachate. Volatile organic levels, measured as total volatile organics (TVOs), ranged from 48 to 2,800 parts per billion (ppb) within and around the landfill. Residential wells ranged from 32 ppb to 415 ppb, expressed as total volatile priority pollutants (TVPP).

Wehran's 1984 investigation confirmed the findings of the 1983 study with respect to the immediate landfill vicinity. Total volatile priority pollutant concentrations ranged from "not detected" in upgradient monitoring wells to 7,795 ppb immediately downgradient. Contamination was confined, primarily, to the upper portions of the glacial outwash aquifer that underlies the Site.

The Site was proposed for inclusion on the Superfund National Priorities List (NPL) in October 1984 and it was listed on the NPL in June 1986.

In 1988, Wehran completed a remedial investigation (RI) at the Site on behalf of the Broome County Department of Public Works, Binghamton, New York and GAF Corporation, Wayne, New Jersey, the Potentially Responsible Parties (PRPs), pursuant to an Order on Consent (Index No. T010687) with NYSDEC. In 1990, Wehran completed a confirmatory sampling program which confirmed the findings of the 1988 RI.

In December 1990, Wehran completed a feasibility study (FS) report which presented an analysis of the potential alternatives for the remediation of contamination observed at the Site.

ENFORCEMENT ACTIVITIES

On May 20, 1987, an Order on Consent (Index No. T010687) was signed by the Commissioner of the NYSDEC. The Order required the Broome County Department of Public Works and GAF Corporation, to conduct an RI/FS to determine the nature and extent of the contamination at the Site and to evaluate alternatives for site remediation. Once the remedial alternative is selected for the Site, the design and construction of such remedy will be implemented as provided for under NYSDEC's Order.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The RI/FS report and the Proposed Plan for the Site were released to the public for comment on January 5, 1991. These two documents were made available to the public in the administrative record and an information repository maintained at EPA Docket Room in Region II, New York, at the Town of Colesville Town Hall in Harpursville, New York, and at NYSDEC's offices in Albany, New York. A public comment period on these documents was held from January 7, 1991 through February 6, 1991. In addition, a public meeting was held at the Broome County Office building, Binghamton, New York on January 30, 1991. At this meeting, representatives from EPA and NYSDEC answered questions about problems at the Site and the remedial alternatives under consideration. Responses to the comments received during the public comment period are included in the Responsiveness Summary, which is appended to this ROD.

SCOPE AND ROLE OF RESPONSE ACTION

The purpose of this response is to reduce the risk to human health and the envrionment due to the release of volatile organic compounds (VOCs) from the Site to the underlying glacial outwash aquifer, to eliminate the leachate seeps and discharges, to ensure protection of human health and the environment from the migration of contaminants in the groundwater and direct contact with leachate seeps, to ensure protection of the groundwater, air, and surface water from the continued release of contaminants from the landfill, and to restore the groundwater to levels consistent with state and federal water quality standards.

This remedial action will utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. However, because treatment of the principal threats of the Site is not practicable, this remedial action does not satisfy the statutory preference for treatment as a principal element of the remedy. The size of the landfill and the fact that there are no identified on-site hot spots that represent the major sources of contamination preclude a remedy in which contaminants could be excavated and treated effectively.

This response applies a comprehensive approach (i.e., one operable unit) to remedial action at the Site. In other words, this project has not been segmented into incremental portions.

NYSDEC is the lead agency for this project; EPA is the support agency.

SUMMARY OF SITE CHARACTERISTICS

The Colesville Landfill was used for the disposal of municipal solid waste throughout its operational life. Between 1973 and 1975, industrial wastes were also disposed of at the facility. Table 1 lists the nature and amount of industrial wastes disposed of at the landfill.

It has been reported that wastes received in drums were randomly codisposed of with the municipal solid wastes and disposed in segregated areas. The drums were either buried intact, or punctured and crushed prior to burial. Facility records indicate that a narrow trench along the south-central landfill boundary was designated for drum disposal. Based upon the estimated total volume of the trenches, it was estimated that approximately 468,000 cubic yards of municipal solid wastes and industrial waste have been disposed of at the Site.

The key findings of RI and confirmatory sampling program are as follows:

- The Site is currently releasing low levels of VOCs.
- Over the last six to seven years, it has become apparent that the extent of groundwater contamination is limited in area and not increasing in severity.
- The current data suggest a slight advancement of a plume southwest of the landfill, with an overall decrease in VOC concentrations at the landfill border.
- VOCs in the part per billion (ppb) range have been detected in wells at three residences downgradient of the landfill. This contamination has been consistent over different sampling efforts, indicating that the contaminant profile has not changed since 1987.
- Historical and current data have failed to confirm contamination of the bedrock aquifer.
- The only bedrock well currently used within the path of the VOC plume is not affected.
- The available data suggest that VOCs currently being released from the landfill via the groundwater pathway are not expected

to have a measurable impact on the Susquehanna River.

- The only measurable surface water contaminated discharge points are in leachate seeps discharging to the North Stream, South Stream, and in sediments in the tributaries immediately adjacent to surficial outbreaks of landfill seeps.

- Groundwater recharge to the tributaries has not resulted in any measurable VOC levels in surface water flowing to the Susquehanna River.

- The areas affected by the seeps, as measured by VOC and metal concentrations, are limited to sediments proximate to the seeps.

- No significant releases of VOCs to the air pathway were suggested by the available data.

Soil Investigation

In order to determine the location and extent of waste landfilled within the trenches and investigate the potential extent of groundwater contamination, a multi-phase geophysical investigation was conducted in soils. The techniques utilized were a magneto-meter survey, which defines local variations in the soils' magnetic field due to buried ferromagnetic material (i.e., drums), the terrain conductivity, which measures the conductivity of subsurface materials and areas of buried waste, and earth resistivity sounding, which measures the resistivity of subsurface materials and the depth and thickness of buried ferromagnetic materials. Based on the results of the magnetometric survey and the terrain conductivity, a number of anomalies were detected which are interpreted as trenches. The results of the earth resistivity sounding indicated that the trenches are generally 30 to 35 feet deep. Furthermore, the off-landfill terrain conductivity survey did not detect any significant areas of high conductivity which might have been associated with groundwater contaminant plumes.

Groundwater Investigations

In December 1987 investigations, Wehran sampled 27 groundwater monitoring wells and 4 residential wells. Data from these sampling efforts are included in Tables 2 through 4. The landfill was found to be releasing low levels of VOCs into the groundwater. In general, five VOCs, 1,1-dichloroethane, 1,1,1-trichloroethane, trichloroethene, trans-1,2-dichloroethene and benzene, were the major contaminants in the contaminant plume. Analyses of data provided from the monitoring wells and Residential Well No. 1 indicate that the center line of the VOC plume extends from the landfill through well W-5 and Residential Well No. 1. No contamination was found in the bedrock aquifer. The

southern extent of the VOC plume reached beyond wells W-18 and W-16S, with low levels of 1,1-dichloroethane (24 and 67 microgram per liter (ug/1)), and 1,1,1-trichloroethane (53 and 6 (ug/1)) detected in these wells southwest of the landfill. The extent of the benzene plume was somewhat more limited compared to the other VOCs. Detectable levels of benzene were found in a monitoring well in the center of the landfill at 55 ug/1, and in wells along the west and south perimeters of the landfill ranging from 7 to 85 ug/1. It was not detected along the northern perimeter, in the residential wells, or in monitoring wells to the west of the Site. Low levels of benzene were also detected in monitoring wells located to the south of the landfill.

Groundwater monitoring data obtained during the 1989 confirmatory sampling program defined a VOC plume very similar to the plume defined by in the 1987 sampling efforts. The landfill is still releasing low levels (ppb) of hazardous substances to the groundwater. With the exception of vinyl chloride and benzene, the VOCs identified in the confirmatory sampling program were present at comparable levels and at the same monitoring well locations as were observed during the 1987 sampling effort (see Tables 2 through 4).

Analyses of on the 1987 groundwater samples showed elevated levels of dissolved metals, in particular, arsenic, cadmium, and silver in monitoring wells affected by the VOC plume. Levels of lead and zinc throughout the Site in 1987 were variable and did not fit a particular contamination pattern. Analyses of groundwater samples taken during the 1989 confirmatory sampling effort did not show the presence of lead, cadmium, and silver on the Site. Levels of dissolved zinc were once again variable and did not fit a particular pattern of contamination. Dissolved arsenic levels in the VOC plume range from 13 ug/1 to 24 ug/1, but were comparable to the 13 ug/1 arsenic detected in the upgradient well (MW-25). Elevated levels of dissolved iron were noted at in monitoring well W-24 in the center of the landfill (36,400 ug/1) and within the VOC plume along the southwest perimeter (120,000 ug/1 in monitoring well W-6, and 3,270 ug/1 in monitoring well W-7).

Surface Water and Sediment Investigations

The surface water and sediment samples collected in 1987 during the RI were obtained from five locations in the North Stream, four locations in the South Stream and three locations along the east bank of the Susquehanna River. No VOCs were detected in any of these samples and no widespread contamination of the surface water in the vicinity of the Site was noted. However, leachate seeps were noted as potential sources of localized water quality impacts on both the North Stream and South Stream. Therefore, the surface water samples taken during the 1989 confirmatory sampling program were obtained directly from the seeps, and then

10 feet and 100 feet downstream of the seep locations (see Figure 3).

In the North Stream, several VOCs were detected in water samples taken in 1989 from the seep at SW-8 and downstream from this area (see Tables 5 through 7). Levels of 121 ug/1 of 1,1-dichloroethane were detected at the seep and levels of 4 ug/1 and 3 ug/1 of 1,1-dichloroethane were detected 10 feet and 100 feet downstream, respectively. Low levels of 1,1,1-trichloroethane, chloroethane, and chlorobenzene were also detected at the seep. No VOCs were detected at seep locations on the South Stream. Samples of leachate seeps along the hillside, south of the landfill showed a very low level of 1,1-dichloroethane (4 ug/1) at SW-18.

Detectable levels of total iron, arsenic, and zinc were present in surface water samples from both streams (see Table 6). Cadmium, lead, and silver were not detected. With the exception of iron, total metal concentrations in the surface waters were not significantly elevated at or downstream form the seeps when compared to samples taken upstream of the seeps. Elevated levels of total iron were noted at and downstream from the seep at SW-8. Levels of total iron at SW-5, SW-6 and SW-7 (upstream) were 274 ug/1, 122 ug/1, and 101 ug/1, respectively, as compared with levels of 7,200 ug/1 at the seep and 1,500 ug/1 and 1,200 ug/1, 10 feet and 100 feet downstream of the seep, respectively, as was the case with surface water samples taken in 1987, elevated total iron levels were also noted at SW-2 in the area of a pond north of the landfill. Acidification of the pond water by nearby bog vegetation and the resulting mineral leaching is the likely source of the elevated iron content of the waters at SW-2. Total arsenic was detected only at the seep in the North Stream (24 ug/1) and at the seep area south of the landfill at SW-18 (34 ug/1). In the South Stream, levels of total iron were also elevated at the SW-12 seep (22,600 ug/1) and 10 feet downstream from the seep (12,100 ug/1) as compared with upstream levels of 2,630 ug/1. The highest level of iron was noted in leachate seeps emanating from the hillside south of the landfill (266,00 ug/1).

Only low levels of two VOCs (1,1-dichloroethane and chloroebenzene) were detected in sediment samples obtained from any of the seep areas (see Table 7). A sample taken at SD-8 on the North Stream contained 11 milligrams/kilogram (mg/kg) of 1,1-dichloroethane and 0.9 milligrams per kilogram (mg/kg) of chlorobenzene (see Figure 4). No VOCs were detected downstream from this point. No VOCs were detected in the sediments of the South Stream. Samples from seep areas SD-16 and SD-17, located, south of the landfill, also contained very low levels of 1,1-dichloroethane. Total cadmium, lead, and silver were not detected in any of the sediment samples. Total iron, arsenic, and zinc were detected in sediment samples from both streams and the hillside south of the landfill (see Table 8). No pattern of elevated

metals was observed at or downstream of the seeps, and no widespread contamination of stream sediments was observed. In the North Stream, levels of total zinc ranged from 128 to 1,510 mg/kg, and were variable along the length of the stream. Levels of total arsenic were also variable ranging from 8.3 to 79.7 mg/kg. Comparable levels of total iron were observed above and below the seep on the South Stream (see Table 8). By comparison with levels found in the stream sediments, elevated levels of total arsenic (276 mg/kg) and iron (242,000 mg/kg) were detected at the seep at SD-18 south of the landfill.

SUMMARY OF SITE RISKS

Wehran conducted a Risk Assessment (part of the RI) of the "no-action" alternative to evaluate the potential risks to human health and the environment associated with the Site in its current state. The risk assessment focused on the groundwater contaminants which are likely to pose the most significant risks to human health and the environment (indicator chemicals). The indicator chemicals included 1,1-dichloroethene, 1,1,1-trichloroethane, trichloroethene, tetrachloroethane, benzene, chlorobenzene, 1,1-dichloroethane, 1, 2-dichloroethane, and vinyl chloride.

The risk assessment evaluates the potential impacts on human health and the environment at the Site assuming that the contamination at the site is not remediated. This information is used to make a determination as to whether remediation of the Site may be required.

The RI report presented a detailed site specific risk assessment which addressed site conditions and exposures. The risk assessment qualitatively and quantitatively evaluated the hazards to human health and the environment at the landfill. The qualitative analysis characterized the potential human exposure pathways while the quantitative analysis determined the risk of the complete pathways.

The human exposure pathways considered were ingestion and inhalation of contaminated well water, and dermal contact with contaminated surface water and sediments near the leachate seeps. The potential exposure pathways and the population potentially affected are presented in Table 9.

Cancer potency factors (CPFs) have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. CPFs, which are expressed in units of $(mg/kg\text{-}day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate

of the risks calculated from the CPF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Cancer potency factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied.

Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting noncarcinogenic effects. RfDs, which are expressed in units of mg/kg-day, are estimates of lifetime daily exposure levels for humans, including sensitive individuals. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). These uncertainty factors help ensure that the RfDs will not underestimate the potential for adverse noncarcinogenic effects to occur.

EPA considers risks in the range of 10^{-4} to 10^{-6} to be acceptable. This risk range can be interpreted to mean than an individual may have a one in ten thousand to a one in a million increased chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at the Site.

For groundwater, a comparison was made between observed well contamination levels (Confirmatory Sampling Program, 1989) and existing health-based standards for the indicator chemicals identified. The standards selected for this evaluation were the MCLs for volatile organics established under the Safe Drinking Water Act, National Primary Drinking Water Standards (40 CFR 141), and the New York State Department of Health (NYSDOH) Drinking Water Standards for Volatile Organic Compound (January 1989). Observed groundwater contaminant levels exceeded these standards and guidance values for trichloroethene, 1, 1-dichloroethene, 1, 1, 1-trichloroethane, and 1, 2-dichloroethane. The maximum concentrations of VOCs detected in either groundwater monitoring or residential wells and surface water are presented in Table 10. Table 11 compares the MCL for each indicator chemical with the maximum observed contaminant levels in the groundwater at the baseline exposure points (the residential wells).

Based on this comparison of exposure point concentrations to federal and state health-based standards, the existing conditions for the groundwater in the shallow aquifer at the Site are not adequately protective of human health.

The total baseline carcinogenic risk associated with exposure to

potable well water at the Site is 2.85×10^{-4}. This value is at the high end of the range considered acceptable by EPA for carcinogenic risk (10^{-4} to 10^{-6}). Combined pathway specific intakes (ingestion and inhalation) were calculated using the Hazard Index (HI) approach. The HI for the noncarcinogenic compounds present in the groundwater at the Site is 3.85. An exceedance of 1.0 in the HI indicates that conditions existing at the Site are not adequately protective of human health.

Table 12 summarizes the carcinogenic risks associated with the intake of contaminated groundwater containing VOCs at the maximum concentrations observed in Residential Well No. 1 under baseline conditions. This table also illustrates the risks associated with exposure to the noncarcinogenic compounds present.

No elevated human health risk is anticipated from the consumption of aquatic or terrestrial game species due to the low bioconcentration factors associated with the indicator chemicals. No significant adverse toxicity impact to terrestrial or aquatic wildlife is anticipated based on the levels of the indicator parameters measured at the Site.

Exposure to the chemical substances identified at the Site may result from the consumption of contaminated well water and the inhalation of indoor air contaminated by the VOCs present in the water.

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial threat to public health, welfare, or the environment.

CLEANUP LEVELS FOR CONTAMINATED MEDIA

Cleanup levels based on public health and environmental concerns and on a review of Applicable or Relevant and Appropriate Requirements (ARARs) were developed for the Site. ARARs were used to determine the appropriate extent of site remediation, to scope and formulate remedial response actions, and to govern the implementation and operation of the selected action. CERCLA requires that primary consideration be given to remedial response actions that attain or exceed ARARs. The purpose of this requirement is to make CERCLA response actions consistent with other pertinent federal and state environmental requirements.

A requirement under CERCLA may be either "applicable" or "relevant and appropriate" to a site-specific remedial action, but not both. Currently, the only enforceable regulatory standards promulgated under the Safe Drinking Water Act are MCLs for the protection of human health. For each indicator chemical selected at the Site an MCL has been specified to a level that is protective to human health. Since MCLs exist for those indicator

chemicals ,therefore, regulatory guidelines were not used for comparative purposes to infer health risks and environmental impacts. However, Relevant regulatory guidelines as Ambient Water Quality Criteria, Maximum Contaminant Level Goals (MCLGs), and EPA Drinking Water Health Advisories were considered during the development of cleanup levels. The ARARs identified for the contaminated media at the Site are summarized below.

Soil

Since the landfill soils contain Resource Conservation and Recovery Act (RCRA) listed hazardous wastes, regulations specified in 40 CFR Part 264 Subpart F and G would be considered relevant for the installation of the multi-media cap. However, the implementation of the New York Code of Rules and Regulations (NYCRR) Part 360 final cover (cap) in lieu of a "RCRA Cap" will meet or exceed the performance requirements of Part 264 Subparts F and G at this Site. Based on the size of the landfill and the fact that there are not identified on-site "hot spots" that represent the major sources of contamination preclude any remedial response actions in which the landfilled material could be excavated and treated effectively. Therefore, the remedial action objective is to eliminate any direct contact with soil and to reduce or eliminate the infiltration of precipitation through the Site

Groundwater

The groundwater at the Site is classified by NYSDEC as class "GA", which indicates that the water is suitable as a drinking water supply. The RI has determined that contaminants from the Site have contaminated the groundwater. The remedial response objectives, therefore, include the following:

- Protect human health and the environment from current and potential future migration of contaminants in groundwater; and

- Restore on-site groundwater to levels consistent with federal and state groundwater standards.

The federal and New York State ARARs associated with quality of groundwater suitable for drinking at the Site are listed in Table 13. A comparison of the concentrations of the contaminants of concern in the groundwater to these ARARs reveals that most volatile organic compounds exceed the regulatory concentrations. As a result, the groundwater cleanup levels should meet the most stringent of the federal MCLs or the New York State Department of Health (NYSDOH) MCLs listed in Table 13. For those compounds having only non-carcinogenic effects, cleanup levels have been derived so that the total non-carcinogenic risk (HI) does not exceed unity (i.e., a value of 0.9 was used as the target HI).

The sources of each of the various cleanup levels are provided in footnotes to Tables 13.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Sediments

The sediments in the streams at the leachate seeps contain low levels (ppb) of VOCs. The contaminants of concern found in the sediments at the leachate seeps are benzene, chlorobenzene, 1,1-dichloroethane, 1,1-dichloroethene, and trichloroethene. Direct contact with the soil and sediments near the leachate seeps on the Site is a potential route of exposure. No chemical-specific ARARs for sediment are available at this time. The remedial action objective associated with the sediments is to eliminate the leachate seeps from the Site and any associated leachate discharges to the North and South Stream to prevent further contamination of sediments.

Since the health risk associated with direct contact of existing sediments is within the acceptable range, remediation of the existing sediments is not necessary.

DESCRIPTION OF ALTERNATIVES

The FS report evaluates, in detail, nine remedial alternatives for addressing the contamination associated with the Site.

These alternatives are:

Alternative 1: No Action with Monitoring

Capital Cost: $0
Operation and Maintenance (O & M) Cost: $14,000/yr
Present Worth Cost: $128,000
Time to implement: 0 yrs

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison of other alternatives. Under this alternative, no remedial action to control the source of contamination would take place. However, long-term monitoring of the Site would be necessary.

This alternative would involve a continuation of the present groundwater monitoring and water supply program provided by Broome County.

Because this alternative would result in contaminants remaining

on-site, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 3a: Limited Action, Existing Water Supply, and Use Restrictions

Capital Cost: $0
O & M Cost: $71,000/yr
Present Worth Cost: $672,000
Time to Implement: 6 months

This alternative would involve a continuation of the present groundwater monitoring and water supply program provided by Broome County. Maintenance inspections would be upgraded to ensure that the carbon/UV filters that are currently provided at the residences are properly operated for all household needs. In addition, a sampling program will be implemented utilizing the existing monitoring wells which were installed as part of remedial investigations and sampled in the confirmatory sampling program. If the County is able to purchase the affected properties, the deeds for these properties would be restricted with respect to future use of groundwater and the property.

Long-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 3b: Limited Action and New Water Supply

Capital Cost: $150,000
O & M Cost: $53,000/yr
Present Worth Cost: $648,000
Time to Implement: 1 yr (includes design)

This alternative would provide new water supply wells upgradient of the landfill, and a distribution system to the residences within the affected area would also be installed.

Long-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 4b1: Landfill Cap, Downgradient Pumping, Groundwater Treatment, and Existing Water Supply

Capital Cost: $4,163,000
O & M Cost: $268,000/yr
Present Worth Cost: $5,595,000
Time to Implement: 1.5 yrs (includes design)

This alternative would involve the installation of a multi-media cap that combines a number of layers of different materials, such as a synthetic membrane or a compacted clay layer, sand drainage layer, and topsoil/vegetation. The cap would be designed to be in compliance with New York State Part 360 Solid Waste Regulations. Groundwater would be collected downgradient using pumping wells, and treated using air stripping. Treated effluent would be discharged to North Stream or the Susquehanna River. Potable water would be supplied to residents via the current program, as described under Alternative 3a.

Long-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 4b2: Landfill Cap, Downgradient Pumping, Groundwater Treatment, and New Water Supply

Capital Cost: $4,313,000
O & M Cost: $250,000/yr
Present Worth Cost: $5,646,000
Time to Implement: 1.5 yrs (includes design)

This alternative would involve the placement of a multi-media cap complying with New York State Part 360 Solid Waste Regulations, the pumping of groundwater downgradient of the landfill using pumping wells, and the treatment of the groundwater. Treated effluent would be discharged to North Stream or the Susquehanna River. A new water supply would be provided as described in Alternative 3b.

Long-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial action may be implemented to remove or treat the wastes.

Alternative 4c1: Landfill Cap, Pumping at Landfill and Downgradient, Groundwater Treatment, and Existing Water Supply

Capital Cost: $4,193,000
O & M Cost: $268,000/yr
Present Worth Cost: $5,040,000
Time to Implement: 1.5 yrs (includes design)

This alternative would involve the placement of a multi-media cap complying with New York State Part 360 Solid Waste Regulations, the pumping of groundwater downgradient of and within the landfill using pumping wells, and treatment of groundwater. The existing water supply program, upgraded as described in Alternative 3a, would be continued.

Long-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial action may be implemented to remove or treat the wastes.

Alternative 4c2: Landfill Cap, Pumping at Landfill and Downgradient, Groundwater Treatment, and New Water Supply

Capital Cost: $4,273,000
O & M Cost: $250,000/yr
Present Worth Cost: $5,135,000
Time to Implement: 1.5 yrs (includes design)

This alternative would involve the placement of a multi-media cap complying with New York State Part 360 Solid Waste Regulations, and the pumping and treatment of groundwater at the landfill and downgradient. A new water supply and distribution system would be constructed as described in Alternative 3b.

Long-term monitoring, fencing and deed restrictions would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial action may be implemented to remove or treat the wastes.

Alternative 4d1: Landfill Cap, Downgradient Cutoff, and New Water Supply

Capital Cost: $8,811,000
O & M Cost: $230,000/yr
Present Worth Cost: $10,977,000
Time to Implement: 1.5 yrs (includes design)

This alternative would involve the placement of a partial groundwater slurry cutoff wall downgradient of the landfill and pumping and treatment of groundwater within the containment wall. A multi-media cap complying with New York State Part 360 Solid Waste Regulations would be constructed to cover the entire landfill and the limits of the slurry wall downgradient of the landfill. Attainment of groundwater standards outside the cutoff wall would occur naturally over the long-term. A new water supply would be provided as described in Alternative 3b.

Long-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 4d2: Landfill Cap, Downgradient Cutoff, and Existing Water Supply

Capital Cost: $8,701,000
O & M Cost: $268,000/yr
Present Worth Cost: $11,230,000
Time to Implement: 1.5 yrs (includes design)

This alternative would involve the placement of a partial groundwater cutoff wall downgradient of the landfill, as described in Alternative 4d1, and pumping and treatment of groundwater within and outside of the cutoff wall. A multi-media cap complying with New York State Part 360 Solid Waste Regulations would be constructed to the limits of the slurry wall downgradient of the landfill and to the limit of the landfill on the upgradient side. The existing water supply program would be continued as described in Alternative 3a.

Long-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely overall protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility or volume (including the statutory preference for treatment), short-term effectiveness, implementability, cost, state acceptance, and community acceptance.

A comparative analysis of these alternatives based upon the evaluation criteria note above, are as follows:

Overall Protectiveness of Human Health and Environment

The no-action alternative would not be protective of human health and the environment. Alternatives involving the utilization of the existing water supply system (Alternatives 3a, 4b1, 4c1, and 4d2) are protective of the human health, since each of these alternatives call for the provision of carbon filters to the present and future affected residences.

Alternative 3a would not be protective of the environment since no provision is provided for source containment, treatment, or leachate seepage control. Alternatives 4b1, 4b2, 4c1, 4c2, 4d1, and 4d2, which provide for source containment, groundwater treatment, and leachate seepage control, are equally protective of the environment.

Under Alternatives 4c1 and 4c2, the carcinogenic risk associated with exposure to VOCs in the groundwater from the Site would be expected to reach an acceptable range after the first year of pumping. Further decreases in the carcinogenic risk to 10^{-6} would be expected during the subsequent 3 years of pumping. The HI is anticipated to decline from a baseline of 3.85 to 0.27 after 1 year of pumping.

Compliance with ARARs

The no-action alternative would not ensure compliance with chemical-specific ARARs within a reasonable or predictable time frame. Alternative 3a, which addresses actual current groundwater use, would immediately comply with health-based ARARs at the point of use, but would provide no action to ensure compliance at the groundwater source. The pumping and containment alternatives (Alternatives 4b1, 4b2, 4c1, and 4c2) also would ensure immediate point-of-use compliance with health-based ARARs. However, these alternatives differ in their estimated time to compliance at the groundwater source. Nevertheless, each containment alternative has the potential to meet chemical-specific ARARs at the groundwater source (i.e., outside the landfill boundary). The containment alternatives involving a cutoff wall (Alternatives 4d1 and 4d2) would ensure immediate point-of-use compliance with health-based ARARs, but will not result in compliance at the groundwater source within a reasonable time frame.

All containment alternatives can be designed to meet action-specific ARARs with conventional technology.

The estimated time to meet ARARs after implementation of each alternative is presented in Table 14.

Long-Term Effectiveness and Permanence

The no-action alternative would be neither effective nor permanent in the reduction of the magnitude of risk associated with the Site.

Alternative 3a would be effective in the reduction of risk, but the permanence of this alternative would depend on the strict enforcement and frequent monitoring and maintenance of the carbon filters. By comparison, Alternative 3b would be effective in the long-term reduction of risk to residences provided with the new water supply system.

Alternatives 4b1, 4c1 and 4d2 provide for controlled source containment, and groundwater treatment, which would reduce risk, but long-term maintenance and monitoring would be required. The limited action component of these alternatives would reduce the adequacy and reliability of these options when compared to the remaining alternatives.

Alternatives 4b2, 4c2, and 4d1 provide for the reduction of risk by virtue of the provision for a new water supply, source containment and groundwater treatment. These alternatives are similar in their ability to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. The proposed controls would require long-term, O&M, but system adequacy and reliability are relatively greater as the local water supply will be unaffected by the remedial action.

In addition, Alternatives 4b1, 4b2, 4c1, and 4c2 should provide long-term effective attainment of ARARs at the groundwater source after several years.

Reduction of Toxicity, Mobility, or Volume through Treatment

The no-action alternative involves no treatment, and consequently, would not contribute to the reduction of contaminant toxicity, mobility, or volume at the Site. This assessment is also applicable to Alternatives 3a and 3b.

All of the containment alternatives (Alternatives 4b1, 4b2, 4c1, 4c2, 4d1, and 4d2) would reduce the toxicity, mobility, or volume through containment and the treatment of the groundwater using air stripping. For these alternatives, emissions from the air stripper would be at allowable limits for discharge to the atmosphere or destroyed through the use of a catalytic destruction unit.

Short-Term Effectiveness

In the short-term, the no-action alternative would not be effec-

tive in protecting human health and the environment. Improvement of groundwater quality would only occur through natural recovery, which is predicted to require at least 20 years.

Alternative 3a, Limited Action, would be effective in the short-term only for the existing residents. No significant community or worker exposure during the remediation would be anticipated. No improvement in environmental quality would be envisioned. The same assessment also applies to Alternative 3b.

All of the containment alternatives (Alternatives 4b1, 4b2, 4c1, 4c2, 4d1 and 4d2) would provide immediate point-of-use compliance with health-based ARAR limits. Alternatives 4c1 and 4c2 are predicted to provide aquifer cleanup to ARAR limits in four years. Aquifer cleanup under Alternatives 4d1 and 4d2 would take much longer.

Protection against community and worker exposure will be required with all of the containment options. For Alternatives 4b2, 4c2, and 4d1 to protect the residents, interim measures, such as maintenance of the existing filters, would be required until the new water supply system is installed and is operational. Additional worker protection measures, pursuant to Occupational Safely and Health Administrative requirements under Alternatives 4d1 and 4d2, would be required.

Environmental impacts during the construction of the groundwater pumping and treatment components of the containment options could be mitigated readily. Relatively greater potential environmental impacts are envisioned with Alternatives 4d1 and 4d2, and these impacts would require more involved mitigation measures during the installation of the cutoff wall.

Implementability

All of the alternatives are implementable.

Alternative 3a presents added administrative requirements for successful implementation due to the need to purchase additional affected residences and to institute and enforce land and groundwater use controls. This same factor must be considered with each containment option that includes limited action as a sub-alternative component.

The containment options calling for a downgradient cutoff wall would involve some difficult construction on steep slopes, but Alternatives 4d1 and 4d2 can be constructed. In contrast, the pumping components of all the containment options can be implements quickly and efficiently. No problems are envisioned with any of the alternatives with respect to the availability of services and materials.

The estimated time to implement each alternative is presented in Table 14.

Cost

The no-action alternative has the lowest estimated present worth cost of $128,000. Alternatives 3a and 3b have slightly greater estimated present value cost of $672,000 and $646,000, respectively.

Alternatives 4b1, 4b2, 4c1, and 4c2 have present value costs ranging from $5,040,000 to $5,646,000.

Alternatives 4d1 and 4d2, which call for a partial downgradient cutoff wall, are the most expensive at $10,977,000 and $11,230,000, respectively.

The capital, annual O&M, and present value costs for each alternatives are presented in Table 14.

State Acceptance

NYSDEC concurs with the selected alternative.

Community Acceptance

EPA and NYSDEC believe that the selected remedy has the support of the affected community. The community comments and concerns received during the public comment period were identified and addressed in the responsiveness summary which is attached as Appendix 5 of this document. None of the comments from the public raised substantive objections or concerns about the selected remedy. Therefore, EPA believes that the selected remedy has the support of the affected community.

THE SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the detailed analysis of the alternatives, and public comments, both EPA and NYSDEC have determined that Alternative 4c2, Landfill Cap, with Pumping at Landfill and Downgradient, Groundwater Treatment, and New Water Supply, is the most appropriate remedy for the Site. The selected remedy will provide containment through the installation of a cap over the landfill material and leachate collection, which will eliminate the potential for direct human or animal contact with the leachate seeps discharges to the North and South Streams. Contaminated groundwater underlying the Site will be restored to levels consistent with state and federal requirements by pumping at and downgradient from the landfill and by treating the extracted groundwater by using air stripping. In addition, the human health risks from potable use of contaminated groundwater will be controlled under the existing

quarterly residential well monitoring program along with the temporary water supply and carbon filtration program for the affected residences until a new water supply is constructed. Also included in the selected remedy is groundwater monitoring, fencing, and deed restrictions. Five-year reviews will be conducted as required by the NCP due to the fact that waste will remain on-site. The purpose of the five-year review is to ensure that the remedy continues to provide adequate protection of human health and the environment.

The landfill will be regraded as necessary prior to installation of the cap to establish slopes which will encourage runoff and minimize erosion. The cap will contain the landfill material and minimize infiltration of precipitation into the landfill material. This will minimize the potential for future contamination of the groundwater.

The major components of the selected remedy include the following:

- Cutting the existing sides of the landfill to slopes of no greater than approximately 33%. The top surfaces of the landfills would be regraded to slopes of no less than 4% to provide for proper drainage.

- Construction of lined (filter fabric) leachate collection trenches.

- Installation of a multimedia cap over the landfill material. Water infiltrating through the vegetative and protective layers of the cap will be intercepted by the impermeable flexible membrane layer and conveyed away from the landfill material.

- Installation of a gravel gas venting layer, with a filter fabric layer placed over the gravel. The FML will be placed over the filter fabric, and another layer of filter fabric will be placed on top of the FML.

- Seeding and mulching of the top soil layer to prevent erosion and provide for rapid growth of vegetation.

- Pumping the contaminated groundwater beneath and downgradient of the landfill.

- Treatment of the extracted groundwater, using metals treat ment and air stripping.

- Discharge of the treated water to surface water.

- Construction of a new water supply system for the present and future affected residences (with the continuation of

existing quarterly residential well monitoring and temporary water supply and carbon filtration programs until the new water supply is in operation). It is contemplated that the new water supply system will utilize a new well or wells northwest of the affected area.

- Fencing to further protect the integrity of the caps by restricting access to the Site.

- Periodic inspection of the cap and maintenance as necessary will provide for long-term effectiveness and permanence of the alternative.

- Imposition of property deed restrictions, if necessary. The deed restrictions will include measures to prevent the installation of drinking water wells at the Site and restrict activities which could affect the integrity of the cap.

- Initiation of a monitoring program upon completion of the closure activities. The monitoring program will provide data to evaluate the effectiveness of the remedial effort over time.

The multi-media cap will be consistent with applicable regulations that require that when a FML is used in place of clay, the FML may have a permeability no greater than 1×10^{-12} cm/sec. The design requirements contained in the 6 NYCRR Part 360 standards would be incorporated into the cap design.

The cap considered above would also attain the performance requirements for caps at hazardous waste landfills as specified in 40 CFR Part 264.310. These requirements, promulgated under the RCRA, specify that the cap should:

1. Provide long-term minimization of migration of liquids through the closed landfill;

2. Function with minimum maintenance;

3. Promote drainage and minimize erosion or abrasion of the cover;

4. Accommodate settling and subsidence so that the cap's integrity is maintained; and

5. Have a permeability less than or equal to the permeability of any bottom liner present or natural subsoils present.

The first RCRA performance requirement would be attained by establishing proper slopes for drainage of precipitation, vege-

tated topsoil to promote evapotranspiration, as well as the installation of a FML with a permeability of 1 x 10^{-12} cm/sec or less.

A minimum amount of maintenance would be required for the cap. Maintenance activities would primarily consist of periodic mowing. Proper slopes and the vegetated topsoil would be established to promote drainage and minimize erosion of the cover.

It is expected that settling and subsidence has already occurred at the Site due to its age and would not occur in the future. However, an FML is considered to typically accommodate settling satisfactorily.

It is assumed that the effluent from the groundwater treatment system will be discharged by gravity to the North Stream in the vicinity of Residential Well No. 1, and that disinfection of this effluent will not be required. Should disinfection be required, an ultra-violet disinfection system would be included. In the final design, sufficient area will be allocated at the location of the groundwater treatment system for the inclusion of this disinfection system in accordance with the 6 NYCRR Parts 700-705.

The groundwater treatment will continue until federal MCLs and state groundwater and drinking water standards for the organics have been achieved in the groundwater. The goal of this remedial action is to restore groundwater to its beneficial use, which is, at this site, a drinking water source. Based on information obtained during the field investigation and on an analysis of all remedial alternatives, EPA and NYSDEC believe that the selected remedy involves using the best available and most appropriate technology to achieve this goal. It may become apparent, during the operation of the groundwater extraction system that, at a certain point, contaminant levels have ceased to decline and are remaining constant at levels higher than the remediation goal. In such a case, the system performance standards and/or the remedy will be reevaluated.

The selected remedy will include groundwater extraction and treatment for at least 4 years, during which the system's performance will be carefully monitored on a regular basis and adjusted as warranted by the performance data collected during operation. Air monitoring will be performed during construction at the Site. Air emissions from the treatment units during groundwater remediation will meet the air emission ARARs. Environmental monitoring will be required during the life of the treatment process. In addition, monitoring of the groundwater at the Site will be conducted for a period of thirty years after completion of the remedial construction, to ensure that the goals of the remedial action have been met.

The new water supply system will be designed to serve the affected residences with the continuation of existing quarterly residential well monitoring and temporary water supply and carbon filtration programs until the new water supply is in operation. It is contemplated that the new water supply system will utilize a new well or wells northwest of the affected area.

The selected remedy will be designed to avoid significant impacts to the North and South Streams. The discharge to the North Stream should be designed to minimize impacts associated with scouring. If the leachate seeps have not significantly subsided or improved in quality within 1 year after remedial construction is completed, collection and treatment of the seeps will be reevaluated.

The groundwater cleanup levels at the Site are based primarily on the classification of the groundwater as a drinking water source. Therefore, the MCLs for volatile organics established under the Safe Drinking Water Act, National Primary Drinking Water Standards (40 CFR 141), and the New York State Department of Health (NYSDOH) Drinking Water Standards for VOCs are relevant and appropriate.

A wetlands delineation (utilizing the "three parameter method"), and a Stage 1A cultural resources assessment will be undertaken during the remedial design phase in accordance with Executive Order 11990. A wetland assessment and restoration plan will be required for any wetlands impacted or disturbed by remedial activity.

The capital, annual O&M, and present value costs for the selected remedy are presented in Table 14.

Remediation Levels

Remediation levels are derived for concentrations of contaminants for each exposure route that is believed to provide adequate protection of human health and the environment based on available site information (55 FR 8712, March 8, 1990).

The media of concern identified for the Site are groundwater from the glacial outwash aquifer and leachate seeps in the North Stream and on the south side of the landfill.

The purpose of the response action for the Site are as follows:

- Control the release of VOCs from the Site to the glacial outwash aquifer that underlies the project area;
- Properly close the landfill and eliminate the leachate seeps, and any associated leachate discharges to the

North and South Streams;

- Eliminate the potential for direct human or animal contact with any active leachate seeps;

- Continue the existing quarterly residential well monitoring program along with the temporary water supply and carbon filtration program for the affect residences until a new water supply is constructed; and

- Restore the groundwater underlying the Site to levels consistent with state and federal ARARs.

STATUTORY DETERMINATIONS

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that achieve protection of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when completed, the selected remedial actions must comply with applicable or relevant and appropriate environmental standards established under federal and state environmental laws unless a statutory waiver is justified. The selected remedy also must be cost-effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal element. The following sections discuss how the selected remedy meets these statutory requirements.

Protection of Human Health and the Environment

Since a new water supply is to be provided under the selected remedy, human health will be protected. Control of the leachate seeps by the capping the landfill will also prevent human contact with contaminated seeps and sediment, and will mitigate any environmental effects.

The selected remedy will protect human health and the environment through the removal and treatment of the organic contaminants in groundwater, using air stripping and metals removal. Risk reduction will be provided by the selected remedy. The carcinogenic risk associated with exposure to VOCs in the groundwater from the Site would be expected to reach an acceptable range after the first year of pumping. Further decreases in the carcinogenic risk to 10^{-6} would be expected during the subsequent 3 years of pumping. The HI is anticipated to decline from a baseline of 3.85 to 0.27 after 1 year of pumping. An HI below unity is indicative of conditions which would be protective of

human health for carcinogenic effects. Further declines in the HI to 0.10 would be anticipated during the first 3 years of remediation.

There are no short-term threats associated with the selected remedy that cannot be readily controlled.

Compliance with ARARs

The selected remedy will not result in immediate compliance with federal and state drinking water MCLs in the groundwater. However, as predicted by contaminant transport modeling, the contaminant concentrations will be within the MCLs after at least four years of pumping and treatment. The discharge to surface water will be treated to conform to State Permit Discharge Elimination System limits (6NYCRR Part 750 through 758). Discharges to the air from stripping will comply with the Ambient Guideline Concentrations in the New York State Air Guide and the standards presented in 6 NYCRR Part 212. If it is determined during detailed design that vapor phase treatment is required, it will be supplied. Installation of a cap and some downgradient pumping wells will require temporary or permanent alterations to the stream bed of the North Stream. Construction, filling, and stream relocation will be designed to comply with relevant requirements of NYSDEC and the U.S. Army Corps of Engineers (33 CFR Parts 320 through 330).

Since the landfill contains RCRA listed hazardous wastes, regulations specified in 40 CFR Part 264 Subpart F and G would be considered relevant for the cap. However, the implementation of the NYCRR Part 360 final cover (cap) in lieu of a "RCRA Cap" will meet or exceed the performance requirements of Part 264 Subparts F and G at this site. Therefore, RCRA capping requirements are not appropriate, since they do not address all facets of a municipal landfill including landfill gas controls. Landfill gas controls are addressed in NYCRR Part 360. In addition the selected remedy will comply with all chemical, action, and location-specific ARARs.

Cost-Effectiveness

The selected remedy is cost effective because it has been determined to provide overall effectiveness proportional to its cost. The total capital and present worth costs for the selected remedy are $4,273,000 and $5,135,000, respectively. The O & M cost for the selected remedy is $250,000 per year.

The selected remedy is the least expensive of all the alternatives which provide for active restoration of the groundwater resources and establish a new supply of drinking water. The most expensive alternatives (Alternatives 4d1 and 4d2) are up to 119 per cent higher than the present worth cost of the selected

remedy. Likewise, the selected remedy provides the same degree of certainty with regard to the effective removal of all the organic and inorganic contaminants.

The capital, annual O&M, and present worth cost for the selected remedy is presented in Table 14.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

EPA and NYSDEC have determined that the selected remedy represents the maximum extent practicable to which permanent solutions and treatment technologies can be utilized in a cost-effective manner for the final source control operable unit at the Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA and NYSDEC have determined that the selected remedy provides the best balance of trade-offs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, and cost, also considering the statutory preference for treatment as a principal element to the maximum extent practicable and considering state and community acceptance.

The selection of treatment of the contaminated groundwater is consistent with program expectations that indicate that highly toxic and mobile wastes are a priority for treatment and often necessary to ensure the long-term effectiveness of a remedy. All the alternatives that consider remedial action are reasonably comparable with respect to implementability, therefore, the major trade-offs that provide the basis for the selection of the remedy are the estimated time to meet the ARARs after implementation, reduction in toxicity, mobility, or volume, and cost effectiveness. The selected remedy can be implemented with less risk to the area of residents and at less cost than the other remedial action alternatives and is, therefore, determined to be the most appropriate solution for the contaminated groundwater at the Site.

With regard to implementability, the components of the selected remedy are easily implemented, proven technologies and are readily available.

Preference for Treatment as a Principal Element

By treating the groundwater by air stripping and by the installation of a landfill cap, the selected remedy addresses the principal threats posed by the Site through the use of treatment technologies to the maximum extent practicable.

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are

legally applicable or relevant and appropriate to the remedial action, and is cost effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The contaminated groundwater and leachate is being treated, addressing the statutory preference for treatment as a principal element of the remedy. However, the size of the landfill and the fact that there are no identified on-site "hot spots" that represent the major sources of contamination preclude a remedy in which the landfilled material could be excavated and treated effectively.

DOCUMENTATION OF SIGNIFICANT CHANGES

There are not significant changes from the preferred alterative presented in the Proposed Plan.

APPENDIX 1 - TABLES

TABLE 1

NATURE AND AMOUNT OF INDUSTRIAL WASTES
RECEIVED AT THE COLESVILLE LANDFILL

Waste Type	Description	Amount Drums/ Month
Aqueous Dye Wastes	. pH - neutral to alkline . 0.18% sulfate (average 10%) . Density - 8.3-9 lbs/gallon . 15% total solids at 110° C . Traces of Zn, Al, Fe, Sn	10
Organic Solvent Mixtures	. Density - 6.8 - 8.3 lbs/gallon 5% total solids at 110° C Heating value - 8,000 BTU/lb (min) . Included benzene, cyclohexane, acetone isopropyl alcohol, methanol, ethanol, n-hexane, toluene, xylene, methyl, cellosolve, 10% chlorinated solvents and water, diethyl ether	10
Mixed Chemical Solvents	. Density - 8.3 lbs/gallon . 5% total solids at 110° C . 15% chloride . Heating value - 6,500 BTU/lb (min) . Included isopropyl alcohol, methanol, methylene chloride acetone, minor amounts of other hydrocarbons and solvents	10

Source: Wehran Engineering, "Hydrogeologic Investigation," September 1983.

Table 2

BROOME COUNTY – COLESVILLE LANDFILL

VOLATILE ORGANIC COMPOUNDS IN MONITORING WELLS

Volatile Compounds (µg/ℓ)	Monitoring Well W-21				Monitoring Well W-22S		Monitoring Well W-22I	Monitoring Well W-22D	Monitoring Well W-23S			Monitoring Well W-24	Monitoring Well W-25
	4/7/84 Chemtech EPA 624	6/8/84 Chemtech EPA 624	12/10/87 Nanco EPA 624	8/15/89 NY Test EPA 8010/8020	12/10/87 Nanco EPA 624	8/15/89 NY Test EPA 8010/8020	12/10/87 Nanco EPA 624	8/15/89 NY Test EPA 8010/8020	12/10/87 Nanco EPA 624	12/10/87 H_2M EPA 624	8/15/89 NY Test EPA 8010/8020	8/15/89 NY Test EPA 8010/8020	8/15/89 NY Test EPA 8010/8020
Chloromethane													
Vinyl Chloride												39	
Chloroethane													
Methylene Chloride				3								4	4
1,1-Dichloroethene													
1,1-Dichloroethane												37	
Trans-1,2-Dichloroethene												0.5	
Chloroform												2	
1,2-Dichloroethane												43	
2-Butanone													
1,1,1-Trichloroethane												3	
1,2-Dichloropropane													
Trichloroethene												21	
Benzene													5
Toluene													
Chlorobenzene												0.5	
Ethylbenzene													
Total Xylenes													
Trichlorofluoromethane	14												
Tetrachloroethene												0.5	

Note: Blank cells indicate not detected

Table 3
BROOME COUNTY - COLESVILLE LANDFILL
VOLATILE ORGANIC COMPOUNDS IN PRIVATE WELLS

Volatile Compounds (µg/ℓ)	Residential Well No. 1						
	3/31/83 NY Testing EPA 624	4/21/83 NYSDOH EPA 601	12/29/83 H_2M EPA 601	9/28/87 H_2M EPA 601	12/11/87* Nanco EPA 624	12/11/87* H_2M EPA 624	8/15/89 NY Test EPA 8010/8020
Chloromethane							
Vinyl Chloride		6					
Chloroethane							
Methylene Chloride	96	10		8			6
1,1-Dichloroethene		12	12	54	7	110	11
1,1-Dichloroethane		33	27	170	130	480	320
Trans-1,2-Dichloroethene	130	70	120			600	140
Chloroform		12	8	12		10	8
1,2-Dichloroethane							
2-Butanone							
1,1,1-Trichloroethane	460	150	>330	220	190	400	270
1,2-Dichloropropane							
Trichloroethene	440	130	140	100	84	220	160
Benzene		31					
Toluene	2	1					
Chlorobenzene							
Ethylbenzene							
Total Xylenes		1					
Trichlorofluoromethane		2					

Notes

Blank cells indicate not detected; BMRL = Below Minimum Reportable Level

* Samples taken by Wehran

Table 4
BROOME COUNTY – COLESVILLE LANDFILL
COLESVILLE CONFIRMATORY SAMPLING PROGRAM 1989
DISSOLVED METALS IN MONITORING WELLS*
AUGUST 1989

Metal (µg/ℓ)	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8†	MW-10	MW-11	MW-12D	MW-13	MW-14S	MW-14D	MW-15	MW-16S
Arsenic			22		24									13
Cadmium														
Chromium														
Copper														
Iron		84.1	21.7	120,000	3,270					34.6				84.9
Lead														
Nickel			26.6											
Silver														
Zinc	37.1	35.5	42.8	51.6	50.2		22			60.5				48.0

Note: Blank cells indicate not detected

* Samples taken by Wehran

† Not Sampled

Table 4 a

BROOME COUNTY-COLESVILLE LANDFILL

COLEVILLE CONFIRMATORY SAMPLING PROGRAM 1989

TOTAL METALS IN MONITORING WELLS

AUGUST 1989

Metals (ug/l)	MW-3	MW-4	MW-5D	MW-6	MW-7	MW-10	MW-13	MW-16S	MW-16D	MW-17S	MW-17I	MW-22S	MW-22D	MW-24	MW-25
Arsenic	7	7	33		24	8			28	21		52	22	14	22
Cadmium															
Chromium	24 2	20 6	14 4		29 6	10 8	74 4		159			10 8	502	435	19 7
Copper	62 2	46 4	39 6	26 2	76 1	32 1	101	24 3	296	22 3	33	32	979	889	31 8
Iron	42,400	27,800	7,860	125,000	26,400	12,400	132,000	5,570	273,000	3,680	7,850	12,200	785,000	754,000	30,400
Lead	29	19 8	21 5		40 4	20 4	96 2		143		7 7	10 5	652	16,700	
Nickel	37 8	34 2		52 2			128	23 4	329			27	995	696	34 2
Silver									10 3						
Zinc	216	197	122	165	171	130	2,010	163	811	99 8	113	99 7	2,460	2,300	164

Note: Blank cells indicated not detected

* Samples taken by Wehran

Table 5
BROOME COUNTY – COLESVILLE LANDFILL
VOLATILE ORGANIC COMPOUNDS IN SURFACE WATER*
AUGUST 1989

Volatile Compounds (µg/l)	SW-01	SW-02	SW-05	SW-07	SW-08	SW-09	SW-10	SW-11	SW-12	SW-13	SW-14	SW-15	SW-16
Chloromethane													
Vinyl Chloride													
Chloroethane					9								
Methylene Chloride			3						5	5			225
1,1-Dichloroethene													
1,1-Dichloroethane					121	4	3	2					4
Trans-1,2-Dichloroethene													
Chloroform													
1,2 Dichloroethane													
2-Butanone													
1,1,1-Trichloroethane					4			2					
1,2-Dichloropropane													
Trichloroethene													
Benzene													
Toluene													
Chlorobenzene					62								
Ethylbenzene													
Total Xylenes													
Trichlorofluoromethane													
1,1,2,2-Tetrachloroethene									5				

Note: Blank cells indicate not detected

* Samples taken by Wehran

Table 6

BROOME COUNTY - COLESVILLE LANDFILL

COLESVILLE CONFIRMATORY SAMPLING PROGRAM 1989

TOTAL METALS IN SURFACE WATER*

AUGUST 1989

Metal (µg/ℓ)	SW-1	SW-02	SW-03	SW-04	SW-05	SW-06	SW-07	SW-08	SW-09	SW-10	SW-11	SW-12	SW-13	SW-14	SW-15	SW-16	SW-17	SW-18
Arsenic								24	6	8								34
Cadmium																		
Chromium																		
Iron	1,240	1,320			274	122	101	7,200	1,500	1,220	366	2,630	22,600	12,100	297			266,000
Lead		103										86.7	14.5		28.7			67.3
Nickel										21.6			25					
Silver																		
Zinc	32.4	41			38.3	34.5	45.3	37.2	36.1	35	60.4	98.9	54.5	58.3	65.2			56

Note: Blank cells indicate not detected

* Samples taken by Wehran

Table 7
BROOME COUNTY – COLESVILLE LANDFILL
VOLATILE ORGANIC COMPOUNDS IN STREAM SEDIMENTS*
AUGUST 1989

Volatile Compounds (ug/kg)	SD-01	SD-02	SD-03	SD-04	SD-05	SD-06	SD-07	SD-08	SD-09	SD-10	SD-11	SD-12	SD-13	SD-14	SD-15	SD-16	SD-17	SD-18
Chloromethane																		
Vinyl Chloride																		
Chloroethane																		
Methylene Chloride	71	3				23	6	7	5	29	7	23	4	101	3	231	12	21
1,1-Dichloroethene																		3
1,1-Dichloroethane								11									12	
Trans-1,2-Dichloroethene																		
Chloroform																		
1,2-Dichloroethane																		
2-Butanone																		
1,1,1-Trichloroethane																		
1,2-Dichloropropane																		
Trichloroethene																		
Benzene																		
Toluene																		
Chlorobenzene								0.9										
Ethylbenzene																		
Total Xylenes																		
Trichlorofluoromethane																		

Notes

Blank cells indicate not detected; BMRL = Below Minimum Reportable Level

* Samples taken by Wehran

Table 8

BROOME COUNTY – COLESVILLE LANDFILL

COLESVILLE CONFIRMATORY SAMPLING PROGRAM 1989

TOTAL METALS IN STREAM SEDIMENTS*

AUGUST 1989

Metal (µg/ℓ)	SD-01	SD-02	SD-03	SD-04	SD-05	SD-06	SD-07	SD-08	SD-09	SD-10	SD-11	SD-12	SD-13	SD-14	SD-15	SD-16	SD-17	SD-18
Arsenic	8.3	11.6			25.5	28.7	79.7	14.8		12.3	11.9	2.8	16.8	10.4	10.8	25.2	32.4	
Cadmium																		
Chromium	11.1	14.9			11.8	15.6	14.3	14.2	15.3	8.0	13.3	18.1	14.2	12.9	10.9	19.9	8.7	
Iron	23,100	30,700			29,900	37,400	30,200	25,600	31,500	20,000	30,400	31,800	29,400	34,900	35,100	44,200	81,800	24,200
Lead	24.9	21.9			43.7	13.9	12.6	10.1	10.4	15.4	10.7	10.1	1.3	15.7	9.9	428	3.3	11.9
Nickel	28.2	5.3			31.9	25.2	31.9	32.5	25.6	12.5	28.9	33.4	21.4	25	29.0	31.2	34.9	23.1
Silver																		
Zinc	355	191			1,510	159	237	1,170	163	128	144	88.6	140	161	138	261	197	153

Note: Blank cells indicate not detected

* Samples taken by Wehran

† Not Sampled

Table 9
BROOME COUNTY – COLESVILLE LANDFILL
CONFIRMATORY SAMPLING PROGRAM 1989
POTENTIAL EXPOSURE PATHWAYS

Release Medium	Release Source	Exposure Point	Exposure Route	Number of People	Pathway Complete*
Groundwater	Buried waste	Nearest residences less than 0.5 mile	Ingestion of drinking water	13[†]	Yes
Surface Water	Seeps/groundwater	Direct contact	Dermal	1,921[‡]	Yes
Steam/Seep/Sediments	Seeps/groundwater	Direct contact	Dermal	1,921[‡]	Yes

Notes:

* Pathway is considered complete if the release medium, source exposure points, and exposure routes all exist.

† Source: 1980 U.S. Census data for Town of Colesville estimated 3.18 persons per household.

‡ Population within a three-mile radius of the landfill.

Table 10

BROOME COUNTY - COLESVILLE LANDFILL

CONFIRMATORY SAMPLING PROGRAM 1989

MAXIMUM CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS

Compound	Concentration		
	Groundwater (mg/ℓ)	Surface Water (mg/ℓ)	Soils* (mg/kg)
Benzene	0.120	ND	ND
Chlorobenzene	0.035	0.062	0.001
Chloroethane	0.048	0.009	ND
1,1-dichloroethane	0.320	0.121	0.012
1,1-dichloroethene	0.015	ND	ND
Trans-1,2-dichloroethene	0.140	ND	ND
1,2-dichloroethane	0.043	ND	ND
1,2-dichloropropane	0.003	ND	ND
Ethylbenzene	0.008	ND	ND
Toluene	0.021	ND	ND
1,1,1,-trichloroethane	0.270	0.004	ND
Tetrachloroethene	0.005	0.005	ND
Trichloroethene	0.160	ND	ND
Total Xylene	0.020	ND	ND
Vinyl Chloride	0.134	ND	ND

Notes:

Samples taken by Wehran-New York, Inc. 1989

* Sediments in the immediate vicinity of leachate seeps

ND = Detected

TABLE 11

BROOME COUNTY – COLESVILLE LANDFILL

CONFIRMATORY SAMPLING PROGRAM 1989

COMPARISON OF MCLs TO ESTIMATED EXPOSURE POINT CONCENTRATIONS

Compound	Value of MCL* (µg/ℓ)	Exposure Point† Concentration (µg/ℓ)	Concentration/ Standard Ratio‡
1,1-dichloroethene	7	11	1.6
Trichloroethene	5	160	32 0
Tetrachloroethene	5	N/D	--
Benzene	5	N/D	--
1,2-dichloroethane	5	320	64.0
1,1,1-trichloroethane	5	270	54.0
Vinyl Chloride	2	N/D	--
Chlorobenzene	5	N/D	--
1,2-dichloroethane	5	N/D	--

Notes:

* New York State Department of Health *Drinking* Water Standards for Volatile Organic Compounds. January 1989.

† Maximum concentrations measured in homeowner wells (Wehran, 1989 Samples)

‡ Ratios greater than one indicate exceedance of the requirements.

N/D = not detected

TABLE 12

BROOME COUNTY - COLESVILLE LANDFILL
CALCULATION OF BASELINE CARCINOGENIC RISK ASSOCIATED WITH INTAKE OF CONTAMINATED GROUNDWATER

DRINKING WATER INGESTION

Compound	Water Conc. mg/l	Intake mg/kg/day	Oral Slope Factor	Oral RfD	Carcinogenic Risk	Hazard Index
1,1-Dichloroethene	0.011	3.14E-04	-	0.021		1.50E-02
Trichloroethene	0.16	4.57E-03	1.1E-03	2.1E-01	5.03E-06	2.18E-02
1,1,1-Trichloroethane	0.27	7.71E-03	-	0.09		8.57E-02
1,1-Dichloroethane	0.32	9.14E-03	-	1.2E-01		7.62E-02
1,2-Dichloroethene	0.14	4.00E-03	-	0.25		1.60E-02
				Total:	5.03E-06	2.15E-01

INHALATION FROM TAP WATER

Compound	Water Conc. mg/l	Intake mg/kg/day	Inhalation Slope Factor	Inhalation RfD	Carcinogenic Risk	Hazard Index
1,1-Dichloroethene	0.011	4.19E-03		7.20E-01		5.82E-03
Trichloroethene	0.16	6.10E-02	4.60E-03	1.00E+00	2.80E-04	6.10E-02
1,1,1-Trichloroethane	0.27	1.03E-01		6.30E+00		1.63E-02
1,1-Dichloroethane	0.32	1.22E-01		1.38E-01		8.83E-01
1,2-Dichloroethene	0.14	5.33E-02		2.00E-02		2.67E+00
				Total:	2.80E-04	3.63E+00

Total Risk and HI:	2.85E-04	3.85E+00

RfD = Reference Dose

Table 13
COLESVILLE LANDFILL
POTENTIAL CHEMICAL-SPECIFIC GROUNDWATER ARARS

Compound	Number of Detects/ Number of Wells	Concentration Range (ug/l)	Chemical-Specific ARARS/SCGs				ARAR Range	Number of Exceedences/ Number of Wells	
			NYS DEC 703 Stds (1)	Fed MCLs (2)	NYS DOH MCLs (3)	NYS Guidance Values (4)		(of lowest ARAR)	(of highest ARAR)
Benzene	8/32	5-62	ND	5	5	0.7 (A)	ND-5	8/32	8/32
Chlorobenzene	5/32	0.05-35	NA	NA	5	20 (C)	5-20	3/32	2/32
Chloroethane	3/32	8-48	NA	NA	5	NA	5	3/32	-
1,1-Dichloroethane	12/32	3-320	NA	NA	5	5 (E)	5-50	10/32	4/32
1,1-Dichloroethene	3/32	4-15	NA	7	5	0.07 (A)	0.07-7	3/32	2/32
Trans-1,2-dichloroethene	4/32	0.5-140	NA	100 *	5	5 (E)	5-50	1/32	1/32
1,2-Dichloroethane	1/32	43	NA	5	5	0.8 (A)	0.8-5	1/32	1/32
1,2-Dichloropropane	1/32	3	NA	5 *	5	5 (E)	5-50	0/32	0/32
Ethylbenzene	1/32	8	NA	700 *	5	5 (E)	5-50	1/32	0/32
Toluene	1/32	21	NA	NA	5	5 (E)	5-50	1/32	0/32
1,1,1-Trichloroethane	10/32	2-270	NA	200	5	5 (E)	5-200	6/32	1/32
Tetrachloroethene	2/28	0.5-5	NA	NA	5	0.7 (A)	0.7-5	1/28	1/28
Trichloroethene	8/32	0.9-160	10	5	5	3 (A)	3-10	6/32	5/32
Total Xylene	1/32	20	NA	10000*	5	5 (E)	5-50	1/32	0/32
Vinyl Chloride	2/32	39-134	5	2	2	0.3 (A)	0.3-5	2/32	2/32

Notes:
*• All values in ug/l; 1989 confimatory sampling round data
U - below detection limits
NA No Standard Available
ND Non-Detectable Level
(1) 6 NYCRR Part 703
(2) 40 CFR Part 141.61
(3) 10 NYCRR Part 5
(4) NYSDEC Ambient Water Quality Standards and Guidance Values, September 25, 1990
(A) 6 NYCRR Part 701.4
(C) 6 NYCRR Part 701.6
(E) 6 NYCRR Part 701.15(e)
(M) 6 NYCRR Part 701.12

*• Phase II MCLs promulgated 1/30/91 in 56 FR 3526 and will take effect for PWSS in 7/92. THese MCLs must be adopted or made more stringent by the States by 7/92.

Table 14

COLESVILLE LANDFILL

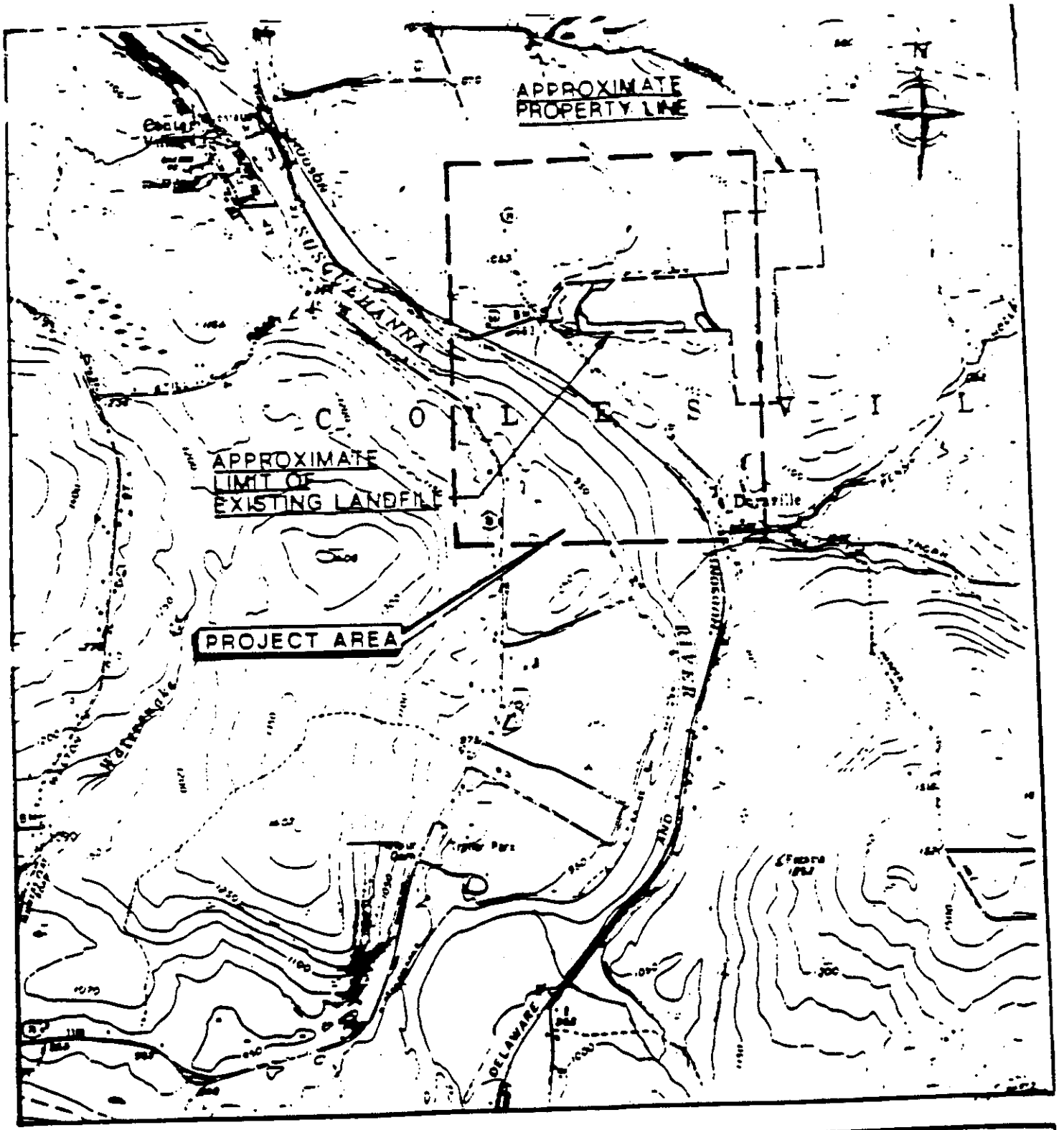
DETAILED ANALYSIS

COST AND TIMING SUMMARY TABLE

Alternative	Estimated Capital Cost ($000)	Estimated O & M Cost (per year) ($000)	Estimated Present Value Cost* ($000)	Estimated Time to Implement (Design/Construct)	Estimated Time to Meet ARARs after Implementation
1	$0	$14	$128	0	>20 yrs
3a	$0	$71	$672 +	6 mo	>20 yrs
3b	$150	$53	$648	1 yr	>20 yrs
4b1	$4,163	$268	$5,595	1.5 yr	8 yrs
4b2	$4,313	$250	$5,646	1.5 yr	8 yrs
4c1	$4,193	$268	$5,040	1.5 yr	4 yrs
4c2	$4,273	$250	$5,135	1.5 yr	4 yrs
4d1	$8,811	$230	$10,977	1.5 yr	>20 yrs
4d2	$8,701	$268	$11,230	1.5 yr	>20 yrs

* The present worth factor was based on an interest rate of 10%/year for the duration of cleanup (30 yrs is used for >20yrs)

APPENDIX 2 - FIGURES



SOURCE:
TOPOGRAPHY TAKEN FROM
1957 AFTON, N.Y.
U.S.G.S. QUADRANGLE
7.5 MINUTE SERIES

SCALE: 1" = 2000'

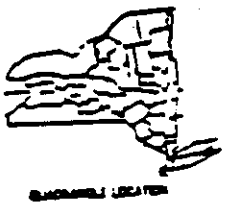


FIGURE 1

FIGURE 2

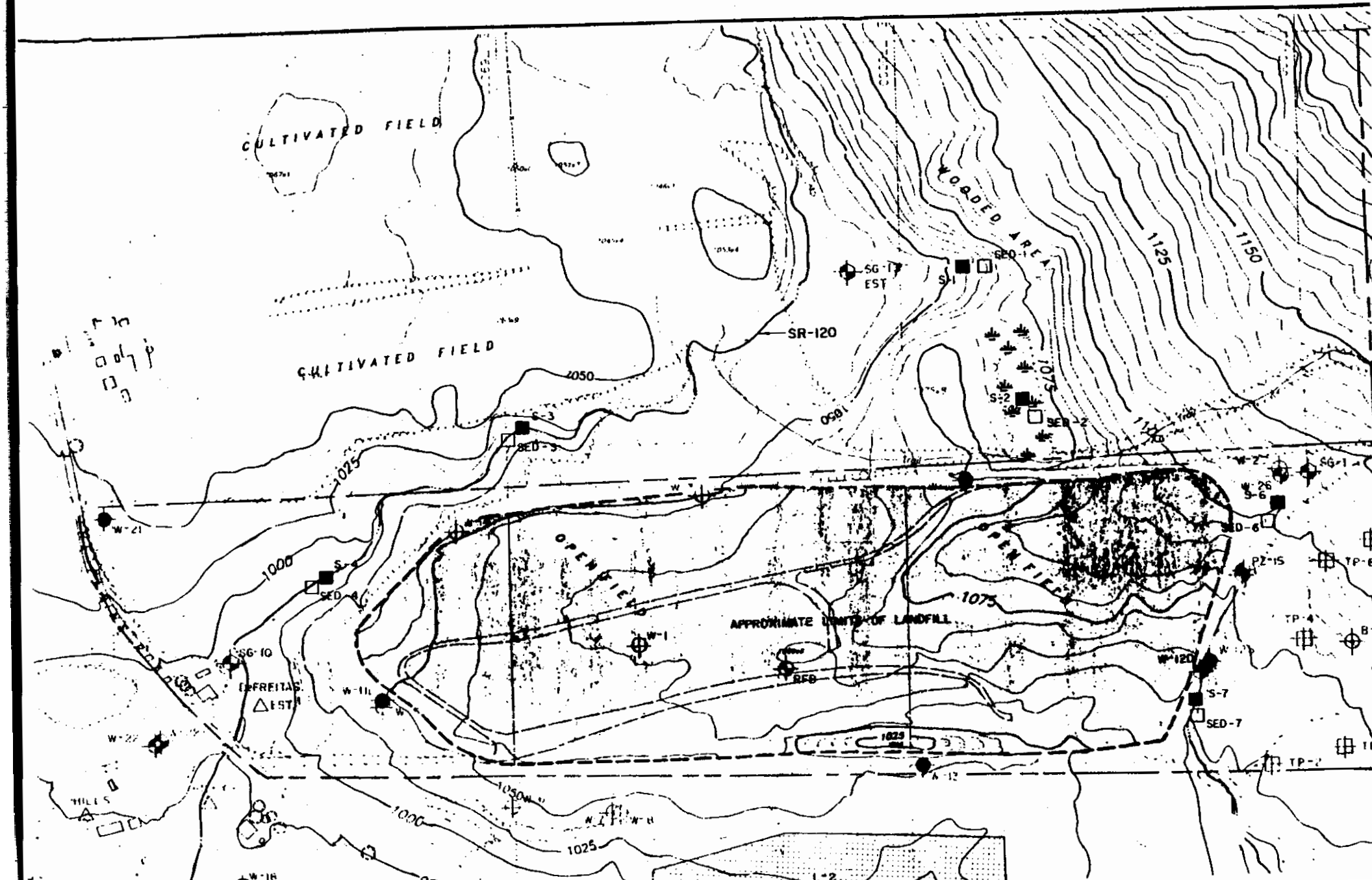

CULTIVATED FIELD
CULTIVATED FIELD
WOODED AREA
SR-120
1125
1150
1075
1050
1025
1000
SG-17
EST
SED-1
S-1
S-2
SED-2
G-3
SED-3
W-21
S-4
SED
SG-10
DeFREITAS
EST
W-111
W-22
W-1
W-2
SG-1
S-6
SED-6
PZ-1S
TP-6
TP-4
OPEN FIELD
APPROXIMATE LIMITS OF LANDFILL
RFB
W-120
S-7
SED-7
TP-7
A-12
W-18
W-11
W-8
1-2
TILES

FIGURE 3

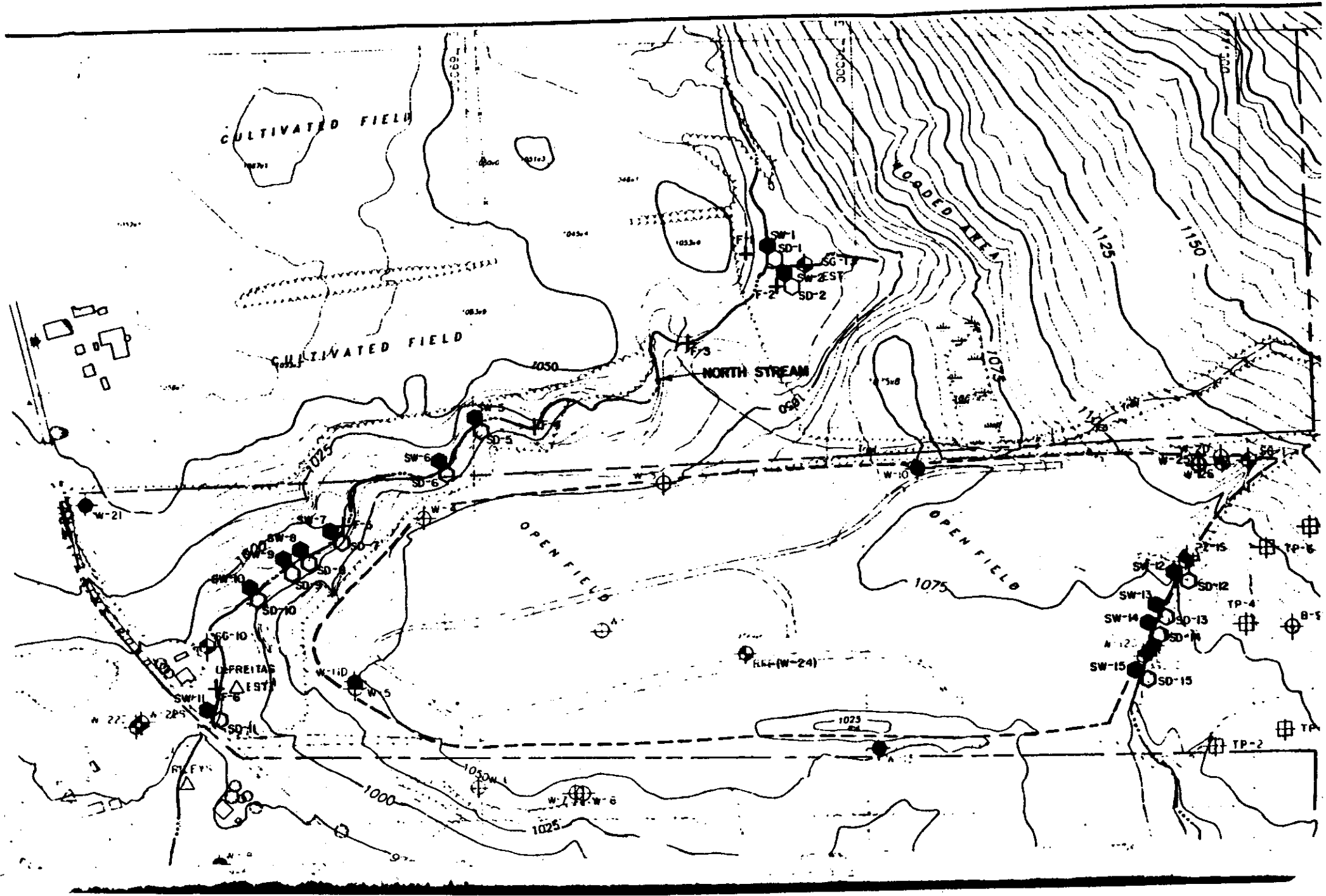
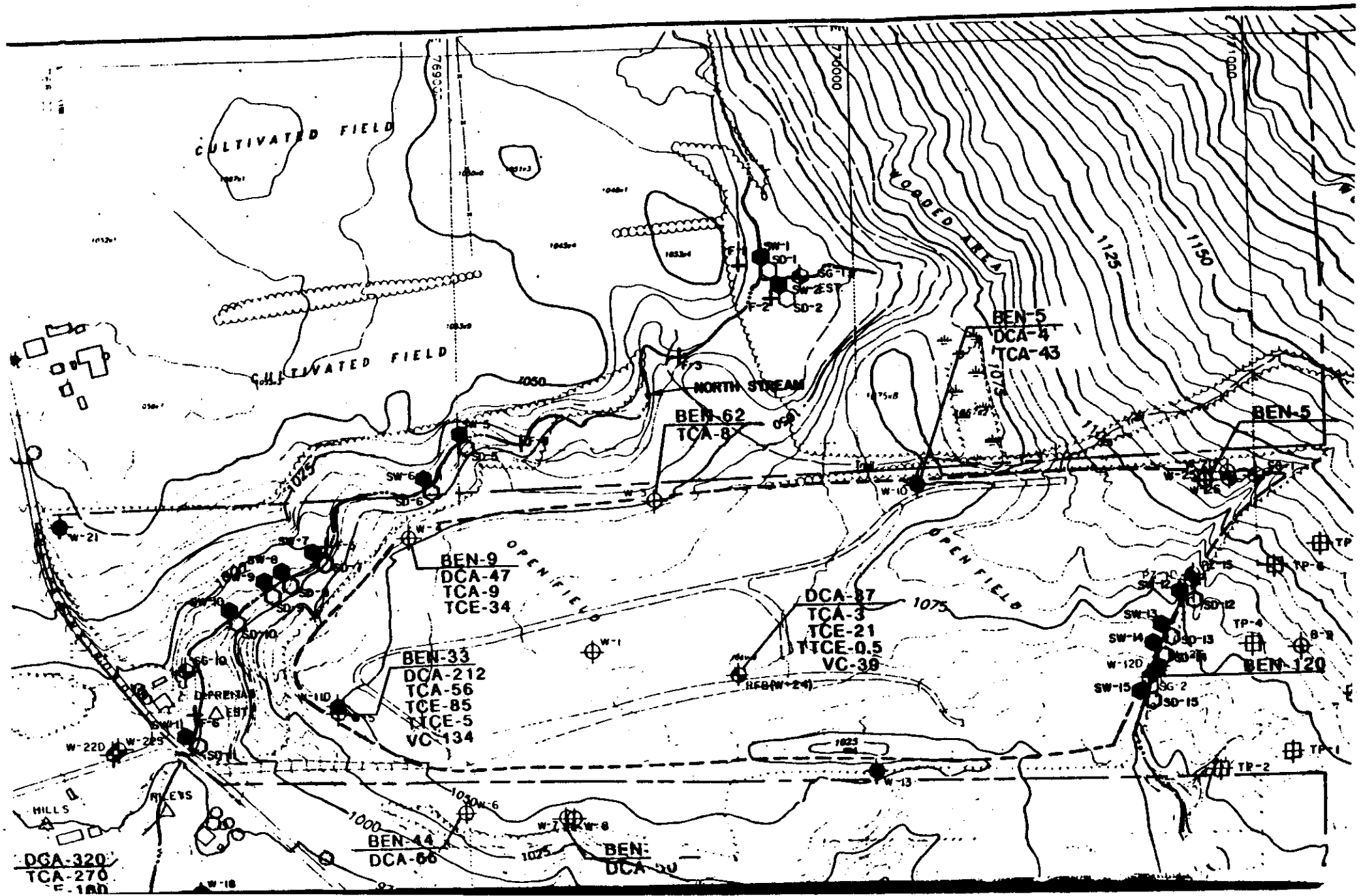

CULTIVATED FIELD
CULTIVATED FIELD
LOADED AREA
NORTH STREAM
OPEN FIELD
OPEN FIELD
1025
1050
1075
1125
1150
1000
SW-1
SD-1
SW-2 EST
SD-2
F-2
F-3
SW-5
SD-5
SW-6
SD-6
SW-7
SD-7
SW-8
SD-8
SW-10
SD-10
SD-10
SW-11
SD-11
F-6
W-21
W-10
W-11D
W-5
W-24
W-25
W-26
SW-12
SD-12
SW-13
SW-14
SD-13
SW-15
SD-15
TP-4
TP-2
DE FREITAS EST

FIGURE 4


CULTIVATED FIELD
CULTIVATED FIELD
WOODED AREA
NORTH STREAM
OPEN FIELD
OPEN FIELD
BEN-5
DCA-4
TCA-43
BEN-62
TCA-8
BEN-9
DCA-47
TCA-9
TCE-34
BEN-33
DCA-212
TCA-56
TCE-85
TTCE-5
VC-134
DCA-87
TCA-3
TCE-21
TTCE-0.5
VC-39
BEN-120
BEN-44
DCA-66
DCA-320
TCA-270
1050
1075
1100
1125
1150
1000
1025

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P. 7444 Letter to Ms. Mary Walsh, Broome County, from Mr. Joseph Forti, NYSDEC, Re: RI Work, August 6, 1987.

HEALTH ASSESSMENTS

ATSDR HEALTH ASSESSMENTS

P. 7445 - 7453 Memorandum to Mr. Doug Tomchuk, NYCCB, from Mr. William Nelson, Department of Helath & Human Services, Re: Enclosed copy of Preliminary Health Assessment for the Colesville site, July 12, 1989. Attachment.

PUBLIC PARTICIPATION

COMMENTS AND RESPONSES

P. 7454 - 7455 Newspaper article, unidentified newspaper, April 10, 1985.

COMMUNITY RELATIONS PLANS

P. 7456 - 7465 Report: Citizen Participation Plan.

P. 7466 - 7472 Letter to Ms. Ethel Oliver, public citizen, from Mr. Brian Davidson, NYSDEC, Re: Citizen participation plan, May 9, 1989.

PUBLIC NOTICES

P. 7473 - 7475 Notice of public comment period and public meeting by the New York State Department of Environmental Conservation.

FACT SHEETS AND PRESS RELEASES

P. 7476 News Release, NYSDEC, April 16, 1987.

P. 7477 News Release: Reactions vary to Colesville dump Plans, January 31, 1991, The Press & Sun Bulletin.

CORRESPONDENCE

P. 7478 - 7479 Letter to Mrs. Sandy LaVare, public citizen, from Mr. Joseph Forti, NYSDEC, Re: Sept. 13 letter, September 26, 1985.

P. 7480 - 7481 Letter to Mr. Joel Singerman, U.S. EPA, from Mr. Brian Davidson, NYSDEC, Re: Administrative Record, January 8, 1991.

APPENDIX 4 - NYSDEC LETTER OF CONCURRENCE

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

Thomas C. Jorling
Commissioner

Mr. Constantine Sidamon-Eristoff
Regional Administrator
United States Environmental Protection
Agency, Region II
26 Federal Plaza
New York, New York 10278

MAR 2 2 1991

Dear Mr. Sidamon-Eristoff:

RE: Colesville Landfill - Site No. 704010
Record of Decision

The New York State Department of Environmental Conservation (NYSDEC) has reviewed the Record of Decision for the Colesville Landfill, and the Department concurs with the selection of Alternative 4c2. Alternative 4c2 consists of a landfill cap, gas control, leachate control, drainage control, long-term post-closure monitoring and maintenance, pumping wells at and downgradient of the landfill, groundwater treatment, discharge of the treated groundwater to the north stream or the Susquehanna River, and a new water supply for affected residents. The Department concurs that the Record of Decision adequately documents and justifies the selection of this remedy.

Should GAF Corporation and Broome County successfully negotiate the purchase of the remaining affected properties, construction of the new water supply system would not be necessary.

Furthermore, as is documented in the Record of Decision, this site will be subject to five year reviews as required by the Comprehensive Environmental Response, Compensation and Liability Act as amended by the Superfund Amendments and Reauthorization Act.

Sincerely,

Edward O. Sullivan
Deputy Commissioner

cc: K. Callahan, USEPA
G. Pavlou, USEPA
J. Singerman, USEPA

APPENDIX 5 - RESPONSIVENESS SUMMARY

Responsiveness Summary

Prepared By: Brian H. Davidson, Project Manager
Division of Hazardous Waste Remediation
New York State Department of Environmental Conservation

Colesville Landfill Record of Decision - Site No. 704010

A responsiveness summary is required by Superfund policy. It provides a summary of citizens' comments and concerns received during the public comment period, and the New York State Department of Environmental Conservation's (NYSDEC) responses to those comments and concerns. All comments summarized in this document will be considered in NYSDEC's and EPA's final decision for selection of a remedial alternative for the Colesville Landfill site.

The public comment period for the Colesville Landfill Proposed Plan began on January 7, 1991. The Proposed Plan is attached in Appendix A. A public meeting was held at the Broome County Office Building at 7:00 pm on January 30, 1991. The public comment period and public meeting were announced in legal notices which appeared in the January 7, 1991 and January 28, 1991 Binghamton Press and Sun-Bulletin. The legal notice is attached in Appendix B. A press release was also issued by the New York State Department of Environmental Conservation (NYSDEC), and a newspaper article appeared in the January 11, 1991 Binghamton Press and Sun-Bulletin which provided information on the project and announced the public comment period and public meeting. A copy of the Press Release and January 11, 1991 newspaper article are attached in Appendix C. Residents, interested public, and local officials listed on the contact list in the Citizen Participation Plan for the Colesville Site were mailed letters to encourage their participation and solicit their comments. A copy of the Citizen Participation Plan and a sample of the letter mailed to residents is included in Appendix D.

The public comment period closed on February 6, 1991. Attached is the transcript from the public meeting. About 45 people attended the public meeting. Most of the questions asked at the public meeting were adequately answered by the responses given at the public meeting and are included in the attached transcript. A January 31, 1991 newspaper article that summarized the meeting is attached in Appendix C. The transcript and attendance list is attached in Appendix E.

The written comments essentially reiterated technical concerns that were raised at the public meeting. The one concern that was expressed at the public meeting that was not reiterated in the written comments was the protection of water supply for the Hamlet of Doraville. The Hamlet of Doraville is located south of the south stream and south of the area effected by the site. All of the data collected to date indicates that residential water supply wells in Doraville have not been

impacted by the landfill. The data also indicates that residential supply wells in Doraville are not likely to be impacted in the future. Groundwater discharges to the south stream, and groundwater monitoring wells between Doraville and the landfill have been clean. Nevertheless, there will be long-term, 30 years monitoring of monitoring wells located between Doraville and the landfill. Should the data collected from these wells indicate that contamination is moving toward Doraville, appropriate response action will be considered during the five year reviews.

Response action would most likely include an expansion of the new water supply system. The new water supply system will be designed to have sufficient capacity to accommodate some future expansion. However, we do not anticipate, based on the existing data, that future expansion of the new water supply system will be necessary to protect Doraville.

Mr. Thomas O'Meara asked at the public meeting (Page 69 of the transcript), whether affected residents would ever have to pay for their water. The long-term operation and maintenance of the water system provided to the affected residences is the responsibility of the responsible parties, and therefore, affected residents will not have to pay for their water in the future. It should be noted, however, that since Broome County is a responsible party there will be some cost to all Broome County taxpayers (including the affected residents) associated with the installation and long-term operation and maintenance of the new water system.

Ms. Mary Clark testified at the public meeting (Pages 44 through 49 of the transcript included in Appendix E) that a number of intermittent streams exist in the vicinity of the site. She indicated through her statements that these streams were not mapped or sampled during the Remedial Investigation.

Site reconnaissance and sampling occurred during various times of the year and as was indicated by Mr. O'Hara on Page 47 of the transcript, "We sampled the streams we saw..." The surface drainage in the vicinity of the site is properly characterized in the Remedial Investigation Report, and as is indicated on Page 57 of the transcript, the south stream was repeatedly sampled at various locations along the stream. No contamination was detected in the south stream.

Copies of the written comments that were received are included in Appendix F. The concerns raised in written correspondences, and the response to those concerns is included below.

<u>Correspondence from the Broome County Division of Solid Waste Management Dated February 5, 1991</u>

1. Suggested amendment (a.) recommends purchasing affected properties rather than installing a new water system.

Response:

Clearly, there are advantages to the County and GAF purchasing the remaining affected properties. Construction of the water supply system would not be necessary if the remaining affected properties could be purchased. However, purchasing the remaining affected properties becomes difficult if the property owners are not receptive to that option. The decision of whether to construct the new water supply or negotiate the purchase of the remaining affected properties is GAF's and Broome County's. Either option is acceptable to the NYSDEC and the USEPA. Should GAF and Broome County successfully negotiate the purchase of all the affected properties, they are still obligated to install and maintain the landfill cap and groundwater pump and treat system.

2. Suggested amendment (b.) recommends recirculating treated groundwater under the cap. The concern is raised that the model does not account for unbroken drums that may rupture in the future and Broome County does not want to treat this site for 100 years.

Response:

The Feasibility Study Report estimates that the landfill cap will reduce infiltration from the current 500 gallons per acre, per day to 10 gallons per acre, per day. Since the watertable is beneath the refuse, this will essentially eliminate leachate generation at the site. Although it is possible that unbroken drums of chemicals are buried on site, and will rupture in the future causing slugs of contamination to enter the groundwater, this scenario is not likely for the following reasons:

1. Although we do not have much in the way of disposal records, the records we do have indicate that many of the drums were crushed or dumped and emptied off the back of trucks.

2. Any intact drums would have been buried for 16 to 18 years, and much of their contents would probably have leaked out.

3. A number of intact drums should have indicated anomalies during the geophysical surveys. However, the geophysical data did not indicate any such anomalies.

4. Groundwater monitoring well data collected from 1984 to 1989 indicates that contaminants on-site and immediately downgradient have become less concentrated over time. No spikes or sporadic sharp increases of a given contaminant have been observed. The overall pattern from the groundwater data tends to indicate bulk of contamination from the drums has been released, and is dispersing and diluting in the groundwater.

Recirculating treated groundwater under the cap would defeat the purpose of the cap, and the effectives of such a system would be hampered by stratification in the upper portion of the outwash aquifer.

Obtaining Maximum Contaminant Levels (MCLs) within four years, as predicted by the contaminant transport model, is probably an optimistic prediction. Factors, such as stratification in the outwash aquifer, may hamper the achievement of that goal. However, the effectiveness of the pump and treat system will be reevaluated in five years as required by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA). If it does not seem to be achieving the program goals as predicted, alternatives will be evaluated at that time.

Correspondence from Mr. Franklyn P. Cism, Jr.

General Comment:

Alternative 4c2 is an acceptable and efficient procedure to follow, and with good fortune, will work.

Response:

Thank you for your comments. We concur that Alternative 4c2 is an appropriate and highly protective remedial alternative for the site.

Comments Included in the February 5, 1991 Correspondence from Broome County Environmental Management Council (EMC)

Hydrogeologic Issues:

Comment No. 1:

General Concern - Wehran Engineering contradicted the vertical profiles at the Public Meeting, log data should be verified, the model is sensitive to one data point which may not be representative of the disposal area.

Response:

The stratigraphic cross-sections from the Remedial Investigation (RI), which were updated and revised as part of the Confirmatory Sampling Program, clearly indicates that the outwash aquifer is in direct contact with the refuse (refer to cross-sections F-F' and G-G'). This fact was correctly stated by Wehran at the public meeting and there is no contradiction between that statement made by Wehran and the geologic cross-sections.

The two-dimensional solute transport model evaluates changes in concentration over time caused by the processes of convective transport, hydrodynamic dispersion, mixing and chemical retardation. Preliminary model input variables for the steady-state base simulation included both hydraulic and transport properties that were determined from available boring log and well data, existing watertable maps, cross-sections and published sources. Therefore, the model is sensitive to more than one data point. The model does require that basic assumptions be made. Those assumptions, and the limitations of the model are discussed in the RI Report and Appendix C of the feasibility study. The results of any groundwater model must be viewed with same degree of skepticism as it is very difficult (if not impossible) to accurately predict contaminate transport in a somewhat complex and variable groundwater flow system. Nevertheless, the groundwater modeling effort used at the Colesville Landfill represents a legitimate attempt to predict contaminate transport.

Comment No. 2:

The RI fails to discuss the source of the stream seeps. In order for the remediation to be effective, the source of the seeps must be substantiated.

Response:

Based on the RI data the North Stream seeps on the north side of the landfill seem to be contaminated springs, or an intersection of the groundwater table and the ground surface. The seeps along the south side of the landfill are close to the watertable, but may actually be due to water perched on thin discontinues clay seams in the upper portions of the outwash aquifer. The seeps are contaminated by landfill leachate. The refuse is above the watertable. The contamination of the seeps is due to infiltration through the landfill mass. Regardless of the exact origin and relation of the seeps to the watertable, they will be remediated by the landfill cap. They should dry up over time due to the combined effect of the landfill cap and the 13 pumping wells. Once the pumping wells are shut off, the seeps on the north side of the landfill may return, but they should be clean due to the landfill cap preventing infiltration through the landfill mass. At this point, we are confident that we know enough to go forward with the remediation. There would be no real benefit from attempting to recalculate stream loading.

Comment No. 3:

The proposed plan does not evaluate the remedial alternative of capping the site and providing a new drinking water supply exclusive of the pump and treat option.

Response:

True. The cost of capping and a new water supply alone can be obtained by subtracting the costs associated with pump and treat from Alternative 4c2 on Table E-1. However, landfill capping with a new water supply without pumping and treating groundwater would not be an acceptable alternative to the NYSDEC or the USEPA.

The outwash aquifer is considered a valuable resource. It has been contaminated by the uncontrolled release of hazardous wastes emanating from the Colesville Landfill. Groundwater quality standards have been violated and an off-site plume of contaminated groundwater has been identified. An attempt must be made to remediate the aquifer and restore the resource.

Comment No. 4:

EMC recommends the inclusion of run-off provisions in all capping alternatives.

Response:

The proper management of run-off of precipitation from the site due to the landfill cap will be addressed during the remedial design.

Managerial Issues:

Comment No. 1:

The cost estimates in the proposed plan do not include inflation factors. Ignoring the effects of inflation can bias the present worth analysis to favor alternatives with large operating and maintenance costs. EMC recommends revising the economic analysis to account for inflation.

Response:

Although cost is considered during the development and initial screening of alternatives, the overall protection of human health and the environment is the driving force behind the selection of remedy.

Typically, cost estimates made during feasibility studies are expected to provide an accuracy of +50 percent to -30 percent, and are prepared using data available from the RI. In conducting the present worth analysis, assumptions must be made regarding the discount rate and the period of performance. Like groundwater models, the results of a present worth analysis must be viewed with some degree of skepticism, since no one can really accurately predict how our economy will perform over the next 30 years. However, it is generally recommended that a discount rate equivalent to the 30-year US treasury bond rate before taxes and after inflation be used in determining the present worth of an alternative. A discount rate equivalent to the 30-year US treasury bond rate before taxes and after inflation would result in a higher present

worth factor than used by Wehran. However, Wehran's present worth factor provides present value costs of remedial alternatives for relative comparison, and recalculating present value costs using an inflation factor or higher present worth factor will not affect the selection of remedy.

Comment No. 2:

Issues relating to the responsible entities for operation, permitting and monitoring of remedial actions were not addressed.

Response:

Broome County and GAF are responsible for the operation, maintenance, and monitoring of the remedial action. Since the Colesville Landfill is a designated hazardous waste site, no actual permits for on-site remedial activities will necessary, although regulatory permit requirements and standards will be satisfied. The NYSDEC will review and oversee the remedial design, construction, operation, maintenance, and long-term monitoring with input from the NYSDOH and USEPA in accordance with the Order on Consent, the State Environmental Conservation Law (ECL), and the Federal CERCLA.

Preferred Alternative:

General Comment:

EMC generally agrees with Alternative 4c2, however, EMC's position is that the remediation of the groundwater will take more than four years to accomplish. EMC is concerned that the pump and treat system will be in operation for many years at a significant cost to the taxpayers of Broome County. EMC recommends a phased remediation with cap and water supply first, and then pump and treat only if necessary.

Response:

The Feasibility Study Report predicts, based on the solute transport model, that MCL's will be achieved within four years by implementing the pump and treat system with the landfill cap. It is entirely possible that this prediction is overly optimistic due to the assumptions and limitations of the model. Nevertheless, the pump and treat system is a necessary and integral part of the remediation. Restoration of the groundwater resource at this site is feasible, warranted and must be attempted.

The pumping wells also enhance the landfill cap by providing hydrologic control. There will be some flexibility during design, and even during remedial construction, to amend the system as necessary based on actual site conditions. The duration and pump rates of various wells can be varied once the system is in place.

This site will be subject to five year reviews established by CERCLA. If, in fact, MCL's are not achieved within four years as predicted by the FS Report, alternatives will be considered during the five year review. It is premature to discuss the alternatives that might be appropriate at that time.

APPENDIX A

Superfund Proposed Plan

Colesville Landfill Site

Town of Colesville, Broome County, New York

EPA
Region 2

January, 1991

NYSDEC

PURPOSE OF PROPOSED PLAN

This Proposed Plan describes the remedial alternatives considered for the Colesville Superfund site located in the Town of Colesville, Broome County, New York, and identifies the preferred remedial alternative with the rationale for this preference. The Proposed Plan was developed by the U.S. Environmental Protection Agency (EPA) in consultation with the New York State Department of Environmental Conservation (NYSDEC). EPA is issuing the Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, 42 USC Section 9617(a) as amended, and the National Contingency Plan (NCP). The alternatives summarized here are described in the remedial investigation and feasibility study (RI/FS) report, which should be consulted for a more detailed description of all the alternatives. The RI/FS report has been prepared by Wehran-New York, Inc., Middletown, New York on behalf of the Broome County Department of Public Works, Binghamton, New York and the GAF Corporation of Wayne, New Jersey pursuant to the requirements of an Order of Consent (Index No. T010687) with the New York State Department of Environmental Conservation (NYSDEC). The NYSDEC is the lead agency for this project; EPA is a the support agency.

This Proposed Plan is being provided as a supplement to the RI/FS report to inform the public of EPA's and NYSDEC's preferred remedy and to solicit public comments pertaining to all the remedial alternatives evaluated, as well as the preferred alternative.

Changes to the preferred remedy or a change from the preferred remedy to another remedy may be made if public comments or additional data indicates that such a change will result in a more appropriate solution. The final decision regarding the selected remedy will be made after EPA and NYSDEC have taken into consideration all comments from the public. We are soliciting public comment on all of the alternatives considered in the detailed analysis phase of the RI/FS because EPA and NYSDEC may select a remedy other than the preferred remedy.

Copies of the RI/FS report, Proposed Plan, and supporting documentation are available at the following repositories:

- Town of Colesville
  Town Hall
  Harpursville, NY 13787

- New York State Department of
  Environmental Conservation
  50 Wolf Road, Room 222
  Albany, NY 12233-7010

- U. S. Environmental Protection Agency
  Emergency and Remedial Response Division
  26 Federal Plaza, Room 29-30
  New York, NY 10278

COMMUNITY ROLE IN SELECTION PROCESS

EPA and NYSDEC rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, the RI/FS report has been made available to the public for a public comment period which concludes on February 6, 1991.

Pursuant to Section 117(a) of CERCLA, a public meeting will be held during the public comment period in the Broome County Office Building, 44 Hawley Street, legislative conference room on the sixth floor, Binghamton, New York, on January 30, 1991 at 7:00 p.m. to present the conclusions of the RI/FS, to further elaborate on the reasons for recommending the preferred remedial alternative, and to receive public comments.

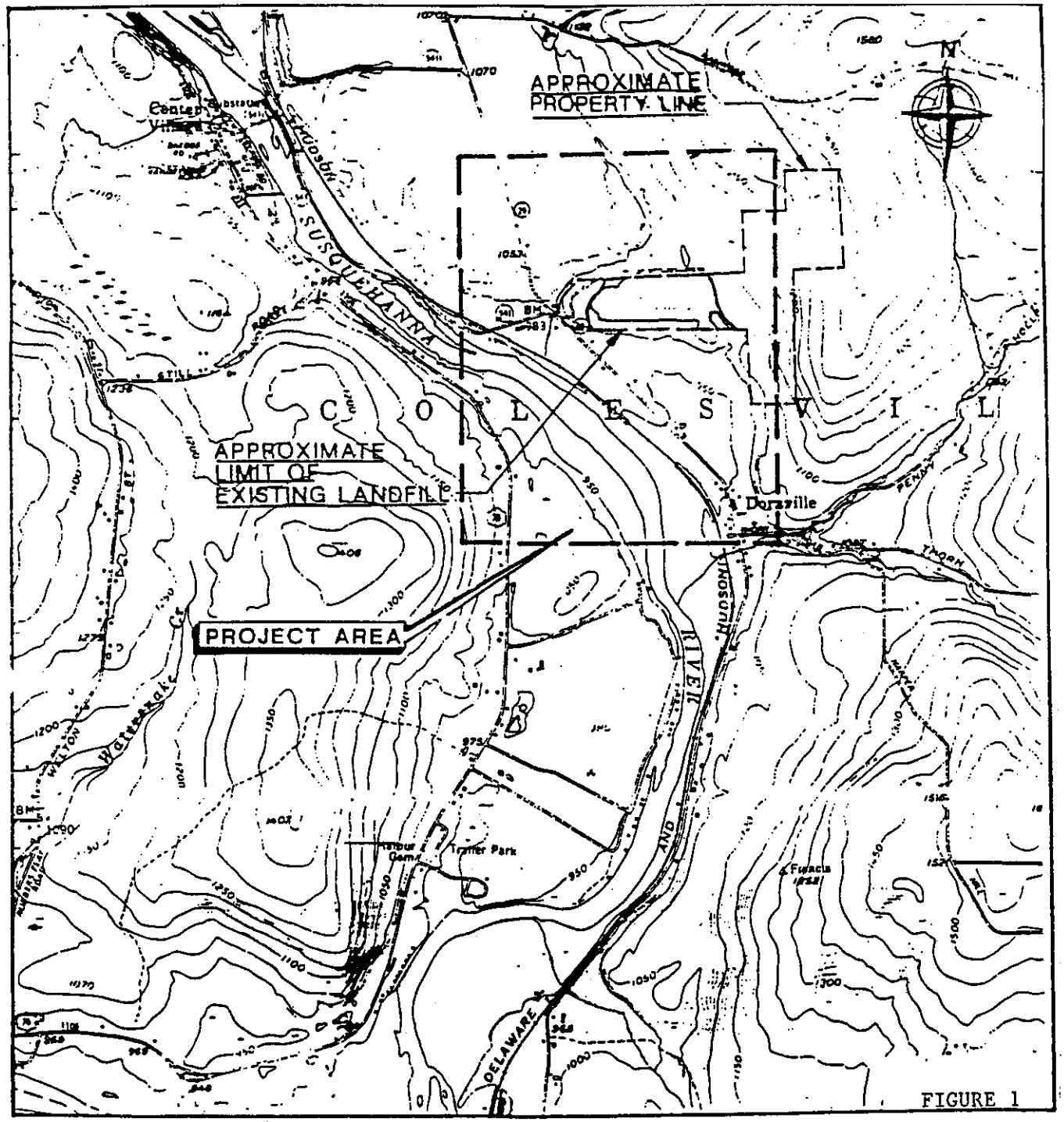

FIGURE 1

Written and oral comments will be documented in the Responsiveness Summary section of the Record of Decision (ROD), the document which formalizes the section of the remedy.

All written comment should be addressed to:

Brian Davidson, Project Manager
reau of Eastern Remedial Action
ew York State Department of
Environmental Conservation
50 Wolf Road
Albany, NY 12233-7010

BACKGROUND

The Colesville Landfill is an inactive landfill located in the Town of Colesville, Broome County, New York, (Figure 1). This area is characterized as extremely rural, and includes large tracts of undeveloped woodlands, as well as large-scale agricultural tracts and scattered residential parcels. Of the 113 acres on which the landfill is situated, only about 35 acres have been used for waste disposal. The area is bounded by East Windsor Road to the west, and by unnamed streams to the north, east, and west (termed the North and South Streams). Surface water in the area drains to the Susquhanna River. The North Stream to the Susquehanna River is

the surface water body most sensitive to potential impacts from the landfill. Most groundwater contamination in the aquifer eventually enters this tributary. The second potential impact is direct groundwater discharge to the southwest and the river.

SITE HISTORY

Landfill operations at the Colesville site commenced in 1969 and continued until 1984. Throughout its operational life, the Colesville Landfill was used for the disposal of municipal solid waste (MSW). Between 1973 to 1975, drums of industrial wastes were disposed of along with the MSW. The industrial wastes that were disposed of consisted primarily of organic solvents. A total of approximately 468,000 cubic yards of MSW and industrial wastes are estimated to have been disposed of at the site. The landfill has not been closed in accordance with New York State Part 360 landfill closure requirements.

In 1983, samples collected by the Broome County Health Department from homeowner wells near the site indicated that the Colesville Landfill was contaminating the groundwater beneath and in the immediate vicinity of the site. There are four residential wells located downgradient from the Colesville Landfill within the maximum zone of groundwater contamination. Based on the analytical results from groundwater samples taken from homeowner wells, groundwater was found to be contaminated with volatile organic compounds (VOCs) such as 1,1-dichloroethene (11 ug/l), trichloroethene (160 ug/l), 1,1,1-trichloroethene (270 ug/l), 1,1-dichloroethane (320 ug/l), chloroform (8 ug/l), and trans 1,2-dichloroethene (140 ug/l).

This results prompted the Broome County Department of Public Works to install granular activated carbon filters on private well supplies and to perform two investigative studies of the Colesville Landfill. These studies were performed by Wehran Engineering in 1983 and 1984. Both of these studies also indicated that the groundwater was being contaminated with VOCs from the landfill leachate. The contamination was found to be moving southwest toward the Susquehanna River.

The Colesville Landfill site was listed on the Superfund National Priorities List in June, 1986.

In 1988, Wehran completed an RI at the site. In 1990, Wehran completed a confirmatory sampling program which verified the conclusion of the 1988 RI. This additional investigation further defined the nature and extent of groundwater and surface water contamination. The key findings of these investigations are as follows:

. The Colesville Landfill is currently releasing low levels (parts-per-billion) of volatile organic compounds (VOCs).

. Over the last six seven years, it has became apparent that the extent of groundwater contamination is limited in area and not increasing in severity.

. The current data suggest a slight advancement of a plume southwest of the landfill, with an overall decrease in VOC concentrations at the landfill border.

. Part-per-billion levels of VOCs have been detected in wells at three residences downgradient of the landfill. This contamination has been consistent over time.

. The only bedrock well currently used within the path of the VOC plume is not affected.

. Historical and current data have failed to confirm contamination of the bedrock aquifer.

. No VOC contamination has been detected downgradient of the Lee property.

. The available data suggest that VOCs currently being released from the landfill via the groundwater pathway are not expected to impact the Susquehanna River.

. The only measurable discharge points to surface water are in leachate discharging to the North Stream and in sediments in the tributaries immediately adjacent to surficial outbreaks of landfill seeps.

. Groundwater recharge to the tributaries has not resulted in any measurable VOC levels in surface water flowing to the Susquehanna River.

. The areas affected by the seeps, as measured by VOC and metal concentrations, are limited to sediments proximate to the seeps.

. No significant releases of VOCs to the air pathway were suggested by the available survey data.

SUMMARY OF SITE RISKS

A baseline risk assessment was performed as part of the RI for the Colesville Landfill site. The risk assessment evaluates the potential impacts on human health and the environment assuming that no remedation occurs.

This baseline risk assessment considered the identity and the number of chemicals found in the various environmental media sampled, potential human and animal exposure pathways, site conditions as related to chemical migration, chemical toxicity, and appropriate environmental standards.

Indicator chemicals for the baseline risk assessment were selected based on their known or potential toxicity and

relative environmental fate and mobility characteristics. ey include VOCs such as: 1,1-dichloroethene; 1,1,1-chloroethene; trichloroethene; tetrachloroethene benzene; chlorobenzene; 1,1-dichloroethane; 1,2-dichloroethane; and vinyl chloride.

The human exposure pathways were: exposure to groundwater; dermal contact with contaminated surface water and sediments near the leachate seeps; and ingestion of game species from the vicinity of the site. EPA considers risks in the range of 10^{-4} to 10^{-6} to be acceptable. This risk range can be interpreted to mean than an individual may have a one in ten thousand to a one in a million increased chance of developing cancer as result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at the site.

The risk assessment indicates that the most significant public health risk results form the exposure to potable well water at the site. At this time, the total baseline carcinogenic risk associated with exposure to potable well water at the site is 2.85×10^{-4}. This indicates that an individual has approximately a three in ten thousand increased chance of developing cancer as a result of ing this water for 70 years. The baseline carcinogenic risk has been significantly reduced by the provision carbon filters and bottled water to the affected residences.

For non-carcinogenic compounds, combined pathway specific intakes (ingestion and inhalation) were calculated using the Hazard Index (HI) approach. The HI for the noncarcinogenic compounds present in the groundwater at the site is 3.85. An exceedence of unity, that is 1.0, in the HI indicates that conditions existing at the site are not adequately protective of human health.

The risk assessment concludes that exposure to potable water from wells in the vicinity of the site represents a significant risk to human health and the environment.

Furthermore, since the landfill has been a continuous source of groundwater contamination, contaminants are found in excess of federal and state standards in the site groundwater plume. EPA policies and regulations allow remedial actions to be taken whenever impacts result in the exceedance of Applicable or Relevant and Appropriate Requirements (ARARs). EPA has promulgated drinking water regulations designed to protect human health from the potential adverse effects of drinking water contaminants. Under the Safe Drinking Water Act, ARARs include Maximum Contaminant Levels (MCLs), hich are enforceable standards that apply to specified drinking water contaminants which EPA has determined have an adverse effect on human health. The MCLs are set to levels that are protective of human health.

Actual or threatened releases of hazardous substances from this site, if not addressed by the preferred alternative or one of the other remedial measures considered, may present a current or potential threat to public health, welfare, and the environment through the groundwater pathway.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA requires that each selected site remedy be protective of human health and the environment, be cost effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

The overall objective of the remediation is to reduce the concentrations of contaminants to levels which are protective of human health and the environment. The RI/FS report contains the detailed information and data used in determining the nature and extent of the contamination, and the development of remedial alternatives to address the contamination.

The remedial response objectives for the Colesville Landfill site are as follows:

. Control the release of VOCs from the Colesville Landfill to the underlying aquifer;

. Eliminate the leachate seeps from the Colesville Landfill, and any associated leachate discharges to the North and South Streams;

. Eliminate the potential for direct human or animal contact with any active leachate seeps; and

. Eliminate the potential risk associated with the exposure to contaminated potable well water.

Accordingly, the FS report evaluates, in detail, nine remedial alternatives for addressing the contamination associated with the Colesville Landfill site.

These alternatives are:

Alternative 1- No Action with Monitoring

Capital Cost: $0
Operation and maintenance (O & M) Cost: $14,000
Present Worth Cost: $128,000

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison of other alternatives. Under this alternative, no remedial

action to control the source of contamination would take ;e. However, long-term monitoring of the site would ⊔⊔ necessary.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 3a-Limited Action with Existing Water Supply and Use Restrictions

Capital Cost: $0
O & M Cost: $71,000
Present Worth Cost: $672,000

This alternative would involve a continuation of the present groundwater monitoring and water supply program provided by Broome County. Maintenance inspections would be upgraded to ensure that the carbon/UV filters that are currently provided at the residences are property operated for all household needs. The deeds for these properties would be restricted with respect to future use of groundwater and the property.

ıg-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 3b-Limited Action with New York Water Supply

Capital Cost: $150,000
O & M Cost: $53,000
Present Worth Cost: $648,000

This alternative would provide new water supply wells upgradient of the landfill, and a distribution system to the residences within the affected area would also be installed.

Long-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat ⁻⁻e wastes.

Alternative 4b1-Landfill Cap with Downgradient Pumping and Existing Water Supply

Capital Cost: $4,163,000
O & M Cost: $268,000
Present Worth Cost: $5,595,000

This alternative would involve the installation of multi-media cap that combines a number of layers of different materials, such as a synthetic membrane, compacted clay layer, sand drainage layer, and topsoil/vegetation. The cap should be designed in compliance with New York State Part 360 Solid Waste Regulations. Groundwater would be collected downgradient using pumping wells, and treated using air stripping. Treated effluent would be discharged to North Stream or the Susquehanna River. Potable water would be supplied to residents via the current program, as described under Alternative 3a.

Long-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 4b2- Landfill Cap with Downgradient Pumping and New Water Supply

Capital Cost: $4,313,000
O & M Cost: $250,000
Present Worth Cost: $5,646,000

This alternative would involve the placement of a multi-media cap complying with New York State Part 360 Solid Waste Regulations, the pumping of groundwater downgradient of and within the landfill using pumping wells, and treatment of the groundwater. A new water supply would be provided as described in Alternative 3a.

Long-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial action may be implemented to remove or treat the wastes.

Alternative 4c1-Landfill Cap with Pumping at Landfill and Downgradient with Existing Water Supply

Capital Cost: $4,193,000
O & M Cost: $268,000
Present Worth Cost: $5,040,000

This alternative would involve the placement of a multi-media cap complying with New York State Part 360 Solid Waste Regulations, the pumping of groundwater downgradient of and within the landfill using pumping well, and treatment of groundwater. The existing water supply pro-

ram, upgraded as described in Alternative 3a, would be ntinued.

Long-term monitoring would included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial action may be implemented to remove or treat the wastes.

Alternative 4c2-Landfill Cap with pumping at Landfill and Downgradient with New Water Supply

Capital Cost: $4,273,000
O & M Cost: $250,000
Present Worth Cost: $5,135,000

This alternative would involve the placement of a multi-media cap complying with New York State Part 360 Solid Waste Regulations, and the pumping and treatment of groundwater at the landfill and douwngradient. A new water supply and distribution system would be constructed as described in Alternative 3b.

rm monitoring would be included.

ecause this alternative would result in contaminants remaining on-site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 4d1-Landfill Cap, Downgradient Cutoff, and New Water Supply

Capital Cost: $8,811,000
O & M Cost: $230,000
Present Worth Cost: $10,977,000

This alternative would involve the placement of a partial groundwater slurry cutoff wall downgradient of the landfill and pumping and treatment of groundwater within the containment wall. A multi-media cap complying with New York State Part 360 Solid Waste Regulations would be constructed to cover the entire landfill and the limits of the slurry wall downgradient of the landfill. Attainment of groundwater standards outside the cutoff wall would occur naturally over the long-term. A new water supply would be provided as described in Alternative 3b.

Long-term monitoring would be included.

ecause this alternative would result in contaminants remaining on-site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 4d2-Landfill Cap, Downgradient Cutoff, Existing Water Supply

Capital Cost: $8,701,000
O & M Cost: $268,000
Present Worth Cost: $11,230,000

This alternative would involve the placement of a partial groundwater cutoff wall downgradient of the landfill, as described for Alternative 4d1, and pumping and treatment of groundwater within and outside of the cutoff wall. A multi-media cap complying with New York State Part 360 Solid Waste Regulations would be constructed to the limits of the slurry wall downgradient of the landfill, and to the limit of the landfill on the upgradient side. The existing water supply program would be continued as described in Alternative 3a.

Long-term monitoring would be included.

Because this alternative would result in contaminants remaining on-site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

PREFERRED ALTERNATIVE

Based upon an evaluation of the various alternatives, EPA and NYSDEC recommend Alternative 4c2 as the preliminary choice for the site remedy. This alternative consists of a landfill cap, groundwater pumping from wells at and downgradient of the landfill, treatment of the extracted water by air stripping, discharge of the treated water to the North Stream or the Susquehanna River, and the provision of a new water supply for the affected residents. The cap will eliminate leachate seeps from the landfill. The pumping system will provide containment and removal of the VOC plume, and is predicted to reduce the risk to acceptable levels within one year and to attain groundwater standards within four years. The preferred alternative will be immediately protective of human health by utilizing a new water supply. Long-term monitoring would be utilized to verify the effectiveness of the groundwater remediation and the cap.

The preferred alternative is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. However, because treatment of the principal threats of the site is not practicable, this remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. The size of the landfill and the fact that there are no identified on-site hot spots that

represent the major sources of contamination preclude a remedy in which contaminants could be excavated and treated effectively.

RATIONALE FOR SELECTION

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely short-term effectiveness, long-term effectiveness and permanence, reduction of toxicity, mobility or volume, implementability, cost, compliance with, ARARs overall protection of human health and the environment, and state and community acceptance.

The evaluation criteria are explained below.

o Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

o Compliance ARAR's Addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

o Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

o Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies, with respect to these parameters, a remedy may employ.

o Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

o Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed.

Cost includes the estimated capital, O&M, and the present worth costs.

o State acceptance indicates whether, based on its review of the RI/FS report and the Proposed Plan, the State concurs with, opposes, or has no comment on the preferred remedy at the present time.

o Community acceptance will be assessed in the ROD and refers to the public's general response to the alternatives described in the RI/FS report and the Proposed Plan.

A comparative analysis of these alternatives based upon the evaluation criteria note above, are as follows:

Overall Protectiveness of Human Health and Environment

The no-action alternative is not protective of human health and the environment. Alternatives involving the utilization of the existing water supply system (Alternatives 3a, 4b1, 4c1, and 4d2) are protective of the human health, since each of these alternatives call for a new water supply system.

Alternative 3a is not protective of the environment since no provision is provided for source containment, treatment, or leachate seepage control. However, with Alternatives 4b1, 4b2, 4c1, 4c2, 4d1, and 4d2 source containment, groundwater treatment and leachate seepage control are provided, protecting the environment.

Compliance with ARARs

The no-action alternative will not ensure compliance with chemical-specific ARARs within a reasonable or predictable time frame. Alternative 3a, which addresses actual current groundwater use, will immediately comply with health-based ARARs at the point of use, but provides no action to ensure compliance at the groundwater source. The pumping and containment alternatives (Alternatives 4b1, 4b2, 4c1, 4c2) also ensure immediate point-of-use compliance with health-based ARARs. However, these alternatives differ in their estimated time to compliance at the groundwater source. Nevertheless, each containment alternative has the potential to meet chemical-specific ARARs at the groundwater source (i.e., outside the landfill boundary). The containment alternatives involving a cutoff wall (Alternatives 4d1 and 4d2) ensure immediate point-of-use compliance with health-based ARARs, but will not result in compliance at the groundwater source within a reasonable time frame.

All containment alternatives can be designed to meet action-specific ARARs with conventional technology.

Long-Term Effectiveness and Permanence

The no-action alternative is neither effective or permanent in the reduction of the magnitude of risk associated with the Colesville Landfill site.

Alternative 3a is effective in the reduction of risk, but the

permanence of this option will depend on the strict enforcement control. By comparison, Alternative 3b is effective in the long-term reduction of risk to existing residents, but not to future residents.

Alternatives 4b1, 4c1 and 4d2 provide for controlled source containment and groundwater treatment, which will reduce risk, but long-term maintenance and monitoring will be required. The limited action component of these alternatives reduces the adequacy and reliability of these options when compared to the remaining alternatives.

Alternatives 4d2, 4c2, and 4d1 provide for the reduction of risk by virtue of the provision for a new water supply, source containment and groundwater treatment. The proposed controls will require long-term operation and maintenance, but system adequacy and reliability are relatively greater as the local water supply will be unaffected by the remedial action.

In addition, Alternatives 4b1, 4b2, 4c1, and 4c2 will provide long-term effective attainment of ARARs at the groundwater source after several years.

Reduction of Toxicity, Mobility, or Volume through Treatment

The no-action alternative involves no treatment, and consequently, will not contribute to the reduction of contaminant toxicity, mobility, or volume at the site. This assessment is also applicable to Alternatives 3a and 3b.

All the containment alternatives (Alternatives 4b1, 4b2, 4c1, 4c2, 4d1, and 4d2) reduce the toxicity, mobility, and volume through containment and the treatment of the groundwater using air stripping. For these alternatives, emissions from the air stripper will be at allowable limits for discharge to the atmosphere or destroyed through the use of a catalytic destruction unit.

Short-Term Effectiveness

In the short-term, the no-action alternative is not effective in protecting human health and the environment. Improvement of groundwater quality will only occur through natural recovery, which is predicted to require at least 20 years.

Alternative 3a, Limited Action, is effective in the short-term only for the existing residents. No significant community or worker exposure during the remediation is anticipated. No improvement in environmental quality is envisioned. The same assessment also applies to Alternative 3b.

All the containment options (Alternative 4b1, 4b2, 4c1, 4c2, 4d1 and 4d2) will provide immediate point-of-use compliance with health-based ARAR limits. Alternatives 4c1 and 4c2 are predicted to provide aquifer cleanup to ARAR limits in several years. Aquifer cleanup under Alternatives 4d1 and 4d2 will take much longer.

Protection against community and worker exposure will be required with all of the containment options. For Alternatives 4b2, 4c2, and 4d1, interim measures, such as filter maintenance, will be required until the new water supply system is installed and is operational, to protect existing residents. Additional worker protection measures, pursuant to Occupational Safely and Health Administrative requirements under Alternatives 4d1 and 4d2, will be required.

Environmental impacts during construction of the groundwater pumping and treatment components of the containment options could be mitigated readily. Relatively greater potential environmental impacts are envisioned with alternatives 4d1 and 4d2, and these impacts will require more involved mitigation measures during the installation of the cutoff wall.

Implementability

All of the alternatives are implementable.

Alternative 3a presents added administrative requirements for successful implementation due to the need to purchase additional affected residences and to institute and enforce land and groundwater use controls. This same factor must be considered with each containment options that include limited action as a subalternative component.

The containment options calling for a downgradient cutoff wall will involve some difficult construction on steep slopes, but Alternatives 4d1 and 4d2 can be constructed. In contrast, the pumping components of all the containment options can be implements quickly and efficiently. No problems are envisioned with any of the alternatives with respect to the availability of services and materials.

Cost

The no-action alternative has the lowest estimated present value cost of $128,000. Alternatives 3a and 3b have slightly greater estimated present value cost of $672,000 and $646,000, respectively.

Alternatives 4b1, 4b2, 4c1, and 4c2 have present value costs ranging from $5,040,000 to $5,646,000.

Alternatives 4d1 and 4d2, which call for a partial downgradient cutoff wall, are the most expensive at $10,977,000 and $11,230,000, respectively.

State Acceptance

NYSDEC concurs with the preferred alternative.

Community Acceptance

Community acceptance of the preferred remedy will be assessed in the ROD following a review of the public comments received on the RI/FS report and the Proposed Plan.

CONCLUSION

EPA and NYSDEC believe that the preferred remedy described above is fully protective of human health and the environment, meets all ARARs, offers the best balance among the evaluation criteria discussed above, and satisfies the statutory preference for treatment as a principal element in remedy selection.

It is important to note that the remedy described above is the preferred remedy for the site. The final selection will be documented in the ROD only after consideration of all comments on any of the remedial alternatives addressed in the Proposed Plan and the RI/FS report.

APPENDIX B

Notice of Public Comment Period and
Public Meeting by the New York State
Department of Environmental Conservation

Notice is hereby given that at the time and place designated below the New York State Department of Environmental Conservation (NYSDEC) will be holding a public meeting to solicit public comments on remedial alternatives for the Colesville Landfill Inactive Hazardous Waste Site (#704010) on East Windsor Road in the Town of Colesville. Written comments will be accepted during a public comment period that will begin on January 7, 1991 and will continue until February 5, 1991.

The Colesville Landfill is a 35-acre landfill which was operated by Broome County from 1969 to 1984. Between 1973 and 1975 drums of industrial wastes were codisposed with municipal solid waste. In 1983, Broome County Health Department homeowner well samples indicated groundwater contamination in the immediate vicinity of the landfill. The landfill gates were closed in 1984 and the site was subsequently listed on the National Priority List (NPL).

A two phase hydrogeologic investigations of the Colesville Landfill site was completed in 1984. In April 1987, Broome County, GAF Corporation and the NYSDEC entered into an Order on Consent which required a Remedial Investigation and Feasibility Study (RI/FS) to be performed on the Colesville site. The work plan for the RI/FS was presented to the public at two (2) public meetings held on February 4, 1987 at the Broome County Office Building in Binghamton, New York. The Remedial Investigation (RI) was completed in September 1988. The RI Report concluded that:

- The landfill is currently releasing low levels of volatile organic compounds to the groundwater.
- An off-site plume of contaminated groundwater exists southwest of the site.
- Three (3) homeowner wells have been contaminated by volatile organic compounds.
- Impacts from the site to air, surface water and sediments are not significant.

A Confirmatory Sampling Report completed in February 1990 essentially confirmed the RI findings and provided additional data validated data. A Landfill Gas Evaluation Report, dated August 1990, indicated only low levels of methane in one area on the southwest perimeter of the site.

The Feasibility Study (FS), which evaluates remedial alternatives for the site, was completed in December 1990.

The FS Report evaluates the following nine (9) alternatives in detail:

- Alternative 1 - No Action with Monitoring
- Alternative 3a - Limited Action with Existing Water Supply and Use Restrictions. This Alternative would upgrade existing carbon/UV filters, purchase properties and restrict deeds if possible.

- Alternative 3b - Limited Action with New Water Supply. This Alternative would provide new water supply wells upgradient of the landfill and a distribution system.

- Alternative 4b1 - Landfill Cap with Downgradient Pumping and Existing Water Supply. This Alternative includes a cap with downgradient pumping and treatment of groundwater.

- Alternative 4b2 - Landfill Cap with Downgradient Pumping and New Water Supply. This Alternative includes a cap, pumping and treating downgradient, and a new water supply.

- Alternative 4c1 - Landfill Cap with Pumping at Landfill and Downgradient with Existing Water Supply. The Alternative includes a cap, pumping groundwater downgradient and within the landfill, treatment and upgrading existing water supply treatment systems.

- Alternative 4c2 - Landfill Cap with Pumping at Landfill and Downgradient with New Water Supply. This Alternative includes a cap, pumping at the landfill and downgradient, treatment and a new water supply.

- Alternative 4d1 - Landfill Cap, Downgradient Cutoff and a New Water Supply. This Alternative includes a cap, a partial groundwater slurry cutoff wall, pumping and treating within the containment wall and a new water supply.

- Alternative 4d2 - Landfill Cap, Downgradient Cutoff, and Existing Water Supply. This Alternative includes a cap, a partial groundwater cutoff wall, pumping and treatment of groundwater with and outside the cutoff wall, and upgrading existing water supply systems.

The FS Report recommends that Alternative 4c2 above be implemented.

The United States Environmental Protection Agency (USEPA) in consultation with the NYSDEC, has issued a Proposed Plan for the Colesville Landfill as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended, and Section 300.430(f) of the National Contingency Plan (NCP). The Proposed Plan summarizes the findings of the RI/FS. The administrative record file, which contains the information upon which the selection of the remedial response action will be based, is available at the following location:

Colesville Town Hall
Box 27
Harpersville, New York
Telephone: (607) 693-1174
Hours: Monday-Friday 9:00 am - 4:00 pm
Saturday 9:00 am - Noon

The Proposed Plan, the RI Report, FS Report and other reports generated on the Colesville site are also available for public review of the NYSDEC offices in Kirkwood and Albany, and the USEPA office in New York City.

Location of Public Meeting	Date and Time
Second Floor Conference Room Broome County Office Building 44 Holly Street Binghamton, New York	January 30, 1991 7:00 pm

Written and oral comments will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), the document which formalizes the selection of the remedy.

Written comments should be sent to:

Mr. Brian Davidson
Project Manager
Division of Hazardous Waste Remediation
New York State Department of Environmental Conservation
50 Wolf Road - Room 222
Albany, New York 12233-7010