Department of Environmental Conservation

Division of Environmental Remediation

Environmental Restoration
Record of Decision

Mount Morris Industrial Park Site
Village of Mount Morris
Livingston County, New York
Site Number B00122-8

March 2003

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* ERIN M. CROTTY, *Commissioner*

DECLARATION STATEMENT
ENVIRONMENTAL RESTORATION RECORD OF DECISION

Mount Morris Industrial Park Environmental Restoration Site
Village of Mount Morris, Livingston County, New York
Site No. B00122-8

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Mount Morris Industrial Park site, an environmental restoration site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Mount Morris Industrial Park environmental restoration site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened releases of hazardous substances and petroleum products from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Site Investigation/Remedial Alternatives Report (SI/RAR) for the Mount Morris Industrial Park site and the criteria identified for evaluation of alternatives, the NYSDEC has selected source area treatment, monitored natural attenuation, and institutional controls. The components of the remedy are as follows:

< Recovery of Floating Petroleum Product - Installation of petroleum recovery wells (two anticipated).

< Enhanced Bioremediation - Injection of oxygen releasing compound (ORC) into source areas with direct-push equipment (e.g., Geoprobe).

< Cap/Cover - Capping of source areas with asphalt, soil, or gravel will serve to restrict access/exposure potential to contaminated soils.

<	Monitored Natural Attenuation - Since the preferred remedy will not immediately meet groundwater standards, a monitoring program will be instituted (monitored natural attenuation). This program will allow the effectiveness of the selected remedy to be monitored and will be a component of the operation and maintenance for the site. The monitoring program will be evaluated annually to determine whether further monitoring is necessary.

<	Institutional Controls - Deed restrictions on future site use (e.g., residential or day care facilities are excluded), groundwater use, and disturbance of source area soils will mitigate the risk of exposure to site contamination. In addition, engineering controls for any construction at the site will include a soil management plan (procedures for handling, characterizing, and disposing of potentially-contaminated soils), and requirements for construction of buildings at the site (slab on-grade with a sub-slab vapor barrier and ventilation system).

<	Annual Certification - The site owner will annually certify to NYSDEC that the institutional controls have been adhered to and that the conditions at the site are fully protective of public health and the environment in accordance with this Record of Decision.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective.

Date	Dale A. Desnoyers, Director Division of Environmental Remediation

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RECORD OF DECISION

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SECTION 1: <u>SUMMARY OF THE RECORD OF DECISION</u>

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) has selected a remedy for Mount Morris Industrial Park. The presence of hazardous substances has created threats to human health and/or the environment that are addressed by this remedy.

The 1996 Clean Water/Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Under the Environmental Restoration (Brownfields) Program, the State provides grants to municipalities to reimburse up to 75 percent of eligible costs for site investigation and remediation activities. Once remediated, the property can then be reused.

The Mount Morris Industrial Park brownfield site (the "site") consists of an approximate 1.5-acre vacant parcel of land located within an approximate 22-acre industrial park near the intersection of Connor Avenue and Main Street in the Village of Mt. Morris. The industrial park is owned and administered by the Livingston County Industrial Development Agency (LCIDA) which applied for and received brownfield funding to investigate this site. As more fully described in Sections 3 and 4 of this document, former use of the site as a petroleum terminal has resulted in the release of petroleum contaminants to the environment. Site contamination includes volatile organic compounds (such as benzene, toluene, and xylene) and semivolatile organic compounds (such as naphthalene and pyrene). These releases have resulted in the following threats to the public health and/or the environment:

- A threat to human health associated with potential exposure to contaminated groundwater by potential future groundwater users or to contaminated soils and groundwater by workers during future construction activities at or near the site.

- An environmental threat associated with the impacts of contaminants to subsurface soils and groundwater.

In order to eliminate or mitigate the threats to the public health and/or the environment that the hazardous substances disposed at the Mount Morris Industrial Park brownfield site have caused, the following remedy was selected to allow for restricted commercial, industrial, or recreational use of the site:

< Source Area Treatment - Recovery of floating petroleum product, injection of oxygen (e.g., an oxygen releasing compound) in the source area to enhance bioremediation, and installation/maintenance of a cap/cover over the source area will act to reduce contaminant mass and minimize the risk of exposure to contaminants.

< Monitored Natural Attenuation - Natural processes, such as biodegradation by soil microbes, sorption, and dispersion/dilution, appear to have controlled the migration of groundwater contamination. The addition of oxygen to the source area is expected to further enhance the breakdown of contaminants by bacteria. Long-term groundwater monitoring will assess the effectiveness of these processes over time.

< Institutional Controls - Deed restrictions on future site use (e.g., residential or day care facilities are excluded), groundwater use, and disturbance of source area soils will mitigate the risk of exposure to site contamination. In addition, engineering controls for any construction at the site will include a soil management plan (procedures for handling, characterizing, and disposing of potentially-contaminated soils), and requirements for construction of buildings at the site (slab on-grade with a sub-slab vapor barrier and ventilation system).

< Annual Certification - Site owners will annually certify to NYSDEC that the institutional controls have been adhered to and that the conditions at the site are fully protective of public health and the environment in accordance with this Record of Decision.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Mount Morris Industrial Park brownfield site (B-00122-8) consists of an approximate 1.5-acre undeveloped, partially-wooded parcel located in an approximate 22-acre partially-developed industrial park (see Figures 1 and 2 at the back of this document). The site is located on the south side of Connor Avenue near the intersection with Main Street (Rt. 36) in the Village of Mt. Morris. The site is currently bounded by the Genesee Valley Greenway on the west and on the north, south and east by undeveloped industrial park property owned by the LCIDA, portions of which are actively farmed.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

Historical records indicate that between approximately 1930 and 1982, a number of companies owned and operated the site as a petroleum bulk storage and distribution facility. Based on the presence of petroleum contamination in soil and groundwater (as discussed below in Sections 3.2

and 4), it is apparent that historic petroleum spills/releases occurred during former operations at the site.

As reported in a 1990 Phase I Environmental Review, the Abstract of Title provided the following chronology of site ownership:

Livingston County IDA	1991 - present
Champion Products, Inc.	1981 -1991
Buell Oil Co., Inc.	1979 - 1981
Radesi, Inc.	1974 - 1979
C.E. Wemett & Co., Inc.	1941 - 1974
Shell Oil Company, Inc.	1939 - 1941
Shell Union Oil Corp.	1936 - 1939
Shell Eastern Petroleum Products, Inc.	1930 - 1936
Frank Teresi	1919 - 1930
Frank Van Dorn	prior to 1919

Review of aerial photographs from the years 1938, 1954, 1963, 1974, 1982 and 1990 indicate that:

< From at least 1938 to 1982, four cylindrical aboveground storage tanks (ASTs) were located on the southern portion of the site. A one-story building and two smaller rectangular structures (possible sheds, etc.) were also observed on the site.

< By 1990, only the one-story building was evident along with apparent concrete pads for the ASTs and one of the former smaller structures.

< From at least 1938 to the present, surrounding land use has been essentially unchanged; farmland to the north, south, and east, and to the west, an abandoned canal bed and a railroad right-of-way (now a recreational trail, the Genesee Valley Greenway).

3.2: <u>Environmental Restoration History</u>

Previous investigations performed between 1990 and 1997 identified petroleum- contaminated soil and groundwater at the site:
In 1990, a Phase I Environmental Review noted the presence of an abandoned 30 foot by 35 foot building (former office/petroleum terminal) and two concrete pads south of the building (former locations of a shed and of four petroleum ASTs noted on the aerial photographs) at the site.

In 1991, a Phase II Preliminary Testing Report (nine test pits with limited soil sampling) and a Phase II Environmental Site Investigation Report (installation and sampling of three groundwater monitoring wells) reported impacts from petroleum-related contaminants in soil and groundwater, respectively.

In February 1991, Champion Products, Inc. notified NYSDEC of petroleum contamination at the site. NYSDEC assigned a spill file (Spill # 9011650) and the site continues to have an active status.

In 1991, the LCIDA purchased the property from Champion Products, Inc., which had owned the site since 1981.

In 1997, a Phase II Investigation Report further assessed the extent of petroleum contamination at the site. However, further investigation was necessary to define the nature and extent of contamination and to evaluate remedial alternatives.

SECTION 4: SITE CONTAMINATION

In February 2000, the LCIDA entered into a State Assistance Contract (SAC) with NYSDEC to perform an environmental investigation and remedy evaluation under the brownfield program. In September 2001, a Site Investigation/Remedial Alternatives Report (SI/RAR) was completed. As summarized below, the SI/RAR presented information on investigative tasks, physical characteristics of the site, the nature and extent of contamination, contaminant fate and transport, and the identification, development and detailed analysis of alternatives to address site contamination.

4.1: Summary of the Site Investigation

The purpose of the Site Investigation (SI) was to define the nature and extent of any contamination resulting from previous activities at the site. The SI was conducted between May 1999 and May 2001 and a report entitled, "Environmental Site Investigation and Remedial Alternatives Report, Conner Avenue, Mount Morris, New York, Environmental Restoration Project #B00122-8, September 2001" was prepared which describes the field activities and findings of the SI in detail. The SI included the following tasks:

< Monitoring of nearby utilities (i.e., sewer and water lines) and associated bedding to evaluate potential contaminant migration;

< Electromagnetic induction survey (EM-31) to search for buried tanks, metal, and debris;

< Soil gas survey to screen the site for organic vapors in the unsaturated zone and identify specific areas for further investigation;

< Test pitting to assess anomalies found with the EM-31 and soil gas surveys;

< Installation of soil borings and monitoring wells for the collection and analysis of soil and groundwater samples as well as for determination of soil properties and hydrogeologic conditions; and

< Periodic measurements of groundwater elevation and floating product thickness.

To determine which media (soil, groundwater, etc.) are contaminated at levels of concern, the SI analytical data were compared to environmental standards, criteria, and guidance values (SCGs). Groundwater and drinking water SCGs identified for the Mount Morris Industrial Park site are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part 5 of New York State Sanitary Code. For soils, NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 provides soil cleanup guidelines for the protection of groundwater, background conditions and health-based exposure scenarios. In addition, for soils, background concentration levels can be considered for certain categories of contaminants.

Based on the SI results in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized below. More complete information can be found in the SI Report.

Chemical concentrations are reported in parts per billion (ppb) or parts per million (ppm). For comparison purposes, where applicable, SCGs are provided for each medium.

4.1.1: Site Geology and Hydrogeology

Site surface soils are classified as silt loam and are derived from recent alluvium (i.e., floodplain deposits from streams; Livingston County Soil Survey, 1956). Subsoils grade into glacial lake deposits (i.e., fine-grained sediments associated with glacial lakes) and glacial till deposits (i.e., poorly-sorted soils deposited in contact with or close proximity to glaciers; New York State Geological Survey, 1988). The Genesee River/Canaseraga Creek Valley once contained a series of glacial lakes as continental glaciers receded northward several millennia ago. Sediments associated with glacial lakes are typically fine-grained silts and clays except nearshore, where coarser-grained sand and gravel beach and delta deposits predominate. A classic example of a delta deposit is the flat-topped County Complex area overlooking Mt. Morris (by inference, a lake must have filled the valley to this elevation in the geologic past). Glacial till deposits form in contact with glaciers and typically contain a wide range of particle sizes (i.e., poorly sorted; often clay to boulders). Tills generally underlie (predate) glacial lake deposits as tills were formed largely beneath glaciers during periods of advance and lake deposits typically formed during glacial stagnation, melting, and retreat.

Site-specific data gathered during this study support these interpretations. Soil-boring data reveal an uppermost silt layer (2-7 feet thick) interpreted as alluvium and glacial lake deposits. The underlying soils are of variable composition (complex mixture of clay, silt, sand, and gravel) and interpreted as glacial till deposits. The gravel consists largely of sub-rounded fragments of gray shale. Bedrock was not encountered in test borings which were advanced to a maximum depth of 32 feet during this study. According to the Geologic Map of New York (New York State Geological Survey, 1970), bedrock in the area is comprised of gray shale of the West River Formation of the upper Devonian (approximately 375 million years old) Genesee Group.

Groundwater elevations have shown considerable seasonal variation, typically with high levels in late spring and lows in late summer/early autumn. For example, monitoring well MW-G has varied from 10 feet to 18 feet below ground surface (bgs) over the course of a year (see Figure 3 for well location). Coupled with a layer of floating petroleum product (i.e., light non-aqueous phase liquid with a variable thickness of 0.01 feet to 0.93 feet in MW-G), this seasonal water table fluctuation has evidently resulted in considerable vertical spreading of contamination. As discussed further below, soil borings and test pits show a significant smear zone of contamination to depths of 25 feet in the vicinity of MW-G.

Based on measurements of groundwater elevations during March, June, and October 2000, groundwater flows eastward (see Figure 3) with a horizontal gradient of approximately 0.03 feet/feet (vertical drop of 3 feet over a distance of 100 feet). Based on slug (permeability) testing of four monitoring wells, hydraulic conductivity values range from 1.02 feet/day to 8.66 feet/day with a geometric mean of 2.57 feet/day. The average groundwater flow velocity (**v**) is on the order of 180 feet/year (**v = K** x **i /n**; where hydraulic conductivity (**K**) = 2.57 ft/day, hydraulic gradient (**i**) = 0.03 ft/ft, and estimated porosity (**n**) = 0.10).

4.1.2: <u>Nature of Contamination</u>

As described in the SI report, numerous soil and groundwater samples were collected at the site to characterize the nature and extent of contamination. The following contaminants of concern were identified:

< Volatile organic compounds (VOCs) related to petroleum products (primarily benzene, toluene, ethylbenzene, xylenes, and trimethylbenzenes);

< Semi-volatile organic compounds (SVOCs) related to petroleum products (primarily naphthalene, 2-methylnaphthalene, and phenanthrene); and

< Metallic elements were detected at somewhat elevated concentrations (primarily iron, manganese, nickel, and zinc) but their spatial distribution suggests that these elements are naturally occurring.

4.1.3: <u>Extent of Contamination</u>

Table 1 summarizes the magnitude of contamination for the contaminants of concern in soil and groundwater and compares the data with the SCGs for the site (Tables 1 through 4 precede the figures in the back of the document). The following are the media which were investigated and a summary of the findings of the investigation.

<u>Soil</u>

Investigation of site soils included:

< an electromagnetic induction (EM-31; metal detector) survey;
< a passive soil gas survey (measurement of contaminant vapors in unsaturated soil);
< an evaluation of buried utilities as a contaminant migration pathway;
< excavation of 11 test pits with a backhoe;
< installation of 26 soil borings with a Geoprobe rig;
< field screening of soils with a PID (photo-ionization detector) and hydrophobic dye; and
< collection and laboratory analyses of 26 subsurface soil samples.

Anomalies identified by the metal detector and passive gas surveys helped to focus the subsequent test pitting and soil boring work. No significant buried metal was uncovered during test pitting except for an apparent dry well comprised of a metal drum; no contamination was evident. Results of the passive soil gas survey indicate that petroleum vapors are present in unsaturated soil on some portions of the site with the highest concentrations on the northern portion of the site near a former fuel dispensing area. However, based on soil gas results and PID readings, vapors do not appear to have infiltrated the buried utilities (i.e., sanitary sewer and water service) or associated bedding located along Conner Avenue on the north boundary of the site.

Data collected from eleven test pits and twenty-six soil borings indicate significant petroleum contamination (i.e., source areas) near the former fuel dispensing operations (in the vicinity of test boring TB-9) and the former above-ground storage tank area (in the vicinity of MW-G and TB-17). Figure 4 depicts the soil test pits and boring locations and the area where soil contamination exceeds NYSDEC TAGM 4046 recommended soil cleanup objectives. For example, a soil sample from a depth interval of 20-24 feet in test boring TB-17 showed VOC contamination totaling over 174 parts per million (ppm) and semi-volatile organic compounds (SVOCs) totaling over 88 ppm (representative soil VOC analytical data is tabulated in Table 2). The only SVOC exceeding NYSDEC TAGM 4046 recommended soil cleanup objectives was phenol. Since phenol was detected in only four soil samples and does not correlate with areas of petroleum contamination, it does not appear attributable to past use of the site as a petroleum bulk storage facility.

NAPL

Evidence of petroleum product (i.e., non-aqueous phase liquid; NAPL) was noted as residues in soil samples from test borings TB-9, TB-12, TB-13, and TB-17 and as a floating product layer in monitoring well MW-G. Most of the NAPL at the site is considered to be residual in nature (i.e., relatively discontinuous and immobile globules of NAPL entrapped in soil pore spaces) with some mobile (i.e., able to flow by gravity into wells) NAPL evident in MW-G. Whereas observations and data (visual observations and PID screening of soil from 37 locations) indicate very little surface or near-surface contamination, residual NAPL extends quite deep in the subsurface, ranging from roughly 10 feet below ground surface to greater than 25 feet in places.

Such a contaminant distribution pattern is consistent with downward NAPL migration from discrete spills or leaks from subsurface piping followed by pooling and horizontal spreading of mobile NAPL on top of the water table. As the water table (and mobile NAPL) fluctuate seasonally with changes in precipitation/recharge, a smear zone of residual NAPL forms from vertical spreading and entrapment of NAPL in soil pore spaces. Given the large seasonal groundwater fluctuations (10 feet or more) evident at this site, the residual smear zone is particularly thick (upwards of 15 feet).

Measurements of the floating layer of mobile NAPL in MW-G show a variable thickness from 0.01 feet to 1.23 feet. Greater NAPL thickness appears to correlate with times of rising water tables (i.e., recharge in autumn) whereby residual NAPL may coalesce/remobilize as the water table rises through the smear zone. Field observations suggest that mobile NAPL is present over an approximate 50 foot x 75 foot area in the vicinity of MW-G (former storage tank area) and analysis of the NAPL suggests that it is comprised primarily of weathered leaded gasoline mixed with minor amounts of fuel oil.

Based on dates of operation as a petroleum terminal (1930-1980), petroleum spillage at the site apparently occurred at least two decades and potentially up to seven decades ago. The relative timing of spillage is corroborated by a high degree of NAPL weathering. As noted by Kaplan et al. (1996; “Patterns of Chemical Changes During Environmental Alteration of Hydrocarbon Fuels”, Ground Water Monitoring Review, pp 113-124), the ratio of the concentrations of (benzene + toluene) / (ethylbenzene + xylenes) can be used to evaluate gasoline weathering. They reported that the average (B+T)/(E+X) ratio for newly-dispensed gasolines was 0.80 and for water in contact with fresh gasoline, the ratio was 1.0 to 5.0. At sites where the gasoline release is more than 10 years old, the ratio for groundwater in the vicinity of the source area typically is less than 0.5. At this site, the (B+T)/(E+X) ratio for NAPL (weathered gasoline) from MW-G was 0.04 and the ratio for source area groundwater was 0.32, indicating highly weathered NAPL of relatively old age.

Metals

Various metals were detected in soil and groundwater samples from the site. Of particular interest, iron, nickel, and zinc were detected in soil samples at somewhat elevated concentrations from 10 locations including two upgradient locations. Iron concentrations ranged from 2% to 4.5% but showed no systematic correlation with areas of petroleum contamination. Likewise, nickel concentrations in soil were relatively uniform (i.e., ranged between 22.9 ppm and 54 ppm). With the exception of one downgradient location [i.e., 886 ppm at Sample 007 from TB-15 (16-20')], the concentrations of zinc detected in soil samples were relatively uniform (i.e., typically ranging between 58.9 ppm and 117 ppm). The distribution pattern of these metals suggests that the metals are naturally occurring and unrelated to site contamination as elaborated on below:

< Metal concentrations are fairly consistent across the site and higher concentrations do not correlate with areas of petroleum contamination. For example, nickel and zinc in a soil sample from upgradient location MW-D were 44 ppm and 92 ppm, respectively; whereas nickel and zinc in a soil sample from source area location TB-9 were 35 ppm and 68 ppm, respectively;

< The concentrations of nickel and zinc detected in groundwater samples were not above SCGs and the highest concentrations of these metals in groundwater do not correlate with the areas of highest petroleum contamination; and

< The concentrations of nickel and zinc detected in the NAPL sample were relatively low (nickel was not detected and zinc was detected at 2.4 ppm). Of note, however, was the concentration of lead in NAPL (321 ppm) which is most likely related to lead additive in leaded gasoline. But detections of lead in site soils were much lower, ranging from 7 to 33 ppm, well within the range of natural variation.

Based on these observations and the soil data collected, iron, nickel, and zinc, as well as the other metals detected, are interpreted to be naturally occurring.

Groundwater

Four rounds of groundwater sampling have been completed at the site. The first two rounds (March and June 2000) consisted of sampling of eight wells at the site (MW-B through MW-I). The third round (October 2000) focused on contaminated wells (MW-G and MW-H) and a newly installed well (MW-J) and the fourth round (May 2001) focused on downgradient wells, MW-H and MW-J.

Groundwater samples collected from the two wells within the source areas (MW-E and MW-G) and a downgradient well (MW-H; located about 150 feet east of MW-G) contained petroleum-related VOC and SVOC concentrations that exceed SCGs. However, as shown in Table 3 below, contaminant concentrations are significantly lower in MW-H than that detected at source area wells MW-E and MW-G and samples from well MW-J (located approximately 150 feet east of MW-H and downgradient from the source area) were non-detect for petroleum-related VOCs. These data indicate that the groundwater contaminant plume has been defined and that the downgradient edge of the groundwater plume is between monitoring wells MW-H and MW-J (see Figure 3).

4.1.4: Contaminant Fate and Transport

Petroleum hydrocarbons can be divided into two major groups based on physical properties: volatile organic compounds (VOCs, such as benzene, ethylbenzene, toluene, xylenes, and trimethylbenzenes) and semi-volatile organic compounds (SVOCs, such as naphthalene and phenanthrene). VOCs represent the main contaminants of concern at the site since the petroleum present is largely gasoline which is composed primarily of VOCs. In addition, with higher solubilities and volatilities, VOCs partition more readily into water and air, show higher concentrations in groundwater, and hence present greater mobility potential than SVOCs.

Site contaminants are present in three phases: (1) non-aqueous phase (undissolved petroleum product or NAPL) which slowly partitions into (2) dissolved phase in soil water/groundwater, and into (3) vapor phase within air-filled pore space in the subsurface. The distribution and fate of the non-aqueous phase or NAPL in the subsurface depends on such factors as the volume and type (instantaneous or gradual) of spills/releases, properties of the NAPL, properties of the geologic media, and processes such as dissolution, advection, volatilization, and diffusion. Given typical densities less than water, petroleum NAPL (or Light NAPL; LNAPL) can spread rapidly downward to the water table and spread laterally until equilibrium is achieved. As noted above, NAPL can also spread vertically with seasonal groundwater fluctuations causing a thick smear zone of residual soil contamination. NAPL may also diffuse into fine-grained media such as clays and volatilize into the unsaturated zone above the water table.

As precipitation and groundwater move through such source areas, NAPL slowly dissolves into aqueous or dissolved-phase contaminants which migrate in groundwater according to prevailing hydraulic gradients (eastward in this case). Coupled with low solubilities (e.g., 0.01% to 0.2% for aromatic compounds like xylene and benzene) and rapid saturation of adjacent pore water and air, NAPL may persist in the subsurface for many decades as a long-term source of groundwater contamination as demonstrated at this site.

Dissolved-phase transport in groundwater is the most significant contaminant migration pathway at this and most other sites. Given an average groundwater flow velocity at the site on the order of 180 feet/year (refer to Section 4.1.1) and a spill age of several decades, a groundwater contamination problem of miles in extent is theoretically possible. However, site data indicate a much more limited problem roughly 200 to 300 feet in extent. Clearly, other natural processes are at work, such as biodegradation, volatilization, sorption, and dispersion, which help to reduce or attenuate contaminant concentrations and migration in groundwater.

Biodegradation is the most important fate process for petroleum contaminants. Native bacteria can readily break down and/or directly metabolize these contaminants under a wide range of conditions. Aerobic and anaerobic biodegradation can both occur but the aerobic (presence of oxygen) process is generally more efficient and rapid for petroleum contaminants (the opposite is true for halogenated [e.g., trichloroethene] contaminants). Therefore, potential remedies often include stimulating aerobic bacteria by adding oxygen into the subsurface in some manner (e.g., injection of air [air sparging] or oxygen releasing compound).

Volatilization (contaminant transfer from non-aqueous or dissolved phase to the air phase) is also certainly occurring at this site as shown by the soil gas survey. However, in the absence of active pressure gradients (such as from ventilation within buildings) or disturbed/exposed soil (such as from excavation), subsurface volatilization is a very slow process and vapors appear restricted to the site. For example, investigation showed that the buried sanitary sewer and associated bedding material located along the northern portion of the site are not acting as a preferential migration pathway.

Other processes, such as sorption, (contaminant transfer from non-aqueous or dissolved phases to solid media such as organic carbon particles) inhibit contaminant migration by sorption of contaminants to soil organic matter. Dispersion, on the other hand, acts to reduce peak contaminant concentrations (though not total mass) in groundwater through local variations in groundwater flow velocities. Both transverse and longitudinal dispersion occurs whereby peak concentrations near the source area are stretched or spread out mainly in the direction of flow but also laterally to some degree. Whereas the net effect is lower overall concentrations within a contaminant plume, contaminant travel times at the leading edge of the plume may be greater than the average groundwater travel time.

As part of this project, natural attenuation (i.e., combined effects of biodegradation, volatilization, sorption, dispersion, etc.) was evaluated using the United States Environmental Protection Agency Bioscreen software model. Site-specific and default values were entered into the program and the output suggests that natural attenuation is decreasing contaminant concentrations and is inhibiting the migration of impacted groundwater from the site.

4.2: <u>Summary of Human Exposure Pathways</u>

This section describes the types of human exposures that may present added health risks to persons at or around the site.

An exposure pathway is the manner by which an individual may come in contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Pathways which are known to or may exist at the site include:

< Potential ingestion of subsurface soils;

< Potential direct contact with subsurface soils;

< Potential direct contact with groundwater or NAPL; and

< Potential inhalation of VOC vapors from contaminated soil and groundwater.

Public water serves the area and no residences are downgradient of the site; therefore, ingestion of contaminated groundwater is unlikely. The areas of highest contamination will be capped and subsurface disturbance and groundwater use will be restricted by institutional controls (e.g., deed restrictions) thus mitigating the known and potential future exposure pathways.

4.3: <u>Summary of Environmental Exposure Pathways</u>

This section summarizes the types of environmental exposures and ecological risks which may be presented by the site. There are no significant environmental resources (i.e., creeks/streams, wetlands, habitats, etc.) located at the Mount Morris Industrial Park site. However, a creek, Buck Run, is located about 500 feet south of the site and a recreational trail, the Genesee Valley Greenway, is located just west of the site. Investigations completed to date show no contaminant impacts or migration in these directions; groundwater flow is in an easterly direction. Data indicate that the groundwater contaminant plume is stable and of limited extent with no potential for off-site migration to environmental receptors. No pathways for environmental exposure or ecological risks have been identified. However, these contaminants have adversely impacted soils and the groundwater resource at the site.

SECTION 5: <u>ENFORCEMENT STATUS</u>

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past owners and operators, waste generators, and haulers.

The Potential Responsible Parties (PRP) for the site, documented to date, include the former owners and/or operators of the petroleum terminal listed in Section 3 (Site History). The PRPs are subject to legal actions by the State for recovery of all response costs the State has incurred. The Livingston County Industrial Development Agency will assist the State in their efforts by providing all information which identifies PRPs to the State. The Livingston County Industrial Development Agency will also not enter into any agreement regarding response costs without the approval of the NYSDEC.

SECTION 6: <u>SUMMARY OF THE REMEDIATION GOALS AND THE PROPOSED USE OF THE SITE</u>

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all standards, criteria, and guidance (SCGs) and be protective of human health and the environment. At a minimum, the remedy selected must eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous substances disposed at the site through the proper application of scientific and engineering principles.

The future use of the site is undecided but potential future uses currently under consideration include: commercial, industrial, or municipal redevelopment; redevelopment with a pocket park for the Genesee Valley Greenway; or leaving the land fallow as green space.

The remedial goals selected for this site are:

- Reduce, control, or eliminate, to the extent practicable, the contamination present within the soils and groundwater on site.
- Eliminate, to the extent practicable, the potential for direct human contact with the contaminated soils or groundwater on site.
- Provide for attainment of SCGs for groundwater quality at the site, to the extent practicable.

SECTION 7: <u>SUMMARY OF THE EVALUATION OF ALTERNATIVES</u>

The selected remedy must be protective of human health and the environment, be cost effective and comply with other statutory requirements. Potential remedial alternatives for the Mount Morris Industrial Park site were identified, screened and evaluated in a Remedial Alternatives Report. This evaluation is presented in the report entitled: "Environmental Site Investigation and Remedial Alternatives Report, Conner Avenue, Mount Morris, New York, Environmental Restoration Project #B00122-8, September 2001".

A summary of the detailed analysis follows. As presented below, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy, procure contracts for design and construction. Cost estimates assume a 5% interest rate and a 10-year operation and maintenance (O&M) period.

7.1: <u>Description of Remedial Alternatives</u>

The potential remedies are intended to address the contaminated soils and groundwater at the site.

<u>Alternative 1: No Action</u>

The No Action alternative is typically evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Present Worth:	$77,000
Capital Cost:	$0
Annual O&M:	$10,000
Time to Implement	not applicable

Alternative 2 - Institutional Controls (IC) and Monitored Natural Attenuation (MNA)

This alternative would implement institutional controls (IC; deed restrictions on groundwater use and soil excavation/management) and monitored natural attenuation (MNA; in general conformance with the guidance: *"Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites."* http://www.epa.gov/swerust1/oswermna/index.htm).

Groundwater monitoring would be conducted to assess the effectiveness of MNA in achieving the site remedial goals. The monitoring program would be evaluated annually and adjusted as necessary and the site owner would annually certify to the NYSDEC that the deed restrictions have been adhered to and that the conditions at the site are fully protective of public health and the environment. Soil contamination would not be directly addressed by this alternative.

Present Worth:	$84,000
Capital Cost:	$7,000
Annual O&M:	$10,000
Time to Implement	6 months

The following alternatives include the institutional controls (IC) and monitored natural attenuation (MNA) components of Alternative 2 above but differ in how soil contamination is addressed.

Alternative 3- IC, MNA, LNAPL Removal, In-situ Enhanced Bioremediation with oxygen releasing compound, and Capping of Source Areas

This alternative would include IC and MNA and address soil contamination with LNAPL recovery (from two recovery wells to be installed) and the injection of oxygen releasing compound (ORC) in the vicinity of known source areas (i.e., the former storage tank area near well, MW-G and the former fuel dispensing area near test boring, TB-9). The addition of ORC to the subsurface where oxygen is depleted (contaminant source areas) would be expected to stimulate native bacteria and reduce the time necessary to achieve site remedial goals. An asphalt cap (parking lot) over the source areas would reduce infiltration/contaminant mobility and the potential for direct contact with contaminated soil.

Present Worth:	$177,000
Capital Cost:	$100,000
Annual O&M:	$10,000
Time to Implement	6 - 12 months

Alternative 4- IC, MNA, LNAPL Removal, Soil Treatment with Air Sparging and Soil Vapor Extraction, and Capping of Source Areas

This alternative would include IC and MNA and address soil contamination with LNAPL recovery and capping as in Alternative 3 but would add the active remedial technologies of air injection/sparging below the water table coupled with soil vapor extraction (SVE) in the unsaturated zone. Such technologies rely on the volatilization and subsequent removal of VOCs and under the right conditions, allow more rapid cleanup of VOC contaminated sites. The addition of air/oxygen would also be expected to enhance biodegradation. However, at sites with complex stratigraphy (e.g., interbedded clays and sands) and thick smear zones such as at this site, problems arise with contacting and treating contaminants in clay-rich zones (particularly any diffused contaminants) as well as in deeper zones.

Present Worth:	$774,000
Capital Cost:	$235,000
Annual O&M:	$70,000
Time to Implement	6 - 12 months

Alternative 5 - IC, MNA, LNAPL Removal, Excavation and Off-Site Disposal of Soil, Enhanced Bioremediation with ORC in the excavation and Capping of Source Areas

As above, this alternative includes IC, MNA, LNAPL removal, and capping but would address soil contamination by excavation and off-site disposal followed by treatment of residuals with addition of ORC to the excavation. Given the thick smear zone (10-15 feet below the water table) and sizeable source areas, a considerable volume of soil (potentially upwards of 10,000 cubic yards) would require excavation with attendant problems (dewatering, hole stability, machine reach, etc.) of excavating within the saturated zone.

Present Worth:	$ 1,877,000
Capital Cost:	$1,800,000
Annual O&M:	$10,000
Time to Implement	6 - 12 months

7.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of environmental restoration project sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion.

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. The most significant SCGs identified for this site are 6NYCRR Part 703

Water Quality Regulations, NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1., and NYSDEC TAGM 4046. The documents identify groundwater standards and guidelines and soil cleanup objectives which are protective of human health and the environment.

- Alternatives 1 and 2 may eventually meet this criterion but the timeframes would be extremely long and indefinite.

- Alternatives 3, 4, and 5 would be expected to meet this criterion in a shorter timeframe given treatment of soil contamination.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

- Alternative 1 would not meet this criterion.

- Alternative 2 would reduce potential human exposure and environmental exposure with institutional controls and monitored natural attenuation.

- Alternatives 3, 4, and 5 would further reduce potential human and environmental exposure with treatment of soils, and capping of source areas.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies. Alternative 1 is not considered further since it did not meet one of the threshold criteria.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

- Alternative 2 would meet this criterion as there would be no short term adverse impacts.

- Alternatives 3 and 4 would meet this criterion as exposure to contaminated soils would be minimal although 4 would also involve potential treatment of air discharges from SVE.

- Alternative 5 would involve extensive handling of contaminated soils which may present potential short-term exposures to on-site workers and others in the vicinity of the work activities. Mitigative measures such as temporary fence installation, dust suppression controls during excavations, and implementation of a site-specific health and safety plan would be utilized to address short-term effects.

- The length of time to achieve remedial objectives would be expected to vary from longest for Alternative 2 to shortest for Alternative 5.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after

the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

- Alternative 2 would effectively prevent contact with contaminated soils; however, it would allow all identified wastes to remain on site after the remedy has been implemented. The effectiveness of this alternative in meeting this criterion would be dependent upon the adequacy and reliability of institutional controls intended to limit the risks to human exposure.

- Alternatives 3, 4, and 5 would meet this criterion by treating or permanently removing contaminated soil. However, some residuals would remain regardless of the remedy and managing risks associated with exposure to this material would be accomplished through institutional (deed restrictions) and engineering (asphalt cap) controls.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the substances at the site.

- Alternative 2 would gradually reduce the toxicity, mobility, and volume of groundwater contamination through MNA but would not provide any significant reduction in the toxicity or volume of the contaminated soil.

- Alternatives 3, 4, and 5 would meet this criterion for groundwater as above and would treat soils with increasing aggressiveness from Alternative 3 through 5. Alternative 5 would significantly reduce the volume of contaminated soil quickly (excavation and disposal/ treatment elsewhere) whereas Alternative 3, although slow, would permanently reduce the toxicity, mobility, and volume of contaminants in place (contaminant destruction by enhanced biodegradation).

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

- Alternatives 2, 3, and 4 would be technically feasible and readily implemented at the site.

- Alternative 5 (excavation) would be technically difficult given the depth of contamination, much of it below the water table. Potential problems include hole stability, machine reach, dewatering, and treatment of contaminated waters.

- All alternatives would be administratively feasible.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can

be used as the basis for the final decision. The costs for each alternative are presented in Table 4.

- The total present worth of the four alternatives are $77,000 (Alternative 2), $177,000 (Alternative 3 - OCR), $774,000 (Alternative 4 - AS/SVE) and $1,877,000 (Alternative 5 - excavation).

- Of the three alternatives (3, 4, and 5) that met the other balancing criteria, Alternative 3 is the most cost-effective.

This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. <u>Community Acceptance</u> - Concerns of the community regarding the SI/RA reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the NYSDEC addressed the concerns raised. In general, the public comments received were supportive of the overall selected remedy. However, several comments were received which oppose the proposed reuse of the property as a pocket park for the Genesee Valley Greenway. The LCIDA in turn has not reached a consensus on site reuse and would like to maintain flexibility as to future site use. Accordingly, the asphalt cap component of the remedy (an asphalt parking lot for the pocket park) has been revised to include other options such as clean soil with vegetative cover or crushed stone/gravel of at least one foot in thickness.

SECTION 8: <u>SUMMARY OF THE SELECTED REMEDY</u>

Based on the Administrative Record (Appendix B) and the discussion presented below, the NYSDEC has selected Alternative #3 (Institutional Controls, Monitored Natural Attenuation, LNAPL Removal, In-situ Enhanced Bioremediation with oxygen releasing compound (ORC), and Capping of Source Areas) as the remedy for this site. The elements of this remedy are described at the end of this section.

The selected remedy is based on the results of the SI and the evaluation of alternatives presented in the RAR. Alternative 1 did not comply with the threshold criteria and, therefore, was eliminated from further consideration. Alternative 2, while inexpensive, did not adequately reduce the toxicity or volume of soil contamination and showed greater uncertainty with long-term effectiveness and permanence. The remaining alternatives met most of the balancing criteria although Alternative 5 would be technically very difficult as well as the most expensive remedy and Alternative 4 would involve considerable O&M of active remedial systems with uncertain effectiveness. Considering the above and that Alternative 3 is the most cost-effective and feasible alternative while passively providing permanent destruction of contaminants in place, it is the preferred remedy.

The estimated present worth cost to implement the remedy is $177,000. The cost to construct the remedy is estimated to be $100,000 and the estimated average annual operation and maintenance cost for ten years is $10,000.

The elements of the selected remedy are as follows:

1. Remedial Design - A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the SI/RAR will be resolved.

2. Recovery of Floating Petroleum Product - Installation of petroleum recovery wells (two anticipated).

3. Enhanced Bioremediation - Injection of oxygen releasing compound (ORC) into source areas with direct-push equipment (e.g., Geoprobe).

4. Cap/Cover - Capping of source areas with asphalt or a minimum of one foot of soil or gravel over a demarcation layer (e.g., a geotextile fabric) will serve to restrict access/exposure potential to contaminated soils.

5. Monitored Natural Attenuation - Since the preferred remedy will not immediately meet groundwater standards, a monitoring program will be instituted (monitored natural attenuation). This program will allow the effectiveness of the selected remedy to be monitored and will be a component of the operation and maintenance for the site. The monitoring program will be evaluated annually to determine whether further monitoring is necessary.

6. Institutional Controls - Deed restrictions on future site use (e.g., residential or day care facilities are excluded), groundwater use, and disturbance of source area soils will mitigate the risk of exposure to site contamination. In addition, engineering controls for any construction at the site will include a soil management plan (procedures for handling, characterizing, and disposing of potentially-contaminated soils), and requirements for construction of buildings at the site (slab on-grade with a sub-slab vapor barrier and ventilation system).

7. Annual Certification - The site owner will annually certify to NYSDEC that the institutional controls have been adhered to and that the conditions at the site are fully protective of public health and the environment in accordance with this Record of Decision.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the Mount Morris Industrial Park environmental restoration process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.

- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.

- Two fact sheets were issued:

  “Investigation to Begin at Mt. Morris Greenway Industrial Park - October 1999" and

  “Cleanup Proposed for the Mt. Morris Industrial Park Brownfield Site - February 2003".

- A public meeting was held on February 5, 2003 to present and receive comment on the PRAP.

- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

TABLE 1

Nature and Extent of Contamination

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE	FREQUENCY Exceeding SCGs or Background	SCG/ Bkgd. (ppm/ ppb)
Soil	Volatile Organic Compounds (VOCs) - ppm	Benzene	ND to 0.49	5 of 27	0.08
		Toluene	ND to 0.11	0 of 27	1.5
		Ethylbenzene	ND to 2.90	0 of 27	5.5
		Total Xylenes	ND to 7.00	5 of 27	1.2
		1,2,3-Trimethylbenzene	ND to 5.30	2 of 27	3.2
		1,2,4-Trimethylbenzene	ND to 6.70	0 of 27	10
		1,3,5-Trimethylbenzene	ND to 16.00	3 of 27	3.3
		TICs (tentatively identified compounds)	ND to 198.40	7 of 27	10 (total VOCs)
	Semi-Volatile Organic Compounds (SVOCs) - ppm	Naphthalene	ND to 2.80	0 of 27	13
		2-Methylnaphthalene	ND to 7.70	0 of 27	36.4
		Phenol	ND to 1.60	4 of 27	0.03
		Phenanthrene	ND to 0.93	0 of 27	50
		TICs (tentatively identified compounds)	0.37 to 83.4	0 of 27	500 (total SVOCs)
	Inorganic Compounds (Metals) - ppm	Iron	20,800 to 45,000	9 of 10	40,000 (B)
		Nickel	22.9 to 54	9 of 10	50 (B)
		Zinc	58.9 to 886	9 of 10	100 (B)
Groundwater	Volatile Organic Compounds (VOCs)- ppb	Benzene	ND to 1500	7 of 20	1
		Toluene	ND to 130	6 of 20	5
		Ethylbenzene	ND to 1300	6 of 20	5
		Total Xylenes	ND to 3679	6 of 20	5
		1,2,3-Trimethylbenzene	ND to 2440	5 of 20	5
		1,2,4-Trimethylbenzene	ND to 1050	3 of 20	5
		1,3,5-Trimethylbenzene	ND to 210	3 of 20	5

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE	FREQUENCY Exceeding SCGs or Background	SCG/ Bkgd. (ppm/ ppb)
	Semi-Volatile Organic Compounds (SVOCs) - ppb	Naphthalene	ND to 674	4 of 20	10
		2-Methylnaphthalene	ND to 1020	2 of 20	50
		Phenanthrene	ND to 60	1 of 20	50
	Inorganic Compounds (Metals) - ppm	Iron	4.38 to 35.1	3 of 3	0.3
		Manganese	0.091 to 22.7	2 of 3	0.3
		Sodium	3.56 to 79.9	2 of 3	20

Note:
SCGs = Standards, Criteria, Guidance Values
ND = Not detected
(B) = site-specific background value based on evaluation of soil boring data
ppm = parts per million
ppb = parts per billion

TABLE 2

Soil VOC Contamination

VOCs	SOIL SAMPLE LOCATIONS - VOC CONCENTRATIONS (ppm)							SCGs
	TP-F (8.5')	TB-13 (16'-20')	TB-18 (16'-20')	TB-9 (14-16')	MW-G (16'-20')	MW-G (12'-16')	TB-17 (20'-24')	
Benzene	ND	0.17	0.08	0.32	0.49	0.34	0.24	0.80
Ethylbenzene	0.26	2.5	0.12	0.23	1.6	1.2	2.9	5.5
Toluene	ND	ND	0.03	0.11	ND	0.60	ND	1.5
Total Xylenes	1.1	4.7	0.16	0.88	3.6	3.4	7	1.2
Total TCL VOCs	1.43	7.37	0.39	1.54	6.25	5	10.14	NA
TICs								
1,2,4-Trimethylbenzene	2.4	ND	ND	ND	ND	ND	6.7	10
1,2,3-Trimethylbenzene	3	ND	0.06	6.3	ND	5.3	4.7	3.2
1,3,5-Trimethylbenzene	ND	9.1	0.08	8.8	4.1	1.6	16	3.3
Total TICs*	26.78	198.4	1101	64.11	79.9	34.77	164.5	NA
Total TCL & TIC VOCs	28.21	205.77	1.49	65.65	86.15	39.77	174.64	$\leq$ 10

VOCs = Volatile Organic Compounds
SCGs = Standards, Criteria, Guidance Values
TCL = Target Compound List
TICs = Tentatively Identified Compounds
ND = Not Detected above the laboratory detection limit
NA = Not Applicable

TABLE 3

Groundwater VOC Contamination

VOC CONTAMINANTS	MONITORING WELLS/ VOC CONCENTRATIONS (ppb)			SCGs (ppb)
	MW-E	**MW-G**	**MW-H**	
Benzene	130	1500	48	1
Ethylbenzene	890	1300	31	5
Toluene	68	130	5	5
Total Xylenes	1535	3679	26	5
TOTAL TCL VOCs	2623	6609	110	NA
TICs				
1,2,3-Trimethylbenzene	200	2440	ND	5
1,2,4-Trimethylbenzene	720	ND	9	5
1,3,5-Trimethylbenzene	210	ND	30	5
Naphthalene	ND	220	ND	10
TOTAL TICs	8129	8680	683	NA
TOTAL TCL & TIC VOCs	10752	15289	793	NA

VOC = Volatile Organic Compound
TCL = Target Compound List
TICs = Tentatively Identified Compounds
ND = Not Detected above reported laboratory detection limit
NA = Not Available

TABLE 4

Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual O&M	Total Present Worth
Alt. 1 - No Further Action w/ Monitoring	$0	$10,000	$77,000
Alt. 2 - IC/MNA	$7,000	$10,000	$84,000
Alt. 3 - ORC	$100,000	$10,000	$177,000
Alt. 4 - Air Sparging/SVE	$235,000	$70,000	$774,000
Alt. 5 - Excavation	$1,800,000	$10,000	$ 1,877,000

Cost Estimates are based on 5% Discount Rate and a 10 year O&M period.

Figure 1: Mount Morris Brownfield Site - Location Map

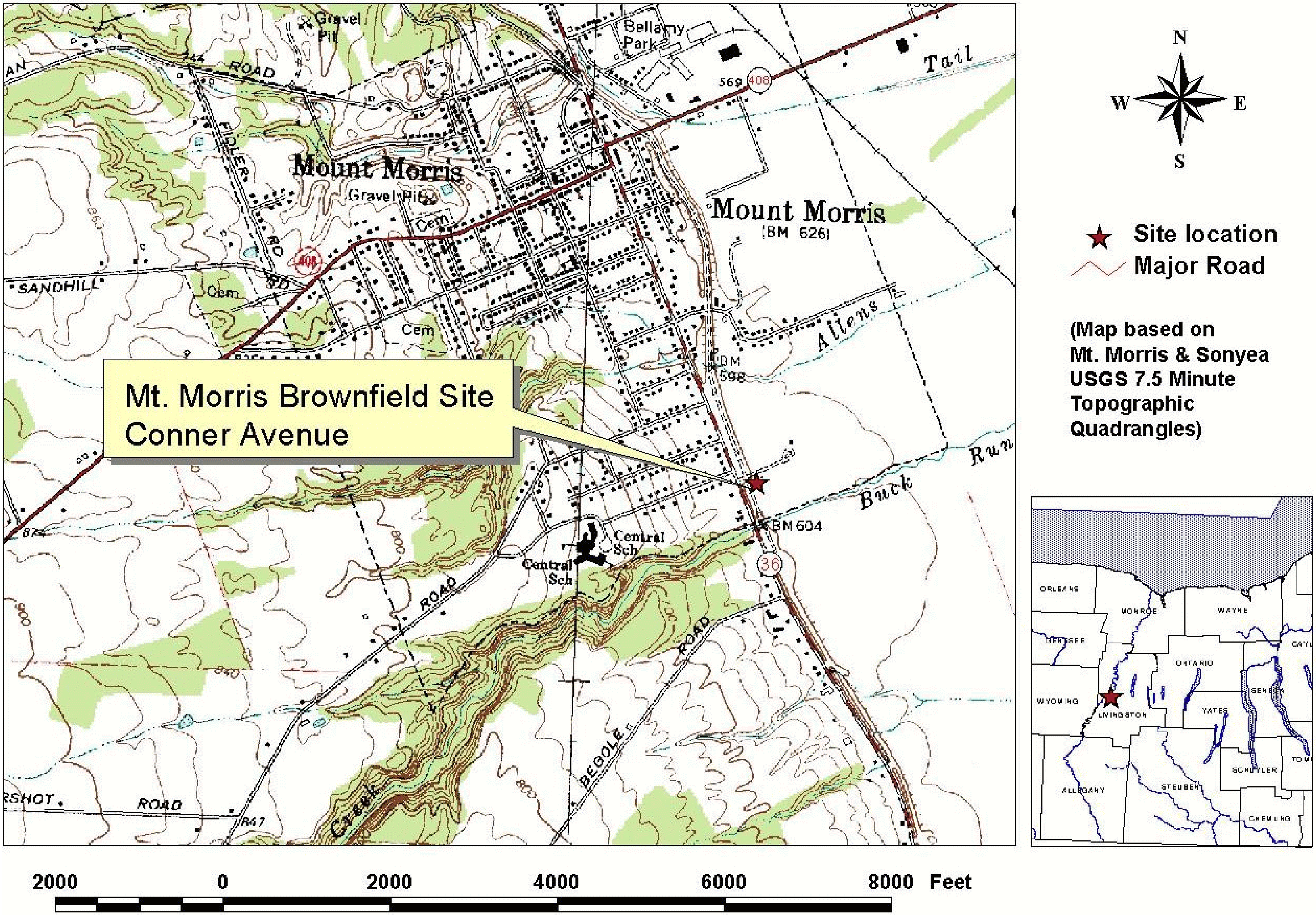


Figure 2: Mount Morris Industrial Park Brownfield Site

N

W E

S

★ **Site location**

Bright Blue = Village of Mount Morris boundary

Map is based on April 1995 aerial infrared photos:

Red = emergent vegetation

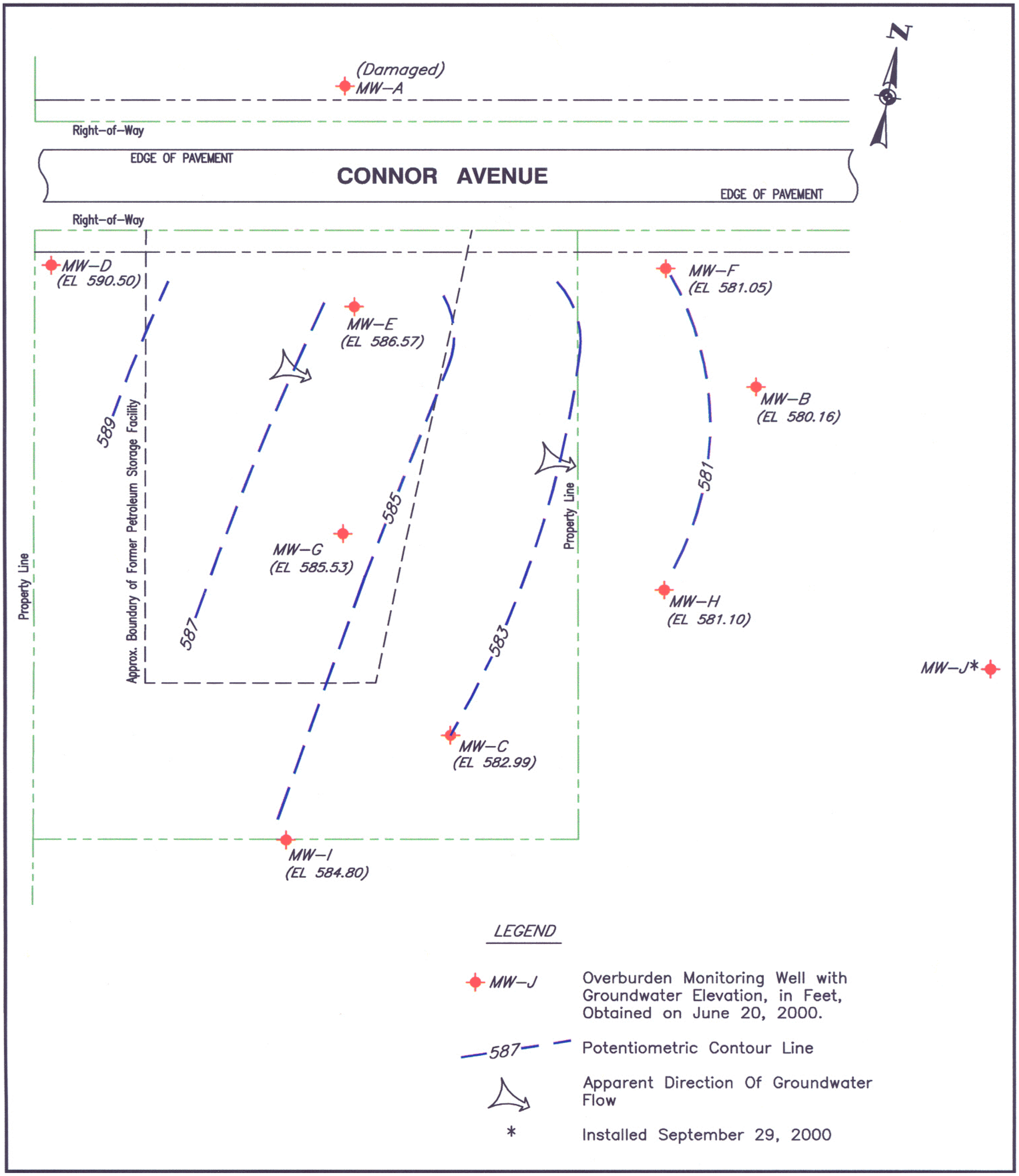
Drab Green/Gray = plowed fields

Dark Green = trees/forest

Mt. Morris Dam is at upper left

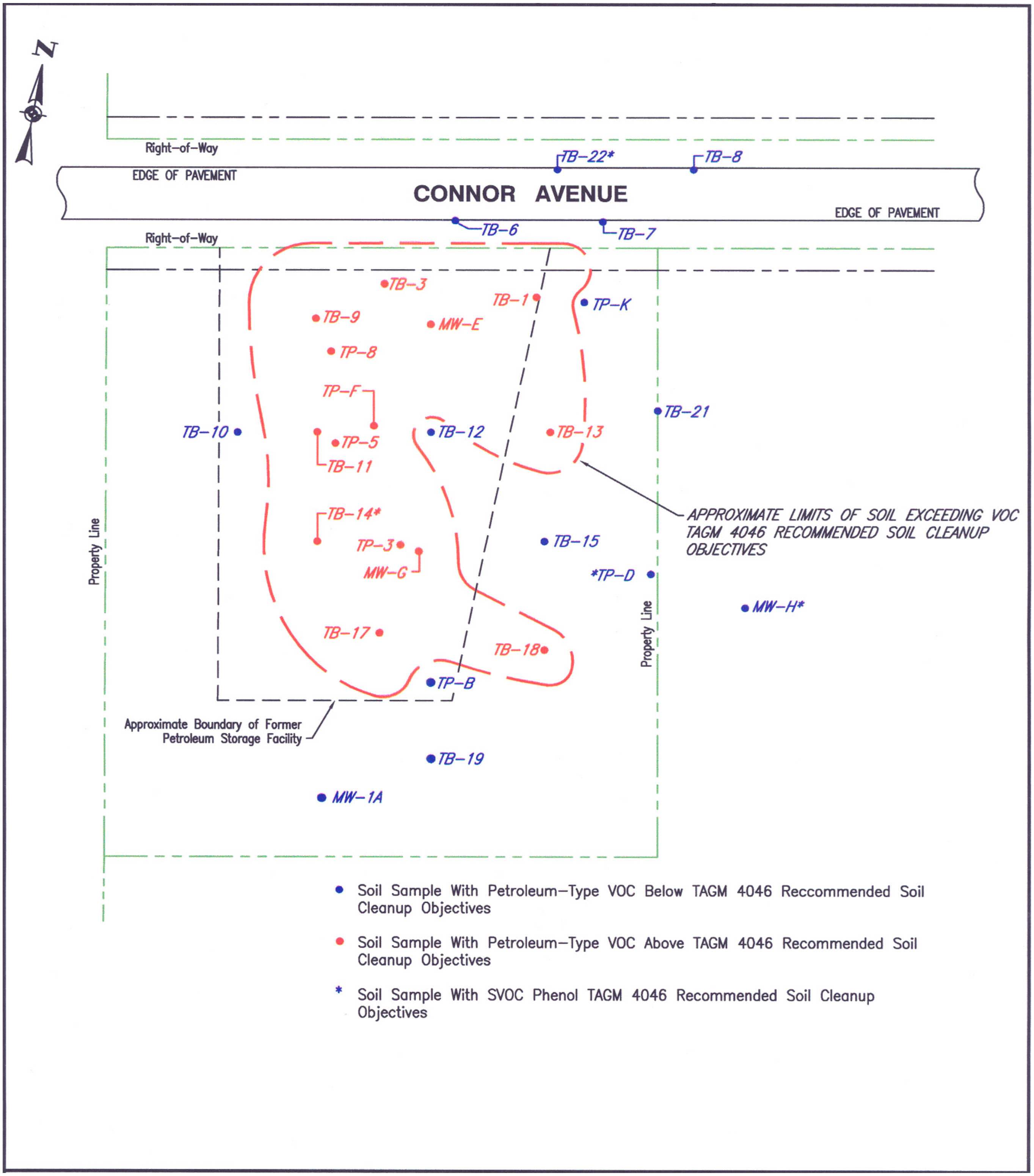
2000 0 2000 4000 6000 8000 10000 12000 Feet

Figure 3 - Monitoring Well Locations and Groundwater Flow Direction



(Scale: 1 inch = 75 feet)

Figure 4 - Soil Test Pit and Boring Locations



(Scale: 1 inch = 75 feet)

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Mount Morris Industrial Park Environmental Restoration Site
Village of Mount Morris, Livingston County, New York
Site No. B00122-8

The Proposed Remedial Action Plan (PRAP) for the Mount Morris Industrial Park site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on January 29, 2003. The PRAP outlined the remedial measure proposed for the contaminated soil and groundwater at the Mount Morris Industrial Park site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on February 5, 2003, which included a presentation of the Site Investigation (SI) and the Remedial Alternatives Report (RAR) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 14, 2003.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the NYSDEC's responses:

COMMENT 1: What is the reason the LCIDA acquired this property?

RESPONSE 1: As understood by the NYSDEC, when the LCIDA purchased a 22-acre parcel (of which the 1.5 acre site is a part) to establish an industrial park in 1991, the previous owner did not fully disclose environmental problems with the site.

COMMENT 2: Would the deed restrictions prohibit or hinder, a light to medium industrial operation from operating on this spot?

RESPONSE 2: The deed restrictions would not prohibit or hinder any industrial operation. However, development/construction plans would include engineering controls such as a soil management plan (procedures for handling, characterizing, and disposing of potentially-contaminated soils), and requirements for construction of buildings at the site (slab on-grade with a sub-slab vapor barrier and ventilation system).

COMMENT 3: There is not much industry here in Mt. Morris. I would like to see some industry come to town. Are we giving up a prime piece of industrial property by putting up the parking lot for the park?

RESPONSE 3: The parcel in question is quite small (1.5 acres) and other parcels are available in the industrial park. The LCIDA is currently undecided on site use and wishes to retain flexibility; future site use could include industrial.

COMMENT 4: Do public utilities service where the groundwater contamination is? Are protections in place to limit the public's exposure to the contaminants?

RESPONSE 4: Yes, utilities are available in the right of way along Connor Avenue. Since most of the contaminant mass is deeper than buried utilities, the risk of exposure is quite low. With implementation of the remedy, deed restrictions (e.g., residential use or day care facilities are excluded and groundwater use and disturbance of site soils are restricted) will further reduce the potential for exposure to contaminants.

COMMENT 5: Why did the fact sheet come out so late? I think more people would have come to this meeting had they been given more notice. I heard about this meeting by chance and am wondering how you determine who gets the meeting notices?

RESPONSE 5: The fact sheets are sent to nearby residents, local officials, the media, stakeholders, and other interested parties. The media is relied on to inform a wider audience since it would not be practical to inform every potentially interested party directly. We apologize for any inconvenience.

COMMENT 6: I think having a pocket park alongside an industrial area is a great idea and a win-win solution for Mt. Morris. Can this really work?

RESPONSE 6: Site reuse as an access point and pocket park for the Greenway was seen by the LCIDA as a way to encourage citizenry to use the Greenway and to appreciate the interesting history of Mount Morris and the Greenway (e.g., the Genesee Valley Canal, the railroads, and the commerce that followed these transportation corridors). So with proper planning and support, this option could certainly work. As noted in comment #16, the LCIDA would prefer to have flexibility on future site use.

COMMENT 7: From a marketing standpoint, is there a stigma attached to this property? Does the contamination make the property unattractive to market? How will you market the property to prospective companies? Does the contamination make it difficult to market to citizens? Will you be asking citizens to bring their children along and use the pocket park, even though there is contamination?

RESPONSE 7: Certainly, in an unremediated state, the property has a stigma and would be difficult to market due to concerns over contamination. The Environmental Restoration Program was instituted to address such issues and help municipalities bring such properties into productive use. The remedy will mitigate the risk of exposure to contamination and ensure that any reuse (excluding residential or day care facilities) of the site will be safe for all citizens.

COMMENT 8: Are there any other State funds or grants available to assist with abatement costs for future businesses that may locate on this property?

RESPONSE 8: The NYSDEC is unaware of any other funding sources. Vapor abatement (e.g., a vent stack keyed into sub-slab gravel with a wind turbine or an in-line fan) is a relatively inexpensive technique to prevent vapor intrusion into buildings.

COMMENT 9: I would not like the parking area to be paved.

RESPONSE 9: Comment noted.

COMMENT 10: Would the NYSDEC or LCIDA maintain this site?

RESPONSE 10: The site owner (currently the LCIDA) would maintain the site.

COMMENT 11: There is a risk to people using the proposed pocket park next to an industrial area. There are huge semi trucks that go in the site now. Kids would have to really watch out. I would be concerned about letting children play there. I think you should keep the property an industrial site and not build the park.

RESPONSE 11: Comment noted; any decision on future site use rests with the LCIDA.

COMMENT 12: Everyone in Mt. Morris knew this property was contaminated over 50 years ago.

RESPONSE 12: Comment noted.

COMMENT 13: The gas company property next to the site has two concrete slabs with propane tanks on them. Have you tried to sell the gas company this land? It would fit in nicely with what they already have there.

RESPONSE 13: Concerns over contamination and liability have impeded sale or development of this parcel up to this point. However, with implementation of the remedy, options for site use will be more varied. Any decision on future site use rests with the LCIDA.

COMMENT 14: If you build a pocket park, will you also build a restroom?

RESPONSE 14: Such a decision would rest with the site owner, the LCIDA.

COMMENT 15: I think it's a great idea to produce both a park and an industrial use area. Most towns ignore environmental aspects when promoting industrial uses, so I think its great to promote both.

RESPONSE 15: Comment noted.

Mr. Patrick Rountree (Director of the Livingston County Industrial Development Agency) submitted a letter dated March 13, 2003 which included the following comments:

COMMENT 16: The Remedial Alternatives need to be more flexible at this time in regard to future use of the Site. The LCIDA has not come to consensus on the best re-use of this Site and would like to keep its options open at this time. Potential future uses currently under consideration include: commercial, industrial or municipal redevelopment; redevelopment with a pocket park for the Genesee Valley Greenway; or leaving the land fallow as green space.

RESPONSE 16: Given this position and other comments noted above, the NYSDEC will work with the LCIDA toward an appropriate end use for the site. The potential future uses noted above would be acceptable, but since the selected remedy would leave hazardous substances at the site, institutional controls would be required.

COMMENT 17: The institutional control aspects for the remedial alternatives outlined in the PRAP include installation of a paved parking lot to minimize exposure to near surface contamination. The institutional controls aspects need to be more flexible at this time in regard to the type of impermeable layer to be applied. For example, the NYSDEC's recommended alternative #3 suggests placing an asphalt cap over source areas. It is recommended that more flexible language be employed to allow for other capping options based on the actual future re-use of the Site (e.g., cap with impermeable liner covered by topsoil or gravel, cap with building that is constructed with appropriate environmental engineering controls, etc.). Section 8.2.2.1 (page 44 of 58, fifth bullet) of the September 2001 SI/RAR includes example language in relation to options for capping near-surface contamination that would allow the LCIDA the flexibility it needs in regard to re-use of the Site.

RESPONSE 17: Given the undetermined future use noted in comment #16, NYSDEC agrees that it is premature to specify the type of cap needed during any future site development. Accordingly, the asphalt cap component of the remedy will be revised to include other options such as clean soil with seed or crushed stone/gravel of at least one foot in thickness over a demarcation layer (e.g., a geotextile fabric).

COMMENT 18: Remedial Alternative #3 outlined in the January 2003 PRAP (RA#3-PRAP) generally contains the same elements as Remedial Alternative #8 outlined in the September 2001 SI/RAR (RA#8-SI/RAR). The costs of RA#3-PRAP is between $60,000.00 and $90,000.00 less than the costs of RA#8-SI/RAR. In addition, RA#3-PRAP suggests an asphalt cap, whereas RA#8-SI/RAR only includes a soil cap that would be expected to cost less than the asphalt cap. It is requested that the NYSDEC provide the LCIDA with a detailed breakdown of the costs estimated for RA#3-PRAP for its review.

RESPONSE 18: The NYSDEC used the same cost estimates provided by the LCIDA consultant ($159,000 capital cost) but then subtracted the 20% contingency ($26,500), the $24,000 budgeted for work plans (since the remedy is straightforward and relatively simple) and $7000 budgeted for institutional controls to arrive at roughly $100,000 for capital cost. For long-term monitoring, a reduced set of target wells (five key wells) should keep those costs to a minimum.

APPENDIX B

Administrative Record

Administrative Record

Mount Morris Industrial Park Environmental Restoration Site
Village of Mount Morris, Livingston County, New York
Site No. B00122-8

1. Proposed Remedial Action Plan for the Mount Morris Industrial Park site, dated January 2003, prepared by the NYSDEC.

2. Fact Sheet - "Cleanup Proposed for the Mt. Morris Industrial Park Brownfield Site", dated February 2003, prepared by the NYSDEC.

3. "Environmental Site Investigation and Remedial Alternatives Report, Conner Avenue, Mount Morris, New York, Environmental Restoration Project #B00122-8, September 2001", prepared by Day Engineering, P.C.

4. Fact Sheet - "Investigation to Begin at Mt. Morris Greenway Industrial Park", October 1999, prepared by the NYSDEC.

5. "Work Plan - Environmental Investigation, Conner Avenue, Mount Morris, New York, Environmental Restoration Project #B00122-8, September 1999", prepared by Day Engineering, P.C.