Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Morse Industrial Corporation Site
Operable Unit No. 3
State Superfund Project
City of Ithaca, Tompkins County, New York
Site Number 755010

October 2010

New York State Department of Environmental Conservation
DAVID A. PATERSON, *Governor* ALEXANDER B. GRANNIS, *Commissioner*
DECLARATION STATEMENT - RECORD OF DECISION

Morse Industrial Corporation Site
Operable Unit No. 3
City of Ithaca, Tompkins, New York
Site No. 755010

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for Operable Unit (OU) No. 3 of the Morse Industrial Corporation site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law, 6 NYCRR Part 375, 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 (the Department) for OU No.3 of the Morse Industrial Corporation site and the public's input to the OU No. 3 Proposed Remedial Action Plan (PRAP) presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

Based on the results of the remedial investigation alternative analysis (RI/AA) for OU No. 3 and the criteria identified for evaluation of alternatives, the Department has selected East Spencer Street Sewer Line Focused Excavation and Venting:

The elements of the proposed unrestricted use remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. The removal and replacement of approximately 300 feet of sanitary sewer line (and removal of associated overburden and bedding material, if present) along East Spencer Street beginning at its intersection with Turner Place (Figure 5). Any overburden or bedding material that is excavated will be tested and properly disposed. The replacement line will be constructed using air- and water-tight joints to prevent the intrusion of soil vapor into the line from the surrounding formation. The pipe bedding will be composed of a highly permeable material to promote the venting of soil vapor. This will be enhanced by the installation of a slotted or perforated pipe within the bedding material. Soil vapor that re-enters the trench will be vented to the atmosphere via a single or series of standpipes connected to the perforated pipe. The standpipe(s) will be fitted with a wind turbine or barometric pressure-actuated device. Monitoring including, at a minimum, testing of the standpipe(s) emissions, will be implemented after the venting system is installed.

Details of the venting system monitoring program will be included in the Site Management Plan, consistent with DER-10.

3. Continued operation and maintenance of the previously installed vapor mitigation systems to achieve the Remedial Action Objective (RAO) of mitigating soil vapor intrusion into the indoor air of homes and other structures in OU No. 3.

4. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

5. Since the remedy results in contamination remaining at OU No. 3, a Site Management Plan is required, which includes the following:

   (a) an Engineering Control Plan that identifies all engineering controls for OU No. 3 and details the steps and media-specific requirements necessary to assure the following engineering controls remain in place and are effective: the venting system discussed in Paragraph 2 above and the vapor mitigation systems discussed in Paragraph 3.

   (b) a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but is not limited to:

   (i) a schedule of monitoring and frequency of submittals to the Department;
   (ii) a provision to evaluate the potential for vapor intrusion for any new buildings (i.e., homes, offices, etc.) developed within OU No. 3, including a provision for mitigation of any impacts identified;
   (iii) a provision to evaluate the potential for soil vapor intrusion for existing buildings within OU No. 3 if building use changes significantly or if a vacant building become occupied.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected for OU No. 3 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. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

10/15/2010
Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

RECORD OF DECISION
Morse Industrial Corporation Site
Operable Unit No. 3
City of Ithaca, Tompkins County, New York
Site No. 755010
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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the above referenced site. The disposal of hazardous waste at the Morse Industrial Corporation site has resulted in threats to public health and the environment within OU No. 3 that are addressed by this remedy presented in this Record of Decision (ROD). The disposal of hazardous waste at the Morse Industrial Corporation site, as more fully described in Section 5 of this document, have contaminated various environmental media. The proposed remedy, discussed in detail in Section 8, is intended to attain the remedial action objectives identified for OU No. 3 in Section 6 for the protection of public health and the environment. This ROD identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for the selected remedy. The Department has selected a final remedy for OU No. 3 after careful consideration of all comments received during the public comment period.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and the environment.

The Department has issued this ROD in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, 6 NYCRR Part 375.

SECTION 2: SITE DESCRIPTION AND HISTORY

2.1: Location and Description

The Morse Industrial Corporation site occupies 100 acres along the west side of South Aurora Street/Danby Road (Route 96B) in the South Hill portion of the City of Ithaca, Tompkins County, New York (Figure 1). The site's surface elevation ranges from 450 to 720 feet above mean sea level, resulting in a very hilly topography. The plant site consists of three main buildings flanked by a number of smaller buildings to the southwest and a series of access roads and parking lots that terrace the hillside above the plant to the east. Undeveloped woodland borders the site to the southwest along the steep embankments of South Hill.

OU No. 3, which is the subject of this document, consists of the neighborhoods, sewer lines and residential structures to the north and west of the plant site (Figures 1 and 2). An operable unit represents a portion of the site that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. The remaining operable units for this site are located at the plant and are being addressed through a December 1994 ROD and a June 2009 ROD amendment.

North of the plant, the topography drops off at a 40% grade (approximately 80 feet) to a residential area. The residential structures are generally terraced into the steep hillside. Some basement floors are directly on bedrock while others are built on a combination of bedrock and cut-and-fill material. These homes are serviced by municipal subsurface utilities including water, sewer and natural gas.

Bedrock in the area is weathered into the upper eight to twelve feet and has a series of regular vertical joint sets identified both in outcrop and through geophysical techniques. The residential neighborhood is bordered by Six Mile Creek to the west, which flows north along the base of South Hill and eventually empties into Cayuga Lake approximately two miles northwest of OU No. 3.

2.2: Operational/Disposal History

The original plant building was constructed in 1906 by Morse Industrial Corporation, which manufactured steel roller chain for the automobile industry. From approximately 1928 to 1983, Borg-Warner Corporation owned the property and manufactured automotive components and power transmission equipment. Up until the late 1970s, Borg-Warner used trichloroethene (TCE), a common solvent at the time, for cleaning and degreasing metal parts. An estimated sixty metal piercing and blanking machines were in operation from the early 1950s to 1977. These machines reportedly operated without drip pans in the 1950s, and solvents used to clean the residual oil from the floors appear to have been flushed into the plant's sanitary sewer system and are believed to have leaked out from the sewer system through cracks and joints in the sewer lines in the vicinity of the residential neighborhood to the north and west of the plant.

In 1983, Morse Industrial Corporation was purchased from Borg-Warner by Emerson Electric Company, and in the late 1980s the facility became known as Emerson Power Transmission (EPT). EPT currently manufactures industrial roller chain, bearings, and clutching for the power transmission industry. Under Emerson's ownership, TCE has not been used at the facility.

In addition, investigations conducted by the Department under the State Superfund Program suggest that spent solvents containing TCE and other volatile organic compounds (VOCs) were flushed into the sanitary sewer systems of both the former National Cash Register (NCR) facility and the Therm Inc. facility. Both of these sanitary sewer systems ultimately discharge in a westerly direction into the Columbia Street sanitary sewer line, which then in turn discharges to the Turner Place sewer line (see Figures 1 and 2 for street references in relation to OU No. 3).

2.3: Remedial History

1. Remedial Parties and Program.

The remedial program is being performed by EPT as a Responsible Party in the Department's State Superfund Program. As a result of identified hazardous waste disposal, the Department listed the Morse Industrial Corporation site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York in July 1987. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

2. Investigation/Actions at OU No. 3.

- Indoor air sampling of private residences by NYSDOH completed in May 1991
- Vadose zone monitoring completed in June 2004
- Soil sampling along Turner Place sewer in July 2006
- Initial soil vapor intrusion assessments of private residences and public structures (Phases I through V, Figure 3) completed in March 2007
- Soil vapor and manhole vapor sampling along sewer lines completed in August 2007
- Installation of mitigation systems on private residences was initiated in 2005
- Vent stack sampling completed in July 2008
- Sewer manhole assessment completed in July 2008
- Focused ambient air sampling completed in July 2008
- Supplemental investigation of sanitary sewers completed in July 2008

SECTION 3: LAND USE

The Department may consider the current, intended, and reasonable anticipated future land use of OU No. 3 and its surroundings when assessing the nature and extent of contamination. Neither soil nor groundwater data suggest the need for any land use restrictions in OU No. 3.

SECTION 4: ENFORCEMENT STATUS

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

The PRPs for the OU No. 3 site include EPT, NCR, and Therm Inc. The Department and EPT entered into a Consent Order on July 13, 1988. The Order obligates EPT to implement a full remedial program.

SECTION 5: SITE CONTAMINATION

A remedial investigation has been conducted to determine the nature and extent of contamination and to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the remedial investigation (RI) was to define the nature and extent of any contamination resulting from previous activities at OU No. 3. Remedial investigation activities for OU No. 3 were conducted between May 1991 and July 2008 as outlined in Section 2.3, and the remedial investigation is considered complete. The field activities and findings are described in the April 4, 2008 Supplemental Remedial Investigation Report and the September 3, 2009 Alternatives Analysis Report.

The following remedial investigation activities were conducted:

- Research of historical information,
- Geophysical survey to determine the lateral extent of subsurface conductive features,
- Soil borings and monitoring well installations,
- Sampling of subsurface soils, groundwater, soil vapor and indoor air,
- Human Health Exposure Assessments.

5.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to 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.
To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and surface and subsurface soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. For a full listing of all SCGs see:

http://www.dec.ny.gov/regulations/61794.html

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of OU No. 3 require remediation. These are summarized in Section 5.1.2. More complete information can be found in the reports referenced in Section 5.1.

5.1.2: Nature and Extent of Contamination

As discussed in Section 2.2, spent solvents containing VOCs from plant operations were historically discharged into the sanitary sewer system. The sewer lines servicing the plant run in a northwesterly direction through the South Hill neighborhood along Turner Place and South Cayuga Street. According to City of Ithaca utility drawings, the majority of the sanitary sewer lines along both Turner Place and South Cayuga Street are trenched directly into unsaturated, highly fractured bedrock. Releases from these sewers can be conceptualized as leaks through cracks and joints of an aging system that migrated along the surrounding bedding material, where present, or directly into the fractured bedrock. Subsequently, VOC-contaminated wastewater which seeped into the fractured bedrock continued to migrate into the deeper sediment-filled fractures (joints and bedding planes) in the bedrock or was held by capillary forces within the pore spaces. VOCs subsequently volatilize into the gaseous phase and are transported by diffusion both laterally and vertically (based on a pressure differential) through the fractures and along the sewers and laterals, eventually reaching the basements of certain homes within the South Hill neighborhood (Figure 4). This conceptual site model is supported by the results of the soil vapor and soil vapor intrusion sampling that has been conducted throughout the area. The highest concentrations of TCE and other VOCs have consistently been detected in samples collected directly over the sewer lines, while contaminant concentrations dropped off appreciably in samples collected as few as ten feet off the sewer lines.

Where present, soils in the immediate vicinity of the Turner Place sewer line within OU No. 3 were evaluated for potential impacts from historical releases. A total of 25 soil samples were collected along Turner Place from the soil/bedrock interface approximately three to six feet below grade as part of the RI work. TCE was detected in 16 of the samples, but at concentrations that were below the NYSDEC's Soil Cleanup Objective (SCO) for unrestricted use. In most instances, the concentrations were several orders of magnitude below the SCO.

Generally, there are at least three geologic profiles across OU No.3. Toward the top of the hill along the upper section of Turner Street there is a thin layer of soil underlain by a highly fractured bedrock zone. Below this highly fractured zone is more competent bedrock. Although these zones vary in thickness, generally the soil is from nonexistent to a few feet thick, and the highly fractured zone is generally less than eight feet thick.

Toward the middle of OU No. 3, about halfway between the plant site and Six Mile Creek, the soil cover thins as does the highly fractured bedrock zone. The more competent bedrock in this area is closer to the surface, accounting for a reduced shallow hydraulic conductivity.

Toward the bottom of the hillside along lower Turner Street the overall thickness of the bedrock increases, and continues at a similar slope to the hillside. The bedrock at this point is covered with deposits of alluvium (i.e., silt, clay, fine sand and peat).

Groundwater transport down the hillside occurs mainly in the shallow fractured bedrock zone. Groundwater flow is interrupted by the thinning of the shallow fractured zone toward the middle of the hill and comes to the surface as evidenced by numerous intermittent seeps. As the shallow fractured bedrock layer thickens toward the bottom of the hill groundwater transport increases through this zone until it is discharged from below into the alluvium.

Six monitoring wells were installed within OU No. 3 in both the shallow and the deeper bedrock zones to evaluate possible groundwater impacts. TCE concentrations in groundwater were either non-detect, or were below ambient water quality standards in all sample locations.

Soil Vapor Intrusion

The evaluation of the potential for soil vapor intrusion was conducted by the sampling of soil vapor, sub-slab soil vapor under structures, and indoor air inside structures. At OU No. 3, due to the presence of buildings in the impacted area, a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.

The initial sampling was conducted in five phases between the fall of 2004 and the fall/winter of 2006/2007 and involved approximately 100 structures (Figure 3). The results indicated that soil vapors were impacting the indoor air of several structures. Based on the concentrations of TCE and other VOCs detected in sub-slab soil vapor and indoor air in comparison to the NYSDOH Soil Vapor Intrusion Guidance and EPT's voluntary mitigation offers, soil vapor contamination identified during the RI was addressed during the IRM described in Section 5.2.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

Mitigation measures were taken at several structures to address both current and potential indoor air contamination by VOCs associated with soil vapor intrusion. As of mid-May 2010, 50 sub-slab depressurization systems (i.e., vapor mitigation systems) had been installed by EPT and another nine were pending. There were also outstanding offers from EPT for the installation of seven additional systems.

It is important to note that a comparison of indoor air and sub-slab soil vapor data to the NYSDOH Soil Vapor Intrusion Guidance resulted in the installation of only nine mitigation systems. All of the remaining systems (and offers) were voluntary on the part of EPT based upon the detection of TCE in indoor air.

5.3: Summary of Human Exposure Pathways

This section describes the current or potential human exposures (the way people may come in contact with contamination) that may result from the site contamination. A more detailed discussion of the human exposure pathways can be found in the reports available at the document repository. An exposure pathway describes the means by which an individual may be exposed to contaminants

originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

As discussed in Section 5.2 above, vapor mitigation systems have already been provided to the nine homes within OU No. 3 where, based upon a comparison of indoor air and sub-slab soil vapor data, the NYSDOH Soil Vapor Intrusion Guidance recommended mitigation. Continued operation of the vapor mitigation systems reduces the potential for exposure from soil vapor intrusion into the homes.

5.4: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by OU No. 3.

The environmental medium of concern within OU No. 3 is soil vapor, in particular the ability of VOC-contaminated soil vapor to migrate to homes and other structures in the area and adversely impact indoor air.

As discussed in Section 5.1.2, no site-related soil or groundwater contamination was identified during RI activities. Therefore, no remedial alternatives need to be evaluated for soil or groundwater.

Further, given OU No. 3's residential setting, there are no ecological resources of concern present.

SECTION 6: SUMMARY OF THE REMEDIATION OBJECTIVES

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial objective for OU No. 3 is:

Public Health Protection

Soil Vapor

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into the indoor air of buildings within OU No. 3.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for OU No. 3 were identified, screened and evaluated in the alternative analysis report which is available at the document repositories established for this site.

A summary of the remedial alternatives that were considered for OU No. 3 is presented below. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis.

As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following alternatives were considered to address the contaminated media identified at OU No. 3 as describe in Section 5:

Alternative 1: No Further Action

The No Further Action Alternative recognizes the remediation of the site completed by the IRM described in Section 5.2. This alternative leaves the site in its present condition and does not provide any additional protection of public health. The No Further Action Alternative serves as a baseline for comparison of the overall effectiveness of the other remedial alternatives. There are no costs associated with this alternative.

Alternative 2: No Further Action with Site Management

The No Further Action with Site Management Alternative recognizes the remediation of the site completed by the IRM described in Section 5.2 and Site Management and Engineering Controls and Institutional Control as necessary to confirm the effectiveness of the IRM. This alternative maintains engineering controls which were part of the IRM and includes institutional controls, in the

form of a Site Management Plan, necessary to protect public health and the environment from contamination remaining at the site after the IRM.

Present Worth: $536,100
Annual Costs: $43,200

Alternative 3: East Spencer Street Sewer Line Focused Excavation and Venting

Alternative 3 involves the removal and replacement of approximately 300 feet of sanitary sewer line (and removal of associated overburden and bedding material, if present) along East Spencer Street beginning at its intersection with Turner Place (Figure 5). This designated length of sewer line is where the highest concentrations of TCE were detected in soil vapor samples collected within the South Hill neighborhood. This is also the area where the highest concentrations of TCE were detected in sub-slab soil vapor samples and, not coincidentally, where five of the nine homes requiring mitigation are located. Two prominent bedrock fractures are present directly below these homes (as well as three others on South Hill Terrace that also required mitigation), and it is believed that the fractures represent a primary migration pathway for contaminated soil vapor from the East Spencer Street sewer line to the homes.

Any overburden or bedding material that is excavated would be tested and properly disposed. The replacement line would be constructed using air- and water-tight joints to prevent the intrusion of soil vapor into the line from the surrounding formation. The pipe bedding would be composed of a highly permeable material to promote the venting of soil vapor. This would be enhanced by the installation of a slotted or perforated pipe within the bedding material. Soil vapor that re-enters the pipe trench would be vented to the atmosphere via a single or series of standpipes connected to the perforated pipe. The standpipe(s) would be fitted with a wind turbine or a barometric pressure-actuated device. As is the case with the residential systems, vented vapors are not anticipated to have any measurable impact to ambient air.

Monitoring including, at a minimum, testing of the standpipe(s) emissions, will be implemented after the venting system is installed. Details of the venting system monitoring program will be included in the Site Management Plan, consistent with DER-10.

This alternative would be implemented in combination with the continued operation of the previously installed vapor mitigation systems to achieve the Remedial Action Objective (RAO) of mitigating soil vapor intrusion into the indoor air of homes and other structures in the area.
An institutional control, in the form of a Site Management Plan, would be necessary to insure proper operation and maintenance of the venting system and the vapor mitigation systems.

Present Worth: $1,143,200
Capital Cost: $596,000
Annual Costs: $44,100

Alternative 4: Soil Vapor Extraction on Sewer Lines

Alternative 4 involves the installation of a soil vapor extraction (SVE) system on the sanitary sewer lines in the area of concern (Figures 1 and 2) with the goal of removing any accumulated vapors located within the bedding material surrounding the lines. This alternative may also include the installation of a vacuum on the inside of the lines. The vapors removed by the extraction system would be treated using conventional treatment methods (e.g., vapor-phase activated carbon).

This alternative would be implemented in combination with the continued operation of the previously installed vapor mitigation systems to achieve the Remedial Action Objective (RAO) of mitigating soil vapor intrusion into the indoor air of homes and other structures in the area.

An institutional control, in the form of a Site Management Plan, would be necessary to insure proper operation and maintenance of the SVE system and the vapor mitigation systems.

Present Worth: *$4,147,000*
Capital Cost: *$2,214,000*
Annual Costs: *$155,700*

Alternative 5: Blanket Mitigation

Alternative 5 involves the installation of additional vapor mitigation systems at all homes and other structures across the area of concern (Figures 1 and 2) without additional pre-mitigation air sampling.

This alternative would be implemented in combination with the continued operation of the previously installed vapor mitigation systems to achieve the Remedial Action Objective (RAO) of mitigating soil vapor intrusion into the indoor air of homes and other structures in the area.

An institutional control, in the form of a Site Management Plan, would be necessary to insure proper operation and maintenance of the vapor mitigation systems.

Present Worth: *$2,999,650*
Capital Cost: *$1,827,000*
Annual Costs: *$94,500*

7.2: Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which sets forth the requirements for the remediation of inactive hazardous waste disposal sites in New York. A detailed discussion of the evaluation criteria and comparative analysis is included in the Alternatives Analysis Report.

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

1. 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.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. 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 engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

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

5. Short-term Impacts and 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.

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

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in the Remedial Alternatives Cost Table 1.

Table 1
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1 (No Action)	0	0	0
Alternative 2	0	43,200	536,100
Alternative 3	596,000	44,100	1,143,200
Alternative 4	2,214,000	155,700	4,147,000
Alternative 5	1,827,000	94,500	2,999,650

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

The final criterion, Community Acceptance, 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.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the Department addressed the concerns raised.

In general, the public comments on some aspects of the remedy were raised that should be highlighted but do not materially change the remedy.

Several comments were received regarding determining the effectiveness of the remedy. The remedy has been revised to include effectiveness monitoring on the sewer venting system after it has been installed.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the Department has selected Alternative 3, East Spencer Street Sewer Line Focused Excavation and Venting, as the remedy for OU No. 3. The elements of the remedy are described at the end of this section.

8.1: Basis for Selection

The selected remedy is based on the results of the RI and the evaluation of alternatives.

Alternative 3 is selected because, as described below, it satisfies the threshold criteria and provides the best balance of the balancing criterion described in Section 7.2. It would achieve the remediation goals for OU No. 3 by preventing the intrusion of contaminated soil vapor into homes through the continued operation of the existing vapor mitigation systems. Although the NYSDEC and the NYSDOH believe that such action is sufficient to mitigate potential exposure, the Responsible Party has proposed additional measures for the collection and venting of contaminated soil vapor closer to a suspected source area that otherwise would likely continue to migrate to, and accumulate beneath homes.

Alternative 1 (No Action) does not provide any protection to public health and will not be evaluated further. Like Alternative 3, Alternatives 2, 4 and 5 include the continued operation of the existing vapor mitigation systems and therefore meet the threshold criteria. Thus, the remaining criteria are particularly important in selecting a final remedy for OU No. 3.

There are no short-term impacts associated with Alternative 2. Alternatives 3 and 4 involve disruptions to the local community typical of a road construction project (e.g., street closure, heavy equipment noise, dust). Alternative 5 involves disruptions to individual homeowners or tenants associated with the scheduling and installation of additional vapor mitigation systems. Each of the alternatives is effective in the short term since each includes the continued operation of the existing vapor mitigation systems (and venting or SVE system, as applicable).

Alternatives 2 through 5 are all effective in the long term since a Site Management Plan will be implemented to insure continued operation and maintenance of the existing vapor mitigation systems.

Each of the alternatives (2 through 5) reduces the volume of contaminated soil vapor present in the subsurface through the continued operation of the existing vapor mitigation systems. Alternative 3 also reduces the mobility of the soil vapor by collecting and venting the vapor before it can migrate to, and accumulate beneath homes. Alternative 4 has the potential to reduce the mobility of the soil vapor as well, although there are a number of technical concerns regarding successful implementation of a full-scale SVE system (e.g., short-circuiting of air flow through bedding material, surrounding utility corridors and poorly sealed road surfaces).

Alternative 2 has already been implemented, as has a portion of Alternatives 3 through 5 (i.e., the existing vapor mitigation systems). Replacement of the sewer line and installation of a venting system as part of Alternative 3 relies on conventional construction methods and is readily implementable, although coordination with the City of Ithaca is necessary. Alternative 4 would require pre-design work (i.e., confirmation of existing sewer line locations and depths) to insure proper implementation. SVE pilot tests would also need to be completed to assess the appropriateness of full-scale implementation, and additional soil vapor samples would be needed to eliminate data gaps that exist along portions of the suspected pathways. Alternative 4 would also require the installation of large vacuum blowers as part of the SVE system, and finding a suitable

location for the equipment would be difficult. It is not feasible to place the equipment on the EPT facility due to the length of conveyance piping needed and the change in elevation, which would result in substantial frictional head loss within the piping. Locating the equipment within the neighborhood is also not feasible due to the significant noise associated with the blowers. Alternative 5 includes the installation of additional vapor mitigation systems. Fifty systems have already been installed throughout the neighborhood utilizing conventional construction methods, and the systems are well understood by the community. However, gaining access to a property may increase the time necessary to install a mitigation system. In addition, the construction process itself may be slowed because of access limitations and City of Ithaca involvement in the residential construction permitting process.

The costs of the alternatives vary significantly. Alternative 2 has the lowest overall cost, yet it includes no provisions to directly address the migration of contaminated soil vapor present in the subsurface. Alternative 3 has the next lowest cost, and it is the only alternative that provides a reliable means of directly addressing the migration of contaminated soil vapor. Alternative 4 is the most costly alternative, and the feasibility of successfully constructing and operating a full-scale SVE system is not likely. Alternative 5 is more costly than Alternative 3, and the need for the installation of additional vapor mitigation systems is not supported by the existing database in comparison to the NYSDOH Soil Vapor Intrusion Guidance. In addition, like Alternative 2, it does not include provisions to directly address the migration of contaminated soil vapor.

The estimated present worth cost to implement the remedy is $1,143,200. The cost to construct the remedy is estimated to be $596,000 and the estimated average annual costs for 30 years is $44,100.

8.2: Elements of the Selected Remedy

The elements of the selected unrestricted use remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. The removal and replacement of approximately 300 feet of sanitary sewer line (and removal of associated overburden and bedding material, if present) along East Spencer Street beginning at its intersection with Turner Place (Figure 5). Any overburden or bedding material that is excavated will be tested and properly disposed. The replacement line will be constructed using air- and water-tight joints to prevent the intrusion of soil vapor into the line from the surrounding formation. The pipe bedding will be composed of a highly permeable material to promote the venting of soil vapor. This will be enhanced by the installation of a slotted or perforated pipe within the bedding material. Soil vapor that re-enters the trench will be vented to the atmosphere via a single or series of standpipes connected to the perforated pipe. The standpipe(s) will be fitted with a wind turbine or barometric pressure-actuated device. Monitoring including, at a minimum, testing of the standpipe(s) emissions, will be implemented after the venting system is installed. Details of the venting system monitoring program will be included in the Site Management Plan, consistent with DER-10.

3. Continued operation and maintenance of the previously installed vapor mitigation systems to achieve the Remedial Action Objective (RAO) of mitigating soil vapor intrusion into the indoor air of homes and other structures in OU No. 3.

4. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

5. Since the remedy results in contamination remaining at OU No. 3, a Site Management Plan is required, which includes the following:

(a) an Engineering Control Plan that identifies all engineering controls for OU No. 3 and details the steps and media-specific requirements necessary to assure the following engineering controls remain in place and are effective: the venting system discussed in Paragraph 2 above and the vapor mitigation systems discussed in Paragraph 3.

(b) a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but is not limited to:

(iii) a schedule of monitoring and frequency of submittals to the Department;
(iv) a provision to evaluate the potential for vapor intrusion for any new buildings (i.e., homes, offices, etc.) developed within OU No. 3, including a provision for mitigation of any impacts identified;
(iii) a provision to evaluate the potential for soil vapor intrusion for existing buildings within OU No. 3 if building use changes significantly or if a vacant building become occupied.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at OU No. 3 and the potential remedial alternatives. The following public participation activities were conducted for OU No. 3:

- 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.
- A public meeting was held on June 17, 2010 to present and receive comments on the PRAP.
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

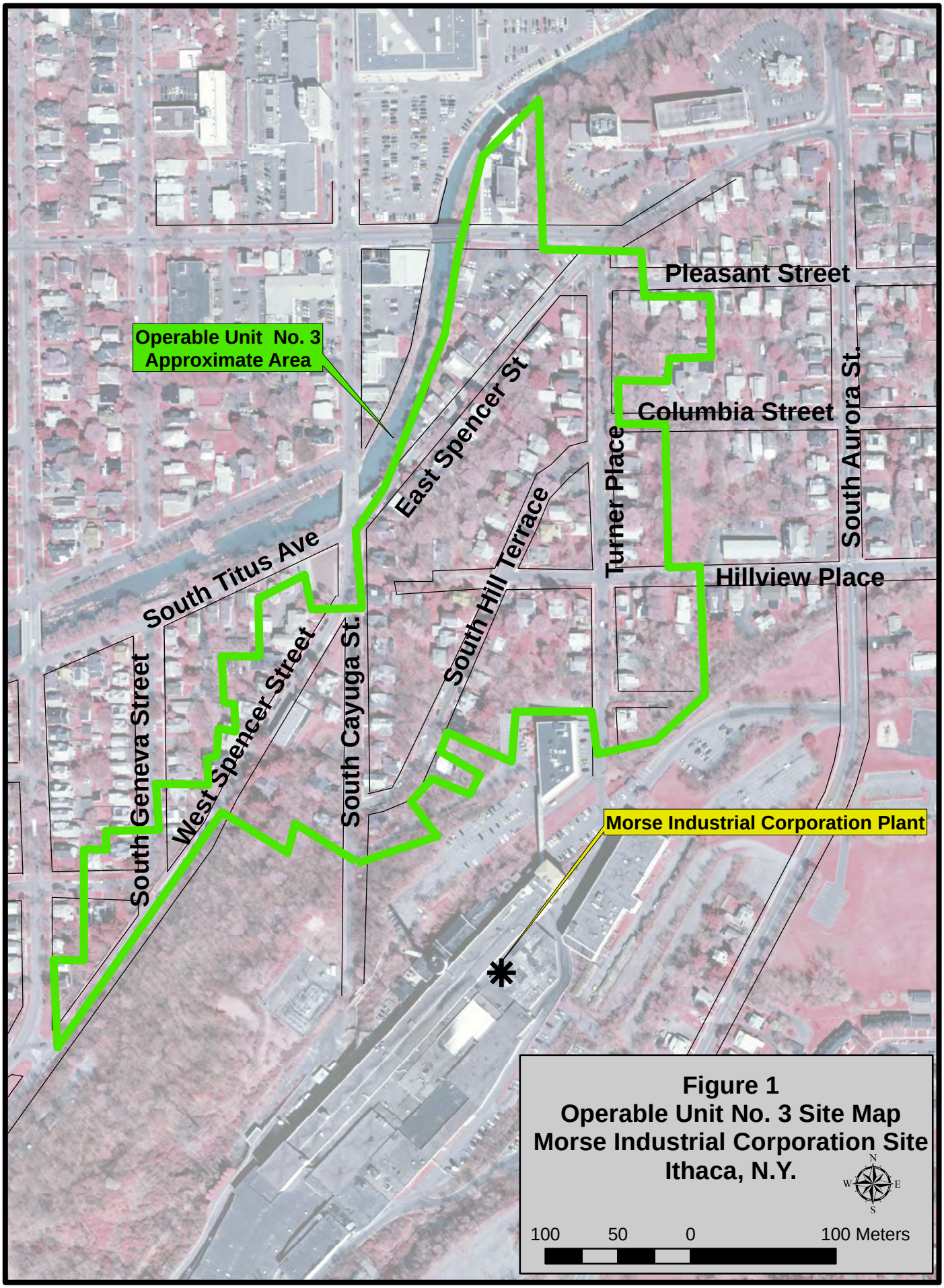
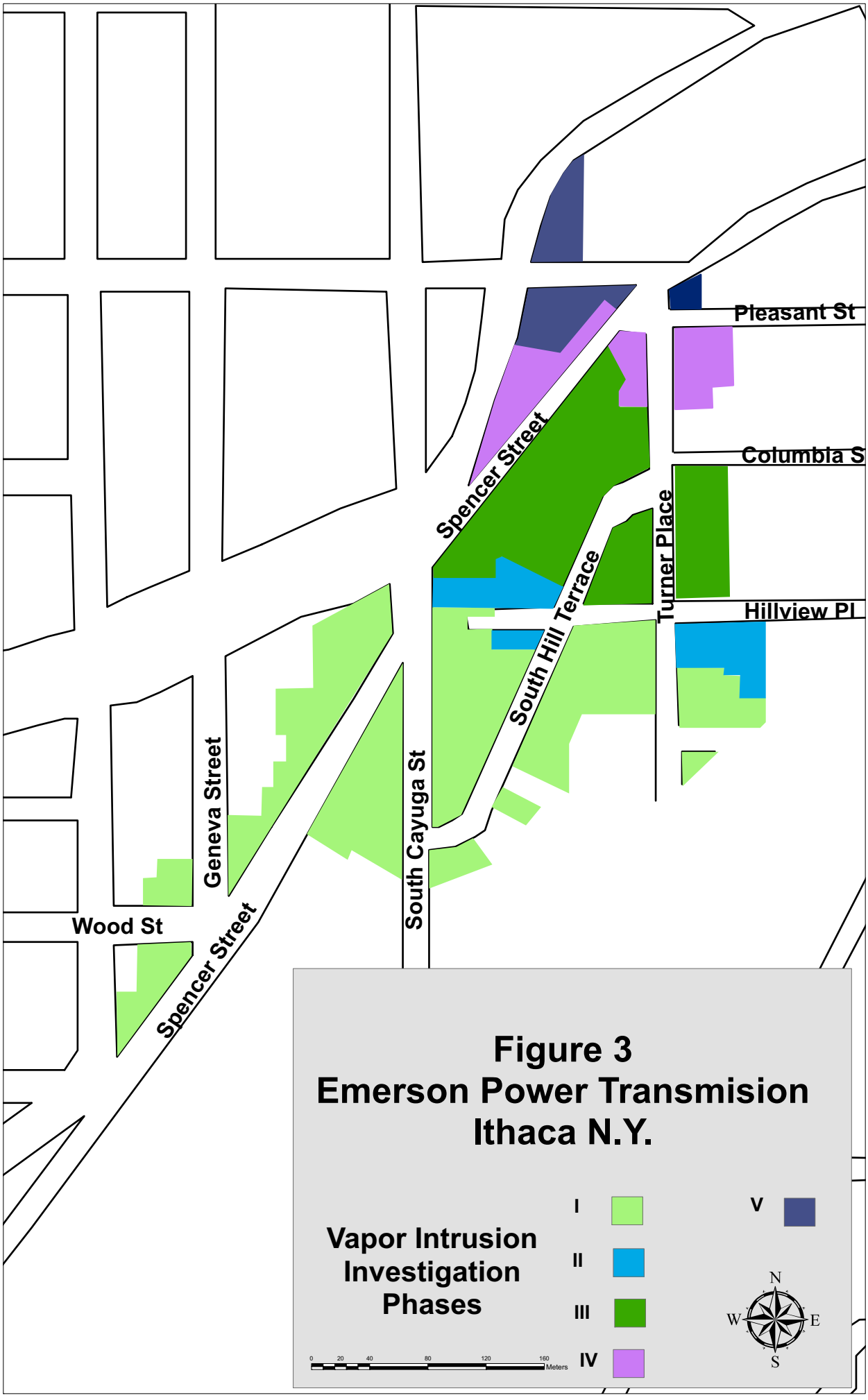


Figure 1
Operable Unit No. 3 Site Map
Morse Industrial Corporation Site
Ithaca, N.Y.

Figure 2
Operable Unit No. 3 - Partial View
Morse Industrial Corporation Site
Ithaca, N.Y.


Pleasant St
Columbia S
Spencer Street
Turner Place
South Hill Terrace
Hillview Pl
Geneva Street
South Cayuga St
Wood St
Spencer Street
Figure 3
Emerson Power Transmision
Ithaca N.Y.
Vapor Intrusion
Investigation
Phases
I
II
III
IV
V
0 20 40 80 120 160
Meters
N
W
E
S

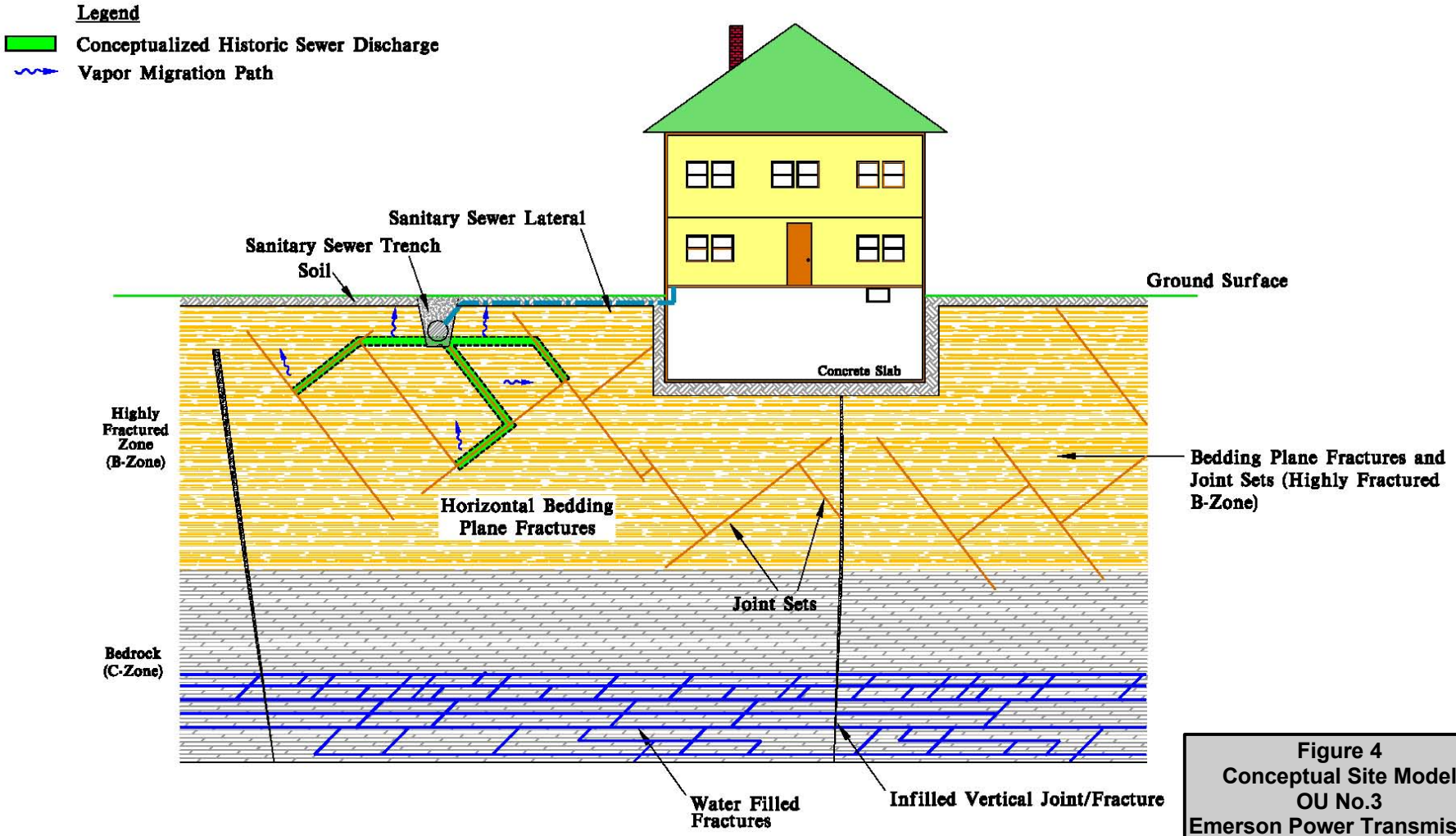
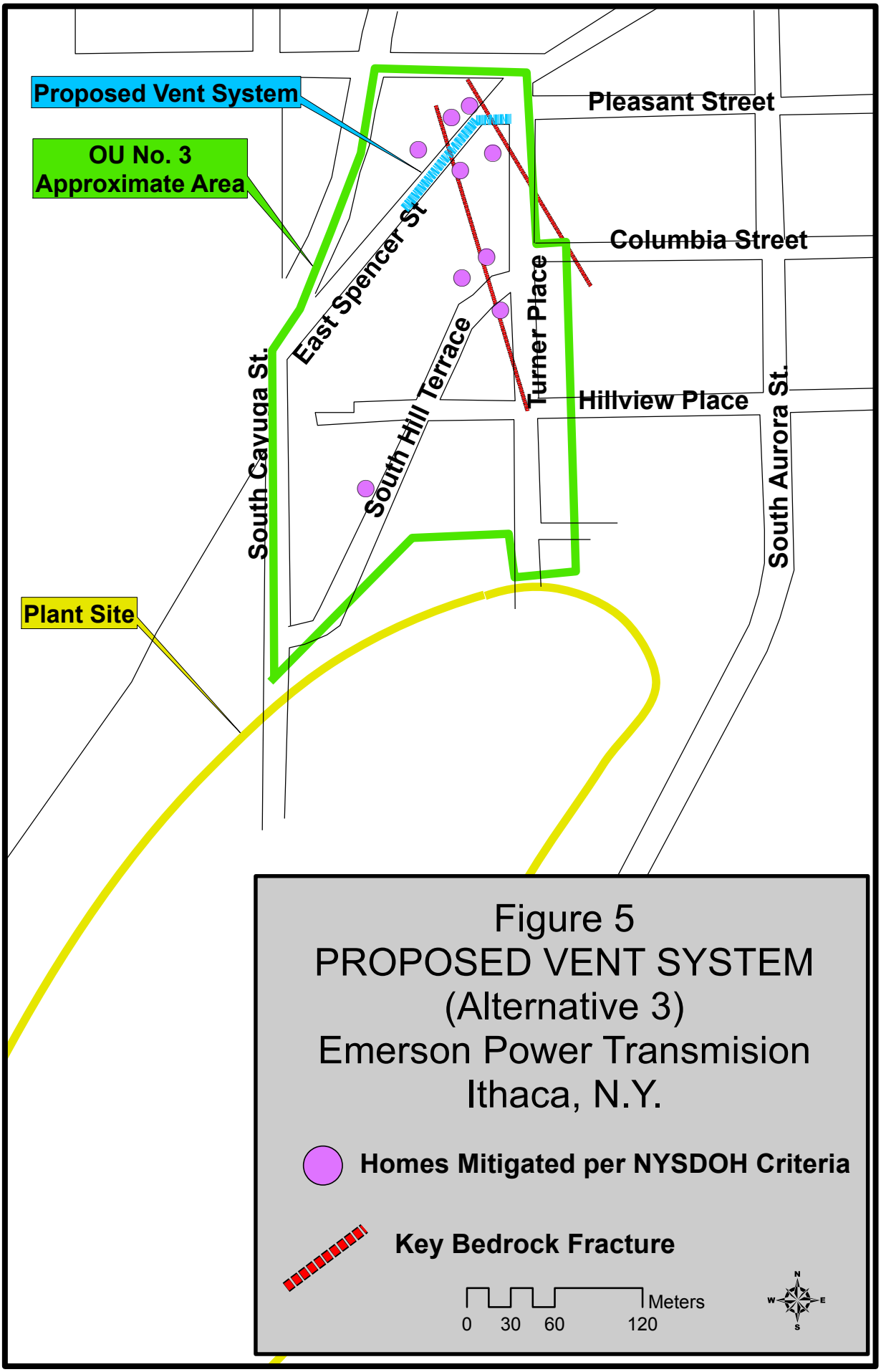


Figure 4
Conceptual Site Model
OU No.3
Emerson Power Transmision
Ithaca, N.Y.


Proposed Vent System
OU No. 3
Approximate Area
Plant Site
Pleasant Street
Columbia Street
East Spencer St
South Cayuga St.
South Hill Terrace
Turner Place
Hillview Place
South Aurora St.
Figure 5
PROPOSED VENT SYSTEM
(Alternative 3)
Emerson Power Transmision
Ithaca, N.Y.
Homes Mitigated per NYSDOH Criteria
Key Bedrock Fracture
0 30 60 120
Meters
N
W
E
S

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Morse Industrial Corporation Site
Operable Unit No. 3
City of Ithaca, Tompkins County, New York
Site No. 755010
October 2010

The Proposed Remedial Action Plan (PRAP) for Morse Industrial Corporation, OU No. 3, was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on June 4, 2010. The PRAP outlined the remedial measure proposed for the contaminated soil vapor at OU No. 3.

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 June 17, 2010, which included a presentation of the remedial investigation/alternatives analysis (RI/AA) for OU No. 3 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 OU No. 3. The public comment period for the PRAP ended on July 9, 2010.

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

Roux Associates on behalf of BorgWarner Inc. submitted a letter dated July 1, 2010 which included the following comments:

COMMENT 1: Page 3 describes the Morse Industrial Corporation site as occupying, "100 acres along the west side of South Aurora Street/Danby Road (Route 96B) in the South Hill Portion of the City of Ithaca." The site description also states that, "Operable Unit (OU) No.3, which is the subject of this document, consists of the neighborhoods, sewer lines and residential structures to the north and west of the plant site." Note that OU No. 3 is depicted in Figure 1 of the RAP as encompassing a portion of the residential properties north of the EPT facility, east of South Cayuga Street, west of Turner Place to approximately East Spencer Street. Section 2.2 (Operational/Disposal History) discusses only the Emerson Power Transmission Facility as the source of chlorinated organic chemicals to the sewer system. Roux Associates requests that other sources of chlorinated volatile organic chemicals (CVOCs) to sewers within OU No. 3 be identified in the RAP, namely:

a. The former NCR facility that discharges to the Danby Road and South Aurora Street sewers, then to the Columbia Street sewer, which in turn discharges to the Turner Place sewer line; and;
b. The Therm facility that discharges to the Columbia Street sewer, which in turn discharges to the Turner Place sewer line.

RESPONSE 1: The text in Section 2.2 has been modified accordingly.

COMMENT 2: In Section 8.1 (Basis for Selection), the last sentence of page 12 states (in reference to the selected remedy) that, "Although the NYSDEC and the NYSDOH believe that such action is sufficient to mitigate potential exposure, the Responsible Party has proposed additional measures for the collection and venting of contaminated soil vapor closer to a suspected source area that otherwise would likely continue to migrate to, and accumulate beneath homes." It is Roux Associates' understanding that the "additional measures for the collection and venting of contaminated soil vapor" noted above refers to the continued operation of the sub-slab depressurization systems described in the Alternatives Analysis Report that was prepared for the EPT facility.

RESPONSE 2: The "additional measures" refer to the focused excavation of the East Spencer Street sewer line and installation of the soil vapor venting system.

COMMENT 3: Page 14 (item #2) states that the standpipe(s) for the newly installed sewer venting system would be fitted with a wind turbine or barometric pressure-actuated device. Roux Associates requests that the location of the proposed wind turbine or barometric pressure-actuated device be shown or described, once that location is determined.

RESPONSE 3: The final location of the standpipe(s) and venting device will be determined during the remedial design phase, however, conceptually, the standpipe fitted with the venting device will be located adjacent to the NYSEG maintenance shed located at the corner of Turner Place and East Spencer Street.

COMMENT 4: Page 14 (item #3) states that the selected remedy requires that, "Continued operation of the previously installed vapor mitigation systems to achieve the Remedial Action Objective of mitigating soil vapor intrusion into the indoor air of homes and other structures in the area." Roux Associates requests that the continued operation of vapor mitigation systems "in the area" be more explicitly defined as solely those vapor mitigation systems in OU No. 3.

RESPONSE 4: The text has been modified accordingly.

COMMENT 5: Page 14 (item #4) reiterates the need to operate the components of the remedy, "until the remedial objectives have been achieved, or until the Department determines that the continued operation is technically impracticable or not feasible." Roux Associates requests that the "technically impracticable or not feasible" basis for discontinuing the sewer vent system be explicitly defined (such as four consecutive quarterly measurements of non-detectable CVOCs in the vent effluent).

RESPONSE 5: The second element of the remedy has been modified to include monitoring of the venting system, which will include, at a minimum, testing of the standpipe(s) emissions after the venting system is installed. Details of the venting system monitoring program will be included in the Site Management Plan, consistent with DER-10.

COMMENT 6: Page 14 [Item #5(b)(ii)] states that the selected remedy includes, "a provision to evaluate the potential for vapor intrusion for any buildings developed on the site, including a provision for mitigation of any impacts identified." To further clarify this provision, Roux Associates requests that,

a. Any such evaluation be conducted before construction of any building to be developed on the Site; and

b. This provision should apply to only buildings within the footprint of OU No.3 as set forth in Figure 1 (Site Map) of the RAP (and not beyond).

RESPONSE 6:
Item a. Compliance with this provision, including scheduling and implementation of the soil vapor intrusion evaluation, would the responsibility of EPT in coordination with the City of Ithaca Building Department.

Item b. The text has been modified accordingly.

Ken and Regina Deschere submitted an electronic mail dated July 7, 2010 which included the following comments:

COMMENT 7: We are grateful that the Responsible Parties have continued to address the problems of these toxins. We are also grateful that the DEC has spent so much time and effort to move the process along. We sincerely hope that the PRAP will be changed to:

- expand the areas in which sewers will be replaced to include the "hot spots" on Turner Place and South Cayuga Street,
- include an offer of blanket mitigation to all OU3 homes adjacent to houses with mitigation systems, and
- make provisions for continuing all forms of testing (soil vapor, sub-slab, indoor and ambient air) to measure the effects of the sewer changes to be sure that the residents of our neighborhood receive the protections they need.

RESPONSE 7:
It is not necessary to expand the sewer replacement to include areas on Turner Place and South Cayuga Street. Elevated levels of TCE and other VOCs were detected in some soil vapor samples collected along Turner Place and South Cayuga Street, however, based on the soil vapor intrusion evaluation, in conjunction with our overall understanding of the site's geology, the areas within OU No. 3 where there is a potential for exposures related to soil vapor intrusion have been identified and appropriate actions have been taken.

Blanket mitigation within OU No. 3 is not warranted. As discussed in Section 5.2 of the ROD, nine mitigation systems were installed. The data does not support the installation of additional systems.

No further testing of homes is warranted, however it should be noted that the remedy has been modified to include monitoring of the venting system, which will include, at a minimum, testing of the standpipe(s) emissions after the venting system is installed (see response to Comment 5).

WSP Environment & Energy, on behalf of Emerson and Emerson Power Transmission (EPT), submitted a letter dated July 8, 2010 which included the following comments:

COMMENT 8: General Comment: The entire document uses the terms "the site" and "OU No. 3" interchangeably. Section 1, paragraph one, line one initially references "the site" as the EPT plant property. Section 2.1, paragraph one also describes the location and features of "the site"; again referring to the EPT plant property. OU No. 3 is defined in Section 2.1, paragraph two, as "…the neighborhoods, sewer lines, and residential structures to the north and west of the plant site." Certain comments below point out the discrepancies identified within the PRAP where one of these terms is used incorrectly and warrants revision.

RESPONSE 8: The text has been modified accordingly.

COMMENT 9:

Section 2.1 Location and Description

In paragraph one, line one, the site is defined as follows: "The Morse Industrial Corporation site occupies 100 acres along the west side of South aurora Street/Danby Road (Route 96B) in the South Hill portion of the city of Ithaca, Tompkins County, New York (Figure 1)." Figure 1, on Page 15, is titled "Site Map" and includes two delineations, one labeled "Plant Site" and one labeled "OU NO. 3 Approximate Area." The figure is inaccurate as it does not show the entire Plant Site, the Plant Site boundary line is approximate, and the figure includes OU No. 3 (later defined in paragraph two). The figure and title should be revised and labeled appropriately. In addition, the delineation of the Plant Site on Figure 5 should also be revised and labeled appropriately.

RESPONSE 9: The titles of both Figures 1 and 5 have been revised, and the yellow line has been removed. The intent of Figure 1 is to show the "plant site" in relation to OU No. 3, therefore the entire "plant site" is not shown.

COMMENT 10:

Section 2.2 Operational/Disposal History

This section discusses the releases of solvents to the sanitary sewer system during Borg Warner's operations. However, solvent discharges also occurred from the NCR and Therm Inc., facilities and have resulted in impacts identified in OU-3. These other sources should be identified in this section.

RESPONSE 10: See response to Comment 1.

COMMENT 11:

Section 2.3 Remedial History
Item 2, bullet 3, states "Initial soil vapor intrusion assessments of private residences and public structures (Phases I through V, Figure 4) completed in March 2007." Since this refers to the indoor air sampling phases conducted in OU No. 3, Figure 3 (Vapor Intrusion Investigation Phases) should be referenced rather than Figure 4 (Conceptual Site Model).

RESPONSE 11: The text has been modified accordingly.

COMMENT 12:

Section 4 Enforcement Status
There are other potentially responsible parties (PRPs) with respect to OU No. 3. This section should also list NCR and Therm Inc.

RESPONSE 12: The text has been modified accordingly.

COMMENT 13:

Section 5.1.2 Nature and Extent of Contamination

Paragraph one, lines one through three discuss the historical discharges to the sewer system along Turner Place and South Cayuga Street and how these discharges conceptually entered the subsurface beneath the South Hill neighborhood. As noted above, discharges also occurred from the former NCR facility (south of EPT) and the Therm facility (east of EPT) and were transported offsite via the sewer lines. These discharges converged with the EPT sewer line at the Turner Place/Columbia Street junction. To be factually accurate the PRAP should identify all PRPs.

Paragraph one, line one, refers to discharges to the "municipal sewer system", whereas, Section 2.2 previously referred to discharges to the "sanitary sewer system." To be consistent, Section 5.1.2 should be revised to indicate "sanitary sewer system." Line 12 in the same paragraph discusses the conceptual model for vapor transport in the subsurface and references Figure 3 (vapor intrusion investigation phases). Figure 4 should be referenced as it illustrates the conceptual site model.

Paragraph two describes the number of soil samples collected during the remedial investigation (RI) conducted by EPT in 2007 along the sewer lines within OU No. 3. The total number of samples and the results listed in the PRAP are incorrect. No soil samples were collected within OU No. 3 during the RI. The PRAP should be revised accordingly.

Paragraph three, line one discusses groundwater resources at "the site" (EPT plant property) as including a shallow fractured bedrock horizon and a deeper, competent bedrock in which groundwater resides in a vertical fracture network. The PRAP concerns OU No. 3 and the discussion of geology should refer to OU No. 3

Paragraph four, line one, under subheading "Soil Vapor Intrusion" is missing a word. The sentence should read "The evaluation of the potential for soil vapor intrusion (added) was conducted by the sampling…" In this same paragraph, line two refers to "the site" which implies the EPT plant property. However, the reference should be to OU No. 3 as that is the area where soil vapor intrusion was investigated.

Paragraph five, line one, under subheading "Soil Vapor Intrusion," references Figure 4 which shows the conceptualized historic sewer discharge to the subsurface. As line one is discussing the five phases of indoor air sampling conducted between the fall of 2004 and winter of 2006/2007, it would be more accurate to reference Figure 3 which delineates the five sampling phases.

RESPONSE 13:
Paragraph 1: The text has been modified accordingly.

Paragraph 2: The soil samples were collected by Emerson along Turner Place and results presented in the July 28, 2006 Sanitary Sewer Line Investigation Report. The text in paragraph 2 has been modified to clarify the location of the soil samples.

Paragraph 3: The text has been modified accordingly, and a discussion of the geologic conditions specific to OU No. 3 has been added to Section 5.1.2.

Paragraph 4: The text has been modified accordingly.

Paragraph 5: The text has been modified accordingly.

COMMENT 14:

Section 7 Summary of the Evaluation of Alternatives
Paragraph one, sentence two states "Potential remedial alternatives for the Site were identified, screened and evaluated in the alternative analysis report which is available at the document repositories established for this site." The next paragraph begins "A summary of the remedial alternatives that were considered for this site is presented below." The alternatives evaluated in the alternatives analysis (AA) report (South Hill Sanitary Sewer Network Alternatives Analysis Report, Emerson Power Transmission, Ithaca, New York, Site No. 755010, September 3, 2009) are as follows:

Alternative 1 – No Action
Alternative 2 – East Spencer Sewer Line Focused Excavation and Venting
Alternative 3 – Soil Vapor Extraction along Sewer Lines
Alternative 4 – Blanket Mitigation of Homes
Alternative 5 – Air Sampling and Mitigation of Homes

These do not match those listed in the PRAP.

Alternative 1 – No Further Action
Alternative 2 – No Further Action with Site Management

Alternative 3 – East Spencer Street Sewer Line Focused Excavation and Venting
Alternative 4 – Soil Vapor Extraction on Sewer Lines
Alternative 5 – Blanket Mitigation

Alternative 2 was added to the PRAP and Alternative 5 from the AA report was not included in the PRAP. The PRAP should be revised accordingly

RESPONSE 14: Per Part 375-2.8(c)(4) "The Department shall select the remedy for the site from among feasible alternatives:

(i) developed and evaluated by the feasibility study; or
(ii) developed by the Department in addition to those presented by the feasibility study."

COMMENT 15:

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

Line one references "the site"; this should be changed to OU No. 3 as this is the area addressed in this section.

RESPONSE 15: The text has been modified accordingly.

COMMENT 16:

Section 8.1 <u>Basis for Selection</u>
Paragraph two states "Alternative 3 is being proposed because, as described below, it satisfies the threshold criteria and provides the best balance of the balancing criterion described in Section 7.2. It would achieve the remediation goals for the site by preventing the intrusion of contaminated soil vapor into homes through the continued operation of the existing vapor mitigation systems. Although the NYSDEC and the NYSDOH believe that such action is sufficient to mitigate potential exposure, the Responsible Party has proposed additional measures for the collection and venting of contaminated soil vapor closer to a suspected source area that otherwise would likely continue to migrate to, and accumulate beneath, homes."

The description of Alternative 3 above is factually not accurate. The selected alternative in the AA report is described as follows: "Excavation of the sewer line and unconsolidated material surrounding the sewer along a section of sewer piping from the intersection of Turner Place and East Spencer Street at manhole MH-9, down East Spencer Street approximately 300 feet, replacement of the sewer line, placement of select backfill and ventilation piping, and a venting system. This alternative also includes continued operation of sub-slab depressurization systems in residential properties in the area." The NYSDEC selected Alternative 3 in the PRAP which includes all aspects of the selected remedy described in the alternatives analysis report. However, the Responsible Party has not proposed any additional measures; and therefore, the PRAP should be revised accordingly.

Paragraph seven, line 12 states that "Forty-eight systems have already been installed throughout the neighborhood utilizing conventional construction methods, and the systems are well understood by

the community." The actual number of installed systems as of mid-May 2010 is 50, as previously stated in Section 5.2.

RESPONSE 16: "Such actions" in the third sentence in paragraph two, as stated above, is referring to continued operation of the existing vapor mitigation systems. "Additional measures" in the fourth sentence in paragraph 2, as stated above, refers to East Spencer Street sewer line focused excavation and installation of the venting system. The text in paragraph seven, line 12, has been modified to indicate that 50 systems have been installed.

COMMENT 17:

Section 8.2 <u>Elements of the Proposed Remedy</u>

Item 5(b)(ii) describes future buildings developed on "the site." This should be revised to state OU No. 3. In addition, clarification of "any buildings" should be further explained (i.e., homes, offices, garages, etc.).

RESPONSE 17: The text has been modified accordingly.

David Henderson submitted and electronic mail dated July 8, 2010 which included the following comments:

COMMENT 18: I am concerned about this being called a "Final Remedy" -- I call for, at least, continuing testing especially to confirm the affect of the proposed remedy, to detect shifts in the migration of the pollutants (and thus additional mitigations), and to detect possible deterioration of the ambient air quality.

RESPONSE 18: See responses to Comments 5 and 7.

COMMENT 19:

- Your proposal calls for replacing "approximately 300 feet" of the sewer line under East Spencer Street starting from Turner Place. How will "approximately" be determined (our property is approximately 300 feet from Turner Place).

- What will be the treatment (replacement, sealing,…) of the laterals connecting the sewer to the houses along the replacements? If our lateral needs to be replaced this will likely disturb our prized, large spruce trees which are growing over the location of our lateral -- how will our irreplaceable trees be protected? We request that the new sewer and vent system end before our property line (which is slightly more than 300 feet from Turner Place).

- How will the standpipes for venting the system to the air be designed and located? I am concerned about the visual affects of the standpipes and the affect of the standpipes on our ambient air quality.

RESPONSE 19: Details of the exact location and length of the sewer replacement along with any impact on connected laterals and/or private property will be determined during the remedial design phase. Once the remedial design is sufficiently advanced and prior to the start of construction, a fact sheet will be issued describing the pending work and identifying the appropriate person(s) to contact to learn more information and/or ask questions. The Department will help to see that local concerns are addressed, to the extent practicable. See response to Comment 3 regarding standpipe(s) location.

COMMENT 20: There are properties and locations with high levels of VOC's that are not located on East Spencer Street. How will your proposed remedy help these properties?

RESPONSE 20: See response to Comment 7.

Timothy Weber submitted an electronic mail dated July 8, 2010 which included the following comment:

COMMENT 21: Specifically, provision is made for testing the VOC concentrations along the length of the sewer pipe being replaced, but not for testing the air in the unmitigated homes that are expected to be affected. It is expected that concentrations will decline, but this is far from certain, and it's not being verified. Given the variable nature of the problem, both spatially and temporally, any reasonable remediation plan must include long-term testing to ensure the remediation has been effective.

RESPONSE 21: See response to Comment 7.

John Oakley submitted an electronic mail dated July 9, 2010 which included the following comment:

COMMENT 22: We are writing to urge you at, a minimum, to include continued monitoring/testing of the homes near the contamination site and to extend mitigation to all homes adjacent to homes that have qualified for mitigation, whether they have accepted it or not in the Remediation Plan for the Emerson site.

RESPONSE 22: See response to Comment 7.

Madison County Department of Health submitted a letter dated July 9, 2010 which included the following comments:

COMMENT 23: At the public meeting, no verification testing was identified and it was stated that there are no plans to retest the homes in that area following sewer line remediation. Given the complexities associated with the South Hill contamination and the unique remediation proposed, it is imperative that monitoring continue and a monitoring plan be developed and implemented to assess the effectiveness of the remediation. Development of this plan should include public review and comment.

RESPONSE 23: See responses to Comment 7 and Comment 19.

APPENDIX B

Administrative Record

Administrative Record

Morse Industrial Corporation Site
Operable Unit No. 3
City of Ithaca, Tompkins County, New York
Site No. 755010
October 2010

Proposed Remedial Action Plan for the Morse Industrial Corporation Site, Operable Unit No. 3, dated June 2010, prepared by the Department.

Order on Consent, Index No. A7-0125-87-09, between the Department and Emerson Power Transmission Company, executed on July 13, 1988.

1. "Vadose Zone Sampling Results, Emerson Power Transmission, Ithaca, New York", July 7, 2004, letter report prepared by Environmental Strategies Consulting LLC.

2. "July 2005 Vadose Zone Sampling Results, Emerson Power Transmission, Ithaca, New York", August 31, 2005, letter report prepared by Environmental Strategies Consulting LLC.

3. "Indoor Air Assessment, Phase I and Phase II Sampling Event, Emerson Power Transmission Facility, Ithaca, New York", September 16, 2005, prepared by Environmental Strategies Consulting LLC.

4. Indoor Air Assessment, Phase III Sampling Event, Emerson Power Transmission Facility, Ithaca, New York", March 23, 2006, prepared by Environmental Strategies Consulting LLC.

5. "Sanitary Sewer Investigation Report, Emerson Power Transmission Facility, Ithaca, New York, Site No. 7-55-010", July 28, 2006, prepared by Environmental Strategies Consulting LLC.

6. "Indoor Air Assessment, Phase IV Sampling Event, Emerson Power Transmission Facility, Ithaca, New York", September 1, 2006, prepared by Environmental Strategies Consulting LLC.

7. "Indoor Air Assessment, Phase V Sampling Event, Emerson Power Transmission Facility, Ithaca, New York", June 15, 2007, prepared by WSP Environmental Strategies LLC.

8. "Supplemental Remedial Investigation Report, Emerson Power Transmission Facility, 620 South Aurora Street, Ithaca, New York, Site No. 7-55-010", April 4, 2008, prepared by WSP Environmental Strategies LLC.

9. "Revised Supplemental Remedial Program/Alternatives Analysis, Emerson Power Transmission Facility, 620 South Aurora Street, Ithaca, New York, Site No. 7-55-010", September 23, 2008, prepared by WSP Environmental Strategies LLC.

10. “Focused Ambient Air Sampling Report, Emerson Power Transmission, Ithaca, New York, Site No. 755010”, September 23, 2009, prepared by WSP Engineering of New York, P.C.

11. “Sewer Manhole Assessment Report, Emerson Power Transmission, Ithaca, New York, Site No. 755010”, September 23, 2009, prepared by WSP Engineering of New York, P.C.

12. “Vent Sampling Report, Emerson Power Transmission, Ithaca, New York, Site No. 755010”, September 23, 2009, prepared by WSP Engineering of New York, P.C.

13. “South Hill Sanitary Sewer Network, Alternatives Analysis Report, Emerson Power Transmission, Ithaca, NY, Site No. 755010”, September 3, 2009, prepared by WSP Engineering of New York, P.C.