PROPOSED REMEDIAL ACTION PLAN
Foster Refrigeration Site
Environmental Restoration Project
City of Hudson, Columbia County, New York
Site No. B00184

March 2007

Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

A 1996 Clean Water/Clean Air Bond Act
Environmental Restoration Project

PROPOSED REMEDIAL ACTION PLAN

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the Foster Refrigeration Site. The presence of hazardous substances has created threats to human health and/or the environment that are addressed by this proposed remedy.

The 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated, the property can then be reused.

As more fully described in Sections 3 and 5 of this document, the undocumented and improper handling of waste have resulted in the disposal of hazardous substances, including lead contaminated ash-like material. These hazardous substances have contaminated the soil at the site, and have resulted in:

- a threat to human health associated with potential exposure to contaminated soils.
- an environmental threat associated with the potential impacts of contaminants to groundwater .

The Department proposes to excavate lead contaminated soils from areas outside the building and PCB contaminated soil from under the building slab, dispose the contaminated soil at an off-site landfill and backfill the excavated area with clean fill to eliminate these threats.

The proposed 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.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for this preference. The Department will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The Department has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the 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. This document is a summary of the information that can be found in greater detail in the November 2006 “Remedial Investigation/Feasibility Study (RI/FS) Report” and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

Hudson Area Association Library
400 State Street
Hudson, NY 12534

Allan Geisendorfer, P.E.
Regional Hazardous Waste Remediation Engineer
NYSDEC
1130 N. Westcott Road
Schenectady, NY 12306-2014
Phone:(518) 357-2068
****BY APPOINTMENT ONLY****

Vivek Nattanmai, P.E.
NYSDEC
625 Broadway
Albany, NY 12233-7013
Phone: (518) 402-9812
****BY APPOINTMENT ONLY****

The Department seeks input from the community on all PRAPs. A public comment period has been set from April 13, 2007 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for May 1, 2007 at the Cafeteria of John L. Edwards School, 360 State Street.

At the meeting, the results of the RI/FS will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP. Written comments may also be sent to Mr. Nattanmai at the above address through May 28, 2007.

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP, based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Foster Refrigeration facility is located at 119 North 2nd Street, City of Hudson, Columbia County, New York (Figure 1). The site is located in a mixed industrial and residential neighborhood, the nearest residence is located approximately 300 feet from the south-east side of the building. The site property consists of an approximately three acre parcel as identified in the City of Hudson tax records. The former manufacturing building occupies most of the property. Figure 2 shows the details of the site. The Hudson River is approximately 3,000 feet to the north-west of the site. To the west and north is an area of undeveloped land comprised of woods, fields and wetland areas. A residential area is located to the east and an industrial area is located to the south of the site.

Site Topography and Hydrogeology

A review of the United States Geographic Survey Topographic Map of the Hudson North, New York Quadrangle (dated 1953, photo revised 1980) indicates that the surrounding area has a surface elevation of approximately ten feet above mean sea level and slopes gently westwards. To the east of the site lies a marshy area which is located in a low-lying area near the Hudson River flood plain. Observations made during fieldwork indicate that the Site is relatively flat. The topographic map indicates that the Foster's Refrigeration building was not present on the site in 1953, but had been built by the time of the 1980 photo revision.

During the course of the fieldwork documented in this Report, groundwater was noted to be present on the Site at depths of approximately 4 feet below surface grade. A review of the topographic map indicates that shallow groundwater flow in the vicinity of the subject property is likely to be toward the west and is tidally influenced.

Geology

The subject property is located in the Hudson-Mohawk geological area and consists of deep, dissected lacustrine sediments above folded bedrock consisting of either Walloomsac Slate or Normanskill Shale. Site observations indicate that fill soils are present on substantial portions of the northern and western portions of the property.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The Foster Refrigeration property was used for the manufacture of refrigerators between 1946 and 1994. The Site is occupied by a 62,652 square foot single-story industrial structure with metal siding and slab at grade concrete floors. The semi-volatile and PCB contamination in soils at the site are presumably from the past operations at the site. However the ash materials found outside the building perimeter and within the site boundary most likely originated from past backfilling operations. The lead contamination in soils and ash material found outside the building would have also presumably originated from past backfilling operations. There are no records to document the past disposal practices at the site or the past backfilling operations conducted at the site.

3.2: Remedial History

In 1999, the United States Environmental Protection Agency (USEPA) performed a drum removal and limited soil removal at the site during a short-term federal Superfund cleanup action. The review of an existing report and a subsequent discussion with the USEPA established that the USEPA's actions consisted of the following: a geophysical survey of two suspected buried drum areas; drum removal; underground storage tank (UST) closure; excavation and removal of drums buried on the northern portion of the site immediately north of the on-site structure; and confirmatory post-excavation soil sampling from the drum removal area.

In a letter dated April 14, 2000 to the Department, the USEPA stated that a "Removal Action" at the Foster Refrigeration site had been completed and concluded that the levels of contaminants found in soil samples obtained from the site do not warrant further removal action under CERCLA.

The majority of the USEPA sampling at the site was performed to characterize the contents of the drums prior to disposal. Based on the sampling results and visual observation, about 20 cubic yards of soil was removed along with buried drums.

Nine post-excavation soil samples were collected from the excavation area and the results of the soil samples indicated marginal exceedances of zinc, mercury, lead, and chromium above established Department guidance levels in all samples. Very low levels of five VOCs, below Department guidance levels, were detected in three samples.

USEPA records indicate that two "petroleum" USTs were found on the site and were vacuum pumped, triple-washed and filled with sand. Figure 2 shows the known location of one of these USTs at the southern end of the building and the suspected location of the other UST is believed to be present on the eastern side of the on-site building.

These removal actions have eliminated the potential for exposure to contaminated soil in the drum burial area. In addition, the cleaning of storage tanks has eliminated the potential exposure to the contents in the tanks.

SECTION 4: ENFORCEMENT STATUS

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. Since no viable PRPs have been identified, there are currently no ongoing enforcement actions. However, legal action may be initiated at a future date by the state to recover state response costs should PRPs be identified. The City of Hudson will assist the State in their efforts by providing all information which identifies Potential Responsible Parties. The City will also not enter into any agreement regarding response costs without the approval of the Department.

SECTION 5: <u>SITE CONTAMINATION</u>

The City of Hudson has recently completed a remedial investigation/feasibility study report (RI/FS) to determine the nature and extent of any contamination by hazardous substances at this environmental restoration site.

5.1: <u>Summary of the Site Investigation</u>

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between May and November 2006. The field activities and findings of the investigation are described in the February 2007 RI report and summarized in Section 5.1.2, Nature and Extent of Contamination.

As part of the investigation, 26 soil borings were installed inside and outside the building to obtain subsurface soil samples. A total of 13 test pits were excavated in areas outside the building to identify any buried objects such as drums and USTs. Soil samples were also collected from the test pits. Field evidence of ash like material containing various other foreign materials including glass, metal fragments, brick and the remains of an automobile were encountered during the extension of test pits. A total of 5 groundwater monitoring wells were installed to obtain groundwater samples and to determine the groundwater flow direction. All the samples were analyzed for contaminants of concern at the site. Soil samples, which exhibited elevated lead concentrations were selected and analyzed for hazardous characteristics by performing Toxicity Characteristics Leaching Procedure. Refer to Figure 2 for sample locations.

5.1.1: <u>Standards, Criteria, and Guidance (SCGs)</u>

To determine whether the soil and groundwater contains contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the Department's Cleanup Objectives ("Technical and Administrative Guidance Memorandum [TAGM] 4046; Determination of Soil Cleanup Objectives and Cleanup Levels." and 6 NYCRR Subpart 375-6 - Remedial Program Soil Cleanup Objectives).

Based on the RI 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 in Section 5.1.2. More complete information can be found in the RI/FS report.

5.1.2: <u>Nature and Extent of Contamination</u>

This section describes the findings for all environmental media that were investigated.

As described in the RI/FS report, soil and groundwater samples were collected to characterize the nature and extent of contamination. As seen in Figure 2 and summarized in Table 1, the main categories of contaminants that exceed their SCGs are polychlorinated biphenyls (PCBs) and inorganics (metals). For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water and parts per million (ppm) for soil.

Figure 2 and Table 1 include a summary of the extent of contamination for the contaminants of concern in soil and groundwater and compare the data with the SCGs for the site. The following are the media that were investigated and a summary of the findings of the investigation.

Soil Contamination (Building Interior)

No VOCs or SVOCs were detected above SCGs.

Metals (including arsenic, barium, copper and lead) were detected at concentrations slightly above guidance levels in 20 of the 22 samples. Elevated concentrations of the metals were detected in one sample B-4 (0-2') of which lead is considered as the contaminant of concern at this site. Lead was detected at 2,330 ppm in sample B-4.

PCB (Aroclor PCB 1254) was detected in sample B-8 (4'-8') at a concentration of 21.6 ppm (guidance level 1 ppm). Subsequent borings installed around B-8 found PCBs above guidance values at two locations with a concentration of 3.10 ppm and 1.9 ppm.

No pesticides were detected at concentrations above laboratory minimum detection limits in the samples submitted for analysis.

Soil Contamination (Building Exterior)

VOCs were not detected in any of the soil samples submitted for analysis. SVOCs, in particular, polychlorinated aromatic hydrocarbons such as benzo(a)anthracene, benzo(a)pyrene and chrysene were detected at concentrations below the guidance values in all the samples except for one sampling location. A soil sample from TP-9 detected benzo(a)pyrene at 1.2 ppm which is marginally above the guidance value of 1 ppm.

Lead was detected in the soil samples obtained from test pits and soil borings. Samples obtained from sixteen (16) locations detected lead concentration above the guidance value of 1,000 ppm. Lead was detected at elevated concentrations in TP-9 at 12,900 ppm, B-13 at 10,900 ppm and B-18 at 10,800 ppm. Other inorganics such as arsenic and barium were also detected above their respective guidance values in several samples. Please refer to Table 2. Since lead was predominantly present in soil samples at the site, lead is considered as the contaminant of concern for the site. The cleanup of lead contaminated soil would also address the other inorganics found above SCGs in soil.

Five of the six soil samples analyzed exceeded the Toxicity Leaching Procedure (TCLP) for lead.

PCBs and pesticides were not detected above guidance value in any of the soil samples taken outside of the building.

Groundwater Contamination

PAHs or VOCs were not detected above laboratory minimum detection limits in any of the groundwater samples collected from the monitoring wells.

One groundwater sample had a lead concentration above the guidance value of 25 ppb in MW-3 at 56 ppb. Lead was detected at concentrations below the groundwater protection standards in MW-2, MW-4, and MW-5. Other metals such as iron, manganese, and sodium were detected at concentrations above groundwater protection standards in all samples.

Summary of the Investigation Results

Soil (Building Interior)

Laboratory results indicate that, in general, the subsurface of the subject property beneath the on-site structure is free from contamination of concern. Soil samples collected from soil borings B-1 through B-11 extended at locations within the on-site structure indicate the absence of widespread impacts to the subsurface.

In the northwest portion of the on-site structure PCB was detected in sample B-8 (4'-8') at a concentration of 21.6 ppm, however, subsequent soil borings installed in the immediate vicinity of B-8 did not contain concentrations of PCBs above the SCGs.

In the southeast portion of the building at boring location B-4 the (0-2') sample contained elevated concentrations of several metals including lead at 2,330 ppm. The lead contamination in soil was found in isolated sampling locations inside the building under the existing concrete slab. The volume of the contaminated soil is not significant and the existing concrete slab is acting as a barrier. Thus, under current conditions there is no potential exposure threat from the soil to health or the environment and the lead contaminated soils found underneath the building require no further action.

The limits of PCBs in soils in the vicinity of B-8 has been defined horizontally and vertically around this location. The PCB contaminated soils found beneath the building would be addressed under the remedy selection process. (see Area 4 on Figure 3).

Soil and Ash (Building Exterior)

Laboratory analysis of soil samples collected from test pits, borings, and monitoring wells indicate the presence of three distinct areas in the northern portion of the property where lead is present in soils at concentrations warranting remedial action. During fieldwork in the northern portion of the property a layer of ash was noted, extending at some locations from the surface to a depth of 9' below surface grade. Elevated concentrations of metals are known to be associated with ash, however, at this site not all samples containing ash contained elevated metals concentrations. These results indicate that the criteria for remedial work performed to address elevated metals concentrations would be based on laboratory analysis of soil samples rather than visual appearance of ash.

The contaminated soil above the SCGs located north of TP-5 would be addressed during the remedial action. The three areas identified in the Figure 3 needs excavation of soil at depth. The following are the three areas identified in the Figure 3:

In the northwest corner (Area 3) of the property in the vicinity of sample locations TP-11, B-12 and B-13 lead was detected at significant concentrations between 1,450 ppm at B-12 (0-4’) and 10,900 ppm at B-13 (0-4’), and 2,460 ppm at TP-11 (0-6”). These results indicate that remediation of soils in the vicinity will be required. The volume of material in this location is approximately 330 cubic yards.

Lead was documented at 12,900 ppm in the central northern (Area 2) portion of the property at the location of TP-9 and leachable lead at a concentration of 7.5 ppb was detected in sample TP-9 (1.5’). These results indicate that remediation of soils in the vicinity will be required. The volume of material in this location is approximately 190 cubic yards.

Lead was detected at concentrations between 1,010 ppm and 10,800 ppm in each of the three samples from the northeastern portion (Area 1) of the property. These results indicate that remediation of soils in the vicinity will be required. Refer to Figure 3. The volume of material in this location requiring treatment is approximately 1,500 cubic yards.

Three areas in the northern and western portions of the subject property contain soils with elevated concentrations of lead above SCGs and two locations have been identified as containing lead which exceed TCLP for lead. It is estimated that a total of approximately 2,600 cubic yards of material will require remedial action. The contaminated soil is qualified as a “Principal Threat Waste” per USEPA guidance presented in “Presumptive Remedy for Metals in Soils Sites” (EPA ID: 540-F-98-054). The presence of such material on-site represents a threat to human health and the environment.

Groundwater

It appears that iron, manganese, and sodium detected in groundwater standards are likely associated with storm water runoff onto the subject property that had been impacted by road salting and therefore, do not represent an on-site source of these contaminants.

Lead was detected in one groundwater sample above the groundwater protection standard. The proposed remediation of lead-impacted soil is anticipated to mitigate the potential for lead to migrate into the groundwater in the future. Overall, the RI did not identify groundwater contamination of concern associated with the site.

Underground Storage Tanks

USEPA records of a removal action at the site in 1999 referenced the presence of two closed-in place USTs located at the southwest side of the building. Borings and test pits extended on southwest portions of the site, both inside and outside the building, found no evidence of petroleum contamination. No petroleum compounds were detected in water samples collected from on-site monitoring wells. These results indicate the absence of petroleum impacts to the subsurface. The impact from the USTs to the site soils and groundwater is not significant and therefore would not be addressed in the remedy selection process.

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 completion of the RI. There were no IRMs performed at this site during the RI/FS.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 2 of the RI/FS report. 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.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). 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.

The following are the potential exposure pathways identified for this site:

1. Potential for trespassers and on-site workers to come in contact with elevated lead in soil.

2. Future on-site workers and construction workers involved in sub-surface excavation below the building slab may come in direct contact with lead and PCB contamination in soil.

5.4: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

Soil contamination found at the site has not significantly impacted the groundwater resource at the site. The lead contamination in groundwater was found in one sample at MW-3 location and the concentration of lead marginally exceeded the groundwater standard. In addition the removal of contaminated soil from the site would prevent the migration of contamination from the soil to the groundwater.

SECTION 6: <u>SUMMARY OF THE REMEDIATION GOALS AND 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. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous substances disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- exposures of persons at or around the site to lead and PCB contamination in soil; and

- the future release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards.

Further, the remediation goals for the site include attaining to the extent practicable:

- ambient groundwater quality standards and

- soil clean up goals for surface and subsurface soils including the potential future use of the site for industrial/commercial per 6 NYCRR Part 375 (1000 ppm for lead and 1 ppm for PCB).

The proposed future use of the site is industrial/commercial.

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, comply with other statutory requirements. Potential remedial alternatives for the Foster Refrigeration Site were identified, screened and evaluated in the RI/FS report which is available at the document repository established for the site.

Presumptive remedies are preferred technologies or response actions for sites with similar characteristics. The use of presumptive remedies streamlines remedy selection for metals-in-soil sites by narrowing the universe of alternatives considered in the Feasibility Study. The presumptive remedies for metals-in-soils waste that is targeted for treatment considered here are reclamation/recovery, immobilization, and excavation and off-site removal.

A summary of the remedial alternatives that were considered for this site is discussed below. The present worth 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 were not achieved.

7.1: **Description of Remedial Alternatives**

The following potential remedies were considered to address the contaminated soils at the site.

Alternative 1: No Action
The no action alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment. The groundwater would be sampled on a periodic basis to determine contamination in soil is affecting the groundwater.

Present Worth:	$37,600
Capital Cost:	$0
OM&M Present Cost:	$37,600
Annual OM&M Cost:	$5,000
Time to Implement:	NA

Alternative 2: Reclamation/Recovery
This presumptive remedy is suitable for sites with high concentrations of valuable or easily volatilized material. This remedial alternative would not be applicable for this site and would be not be cost effective. This alternative is retained for evaluation because the EPA guidance document included this as one of the presumptive remedy for sites with metal contamination in soil.

Present Worth:	$1,037,600
Capital Cost:	$1,000,000
OM&M Present Cost:	$37,600
Annual OM&M Cost:	$5,000
Time to Implement:	12 months

Alternative 3: Immobilization
The effectiveness of immobilization treatment is dependent on several factors including waste uniformity. During the extension of test pits field evidence of ash like material containing various other foreign materials including glass, metal fragments, brick and a the remains of an automobile were encountered. The presence of these materials indicate that an immobilizing reagent may not have the ability to mix with the waste uniformly and would thus not effectively immobilize the known contaminants. Immobilization is unlikely therefore to be a suitable remedy.

Present Worth:	$1,237,600
Capital Cost:	$1,200,000
OM&M Present Cost:	$37,600
Annual OM&M Cost:	$5,000
Time to Implement:	12 months

Alternative 4: Excavation and Off-Site Disposal
Approximately 2600 cubic yards (cu.yds.) of lead contaminated soil would be excavated for off-site disposal. Based on the results from the toxicity characteristics leaching procedure and other chemical analyses, it is estimated that all the excavated soil would be disposed in an hazardous waste landfill. In

addition to this, approximately 100 cu.yds. of PCB contaminated soil would be excavated under the slab of the building and disposed in a hazardous waste landfill. As indicated in Section 6 of this document, the clean up goals used for the excavation of lead contaminated soil is 1000 ppm and the PCB contaminated soil is 1 ppm. Collect and analyze confirmatory samples to verify that the clean up goals have been achieved. Place a demarcation layer at the bottom of each excavation area. Collect a representative number of surface soil samples to verify remaining site surface soil meets clean up goals.

Present Worth:	$950,600
Capital Cost:	$913,000
OM&M Present Cost:	$37,600
Annual OM&M Cost:	$5,000
Time to Implement:	6 months

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of environmental restoration projects in New York A detailed discussion of the evaluation criteria and comparative analysis is included in the RA 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.

Alternative 1 would not be protective of human health and the environment. Alternatives 2 and 3 would comply with this criterion but to a much lesser degree than Alternative 4 because contaminated soil will remain at the site. As stated earlier, the existing soil conditions at the site would make achieving SCGs for soil more difficult for treatment technologies (Alternatives 2 and 3) than soil excavation (Alternative 4).

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 major SCGs applicable for this site include groundwater quality standards in 6 NYCRR Part 703, NYSDEC Track 2 "Restricted Use" SCO for Commercial Properties and land disposal regulations.

Alternative 1 would not meet SCGs. Alternative 3 would not meet the SCGs for soil but will prevent exposures by containing the contaminated soil in a solidified form and would mitigate the further migration of contamination from soil into the groundwater. Alternative 2 would meet all the SCGs but the effectiveness of the treatment technology is uncertain. Alternative 4 would have the highest level of compliance with soil SCGs because it includes direct removal.

The next five “primary balancing criteria” are used to compare the positive and negative aspects of each of the remedial strategies.

3. <u>Short-term Effectiveness</u>. 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.

There would be no short-term impacts, under Alternative 1, because there will be no construction activities. Alternative 4 would pose greater short-term impacts compared to Alternatives 2 and 3 because more contaminated soils would be excavated and transported than under Alternatives 2 and 3. A site-specific health and safety plan that would include engineering controls such as air monitoring and dust suppression measures would be implemented to protect the workers and the community.

Alternative 4 would require less amount of time to achieve soil cleanup goals compared to Alternatives 2 and 3 since the soils would need treatment under Alternatives 2 and 3.

4. <u>Long-term Effectiveness and Permanence</u>. 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.

Alternative 1 would have no long-term effectiveness because all the contaminated soil would remain on-site and risks would not be reduced. Under Alternatives 2 and 3, long-term effectiveness for soil would be dependent upon the effectiveness of the treatment system implemented on the contaminated soils. Alternative 4 would have greater long-term effectiveness compared to Alternatives 2 and 3 due to the complete removal of contaminated soil from the site and the uncertainty of the treatment system to achieve SCGs.

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

Alternative 1 would not reduce toxicity, mobility, or volume. Under Alternative 3 the mobility of the contamination in soil would be controlled but not toxicity or volume. The contaminant/soil removal under Alternatives 2 and 4 would effectively reduce toxicity, mobility and volume. The soil treatment under Alternative 3 would reduce toxicity, mobility and volume but to a lesser degree compared to Alternative 4 because the treatment system would have some level of uncertainty in effectively removing the contaminants from the soil and attainment of SCGs.

6. <u>Implementability</u>. 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.

Alternative 1 would be easiest to implement since no construction is involved. Alternative 2 would need a pilot study to determine its effectiveness and could be implemented with contractors experienced in lead reclamation. Alternative 3 would involve treatment activities and would be technically implementable with limited number of experienced contractors available. Alternative 4 would involve excavation but would be technically implementable with many experienced contractors available.

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 Table 2. Alternative 1 would be the least expensive with a total present worth of $ 37,600 and Alternative 3 would be the most expensive at $ 1,237,600.

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. Community Acceptance - Concerns of the community regarding the RI/FS report and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 8: SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 4, excavation and off-site disposal of lead and PCB contaminated soil as the remedy for this site. The elements of this remedy are described at the end of this section.

The proposed remedy is based on the results of the remedial investigation and the evaluation of alternatives presented in the RI/FS report. Alternative 4 is being proposed because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. It would achieve the remediation goals for the site by removing the contaminated soils exceeding SCGs that create the most significant threat to public health and the environment, would greatly reduce the source of contamination to groundwater, and would create the conditions needed to restore groundwater quality to the extent practicable. Alternatives 2 and 3 would also comply with the threshold selection criteria but to a lesser degree or with lower certainty.

Because Alternatives 2, 3 and 4 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting a final remedy for the site.

Alternatives 2 (reclamation), 3 (immobilization), and 4 (excavation and removal) all would have short-term impacts which can easily be controlled. The time needed to achieve the remediation goals would be longest for Alternatives 2 and 3.

Achieving long-term effectiveness would be best accomplished by excavation and removal of the contaminated soils (Alternative 4). Alternative 4 would be favorable because it would result in the removal of the contaminated soil above SCGs to the extent practicable at the site. The removal action would prevent the migration of contaminants from the soil into the groundwater. Alternative 4 is very favorable because it is a permanent remedy that will eliminate the exposure of contaminated soil to the public.

Alternative 2 and 3 would require a pilot study prior to the implementation of this treatment technology on a full-scale level at the site. The long-term effectiveness of Alternatives 2 and 3 would depend on its implementability and availability of experienced contractors. Alternative 4 would be readily implementable.

Alternative 4, excavation and removal, would reduce the volume of waste on-site. Approximately 2600 cubic yards of material would be removed with Alternative 4. Alternative 4 would remove almost all of the contamination exceeding SCGs on-site. In addition, the building slab would prevent the potential direct contact with the contaminated soils beneath the building. Alternative 3 would greatly reduce the mobility of contaminants but this reduction is dependent upon the effectiveness of the treatment system. Alternative 2 would reduce the toxicity of contaminants by chemical/physical treatment.

The cost of the alternatives varies significantly. Alternative 4 is less expensive than Alternatives 2 and 3. Compared to Alternative 4, Alternatives 2 and 3 costs significantly more and its implementability and effectiveness are uncertain. Designing the remedy, mobilizing the equipment, preparing the site, and construction management are substantial costs associated with each of these remedies.

The estimated present worth cost to implement the remedy is $ 950,600. The cost to construct the remedy is estimated to be $ 913,000 and the estimated present cost of OM&M for 30 years is $ 37,600.

The elements of the proposed remedy are as follows:

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

2. Excavate the lead contaminated subsurface soil (approximately 2600 cu.yds) from areas outside the building to a clean up goal of 1000 ppm and PCB contaminated soil under the building slab (approximately 100 cu.yds.) to a clean up goal of 1 ppm.

3. Excavate and stage the surface soil in the remediation area and use it as backfill in the excavation areas, if it meets the soil clean up goals.

4. Dispose the excavated soil off-site in an approved landfill facility.

5. Collect and analyze confirmatory samples to verify that the clean up goals have been achieved. Place a demarcation layer at the bottom of each excavation area. Collect a representative number of surface soil samples to verify remaining site surface soil meets clean up goals.

6. Backfill the excavated areas with a minimum of twelve (12) inches of clean soil that would meet the Division of Environmental Remediation's criteria for backfill or local site background.

7. Imposition of an institutional control in the form of an environmental easement that would require (a) limiting the use and development of the property to permit commercial uses; (b) compliance with the approved site management plan; (c) restricting the use of groundwater as a source of potable

water, without necessary water quality treatment as determined by NYSDOH; and (d) the property owner to complete and submit to the Department a periodic certification of institutional and engineering controls.

8. Development of a site management plan which would include the following institutional and engineering controls: (a) monitoring of groundwater; (b) identification of any use restrictions on the site; and (c) provisions for the continued proper operation and maintenance of the components of the remedy.

9. The property owner would provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal would: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

10. Since the groundwater was found to be marginally contaminated above the groundwater standards for lead at one location, a monitoring program would be instituted. This program would allow the effectiveness of the excavation and off-site disposal remedy to be monitored. If the groundwater standards are attained over a reasonable period of time, the monitoring could be discontinued with the Department's approval.

TABLE 1
Nature and Extent of Contamination

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Xylenes	0.15	500	0
	Toulene	0.082	500	0
Semivolatile Organic Compounds (SVOCs)	Several	0 – 12	0.56 - 500	0
PCB/Pesticides	PCB 1254	0.62 – 21	1	9/22
Inorganic Compounds	Lead	12 – 12,900	1000	16/86
	Arsenic	1.42 – 33	16	8/35
	Barium	30 – 2800	400	10/35
	Copper	13.3 - 2590	23.4	1/35

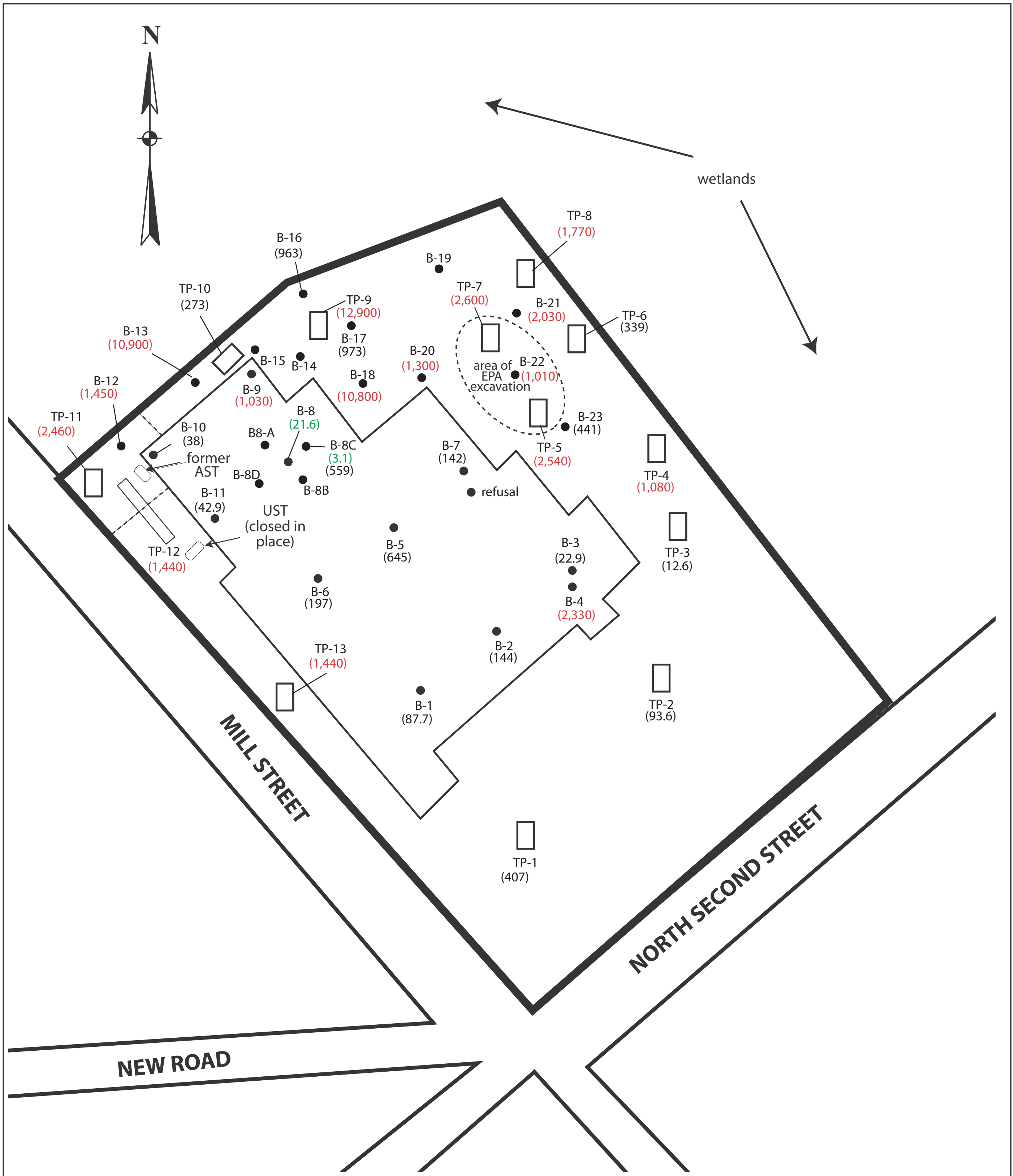
TABLE 1
Nature and Extent of Contamination
Two rounds of groundwater sampling was completed (June and November 2006)

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)		0		0
Semivolatile Organic Compounds (SVOCs)		0		0
PCB/Pesticides	N/A	N/A		N/A
Inorganic Compounds	Lead	6 - 56	25	1/5

Table 2
Remedial Alternative Costs

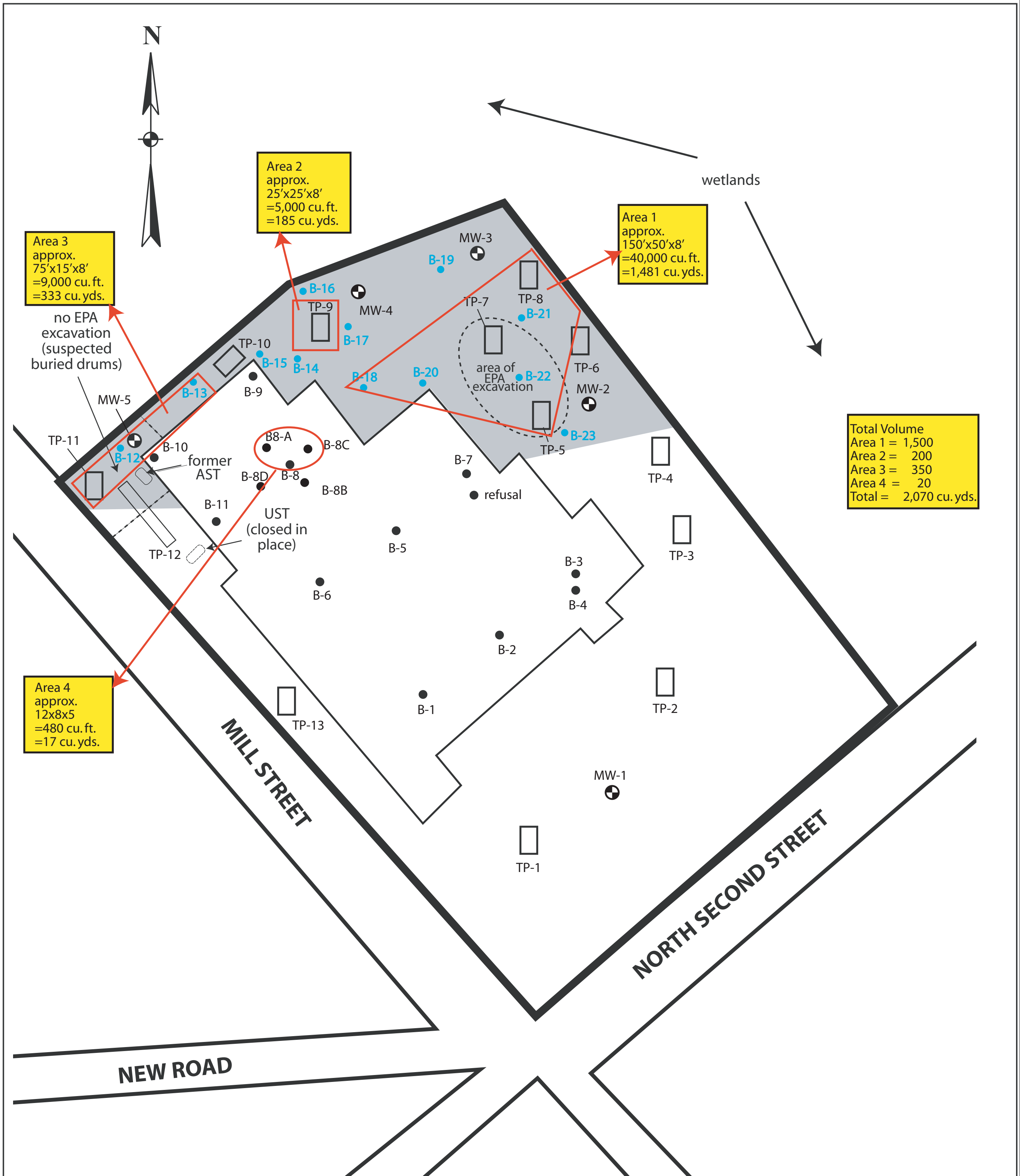
Remedial Alternative	Capital Cost ($)	OM&M present Costs ($)	Total Present Worth ($)
No Action	0	37,600	37,600
Reclamation/Recovery	1,000,000	37,600	1,037,600
Immobilization	1,200,000	37,600	1,237,600
Excavation & Disposal	913,000	37,600	950,600

Site Location Map Foster's Refrigeration Site 119 North 2nd Street Hudson, New York	N	ESI File: MH04055.41 Date: January 2007 Figure 1



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Peak Contaminant Concentrations in Soils Foster Refrigeration Site 119 North 2nd Street Hudson, New York	Legend: subject property border test pits ● boring location (concentrations in ppb) red = lead above guidance level green = PCBs above guidance level black = lead below guidance level	ESI File: MH04055.41 January 2007 Scale: 1” = 50’ (approx.) Figure 2



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Proposed Remediation Map

Foster Refrigeration Site
119 North 2nd Street
Hudson, New York

Legend:
- subject property border
- test pits
- monitoring well
- remedial action area
- boring location
- excavation area
- boring location 9-06

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Scale: 1" = 50' (approx.)

Figure 3