PROPOSED REMEDIAL ACTION PLAN

Former Service Station
Environmental Restoration Project
Clarkson, Monroe County
Site No. E828143
February 2012

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

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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), is proposing a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of contaminants at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred 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.

The Department has issued this document 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. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

BROCKPORT - SEYMOUR LIBRARY

Attn: LIBRARIAN
161 EAST AVENUE
BROCKPORT, NY 14420
Phone: 585-637-1050

A public comment period has been set from:

2/13/2012 to 3/29/2012

A public meeting is scheduled for the following date:

3/1/2012 at 7:00 PM

Public meeting location:

Town of Clarkson Town Hall

At the meeting, the findings of the remedial investigation (RI) and the alternatives analyses (AA) 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 through 3/16/2012 to:

Matthew Gillette
NYS Department of Environmental Conservation
Division of Environmental Remediation
6274 East Avon-Lima Road
Avon, NY 14414
mpgillet@gw.dec.state.ny.us

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 the proposed remedy identified herein. 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.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at

http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location:
The site is located in a suburban area on the north side of Ridge Road West (NYS Route 104) in the Town of Clarkson, Monroe County, New York. The property is 0.25 miles east of Lake Rd and 1.75 miles west of Sweden-Walker Rd (Rte 260).

Site Features:
The site consists of a 0.71-acre parcel that formerly contained two structures (a former body shop/garage and office/storage building), two storage trailers, and a paved parking area on the southern portion of the site. The northern portion of the site is wooded and is approximately 0.5 acres.

Current Zoning/Use:
The site is currently vacant and zoned for commercial use. Adjacent land use includes residential properties to the east and south, a commercial property to the west, and vacant land to the north.

Historical Use:
The Site was used as a retail gas station from approximately 1930 until the 1970s, and a vehicle service station from the 1930's to 2002. The previous use as a gas/service station including the underground storage of petroleum appears to have led to site contamination.

Site Geology and Hydrogeology:
The site grades slightly to the north. A drainage channel is located along the western boundary of the site which directs flow from up-gradient areas on the south side of Route 104 to the north. A tributary to Brockport Creek receives drainage from this site approximately 500 feet to the north. Groundwater flow is primarily to the north. Soils are low-permeability silty clay to a depth of approximately 4 to 10 ft below grade. The upper bedrock is assumed to be the Queenston Shale and Medina Sandstone at a depth of 4 to 10 feet below grade.

A site location map is attached as Figure 1. The site boundaries are shown in Figure 2.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: 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.

No PRPs have been documented to date.

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. Town of Clarkson will assist the state in its efforts by providing all information to the state which identifies PRPs. Town of Clarkson will also not enter into any agreement regarding response costs without the approval of the Department.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

6.1.1: 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 soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list

the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Information

The analytical data collected on this site includes data for:

- groundwater
- soil

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

benzo(a)pyrene	DDE (dichlorodiphenyldichloroethylene)
benz(a)anthracene	DDT (dichlorodiphenyltricholorethane)
benzo[k]fluoranthene	acetone
benzo(b)fluoranthene	mercury
chrysene	silver
dibenz[a,h]anthracene	dieldrin
indeno(1,2,3-cd)pyrene	endrin
arsenic	benzene
barium	1,2,4-trimethylbenzene
chromium	ethylbenzene
copper	methylene chloride
lead	xylene (mixed)
selenium	toluene
zinc	1,1,2-trichloroethane

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil

6.2: 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.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

Interim Remedial Measure - Soil/Tank/Asbestos/Building Removal

IRMs completed at the site included:

1. The removal of asbestos containing materials from the on-site structures.
2. Demolition and slab removal of two on-site structures.
3. Hydraulic lift removal from the former garage.
4. Removal of the former pump island.
5. Removal and proper disposal of a 55 gallon drum partially filled with the chemical Styrene.
6. The removal of four (4) underground petroleum storage tanks and one (1) aboveground petroleum storage tank. See Figure 3 for the location of the excavation areas.
7. The excavation and disposal of 368 tons of petroleum-impacted soil resulting during the removal of the underground storage tanks. Excavations were backfilled with soil that were tested to confirm that they were uncontaminated.
8. The placement of cover material, including stone and soil, over surface soil and sediments where contaminant levels exceeded the soil cleanup objectives for the site. See Figure 4 for the fill and grading plan. One foot of stone was placed over sediments within the drainage ditch along the western site boundary. A demarcation layer and minimum of one foot of soil cover was placed over a portion of on-site soils as detailed in Figure 4. Cover soils were tested to confirm that they were uncontaminated.

6.3: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.* Since some contaminated soils remain at the site below clean backfill, people will not come in contact with contaminated soils unless they dig below the site cover. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination.

6.4: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

Nature and Extent of Contamination:

a) contaminants
Based on the investigations conducted to date, the primary contaminants of concern in groundwater are volatile organic compounds. In soils the contaminants of concern include VOCs, semi-volatile organic compounds (SVOCs), and inorganics (arsenic, barium, copper,

lead, and mercury). These contaminants are suspected to be petroleum-related due to the past use as a motor vehicle repair business.

b) areal extent and depth
Petroleum-related VOCs were identified in the three groundwater monitoring wells in the closest proximity to the former underground storage tank locations which were formerly located in the southwest corner of the property. The tanks were removed as an Interim Remedial Measure (IRM) during the course of the investigation. Pesticides were detected in two monitoring wells. Groundwater was collected from monitoring wells set at a depth of 4 to 20 feet below grade.

Petroleum-related VOCs were identified in sub-surface soils collected adjacent to the underground petroleum storage tanks, and adjacent to the former pump islands at the south end of the site.

SVOCs were found in two sediment samples collected from the drainage along western edge of the site. SVOCs were also identified in surface soils near the center of the site.

Metals (barium, copper, lead, mercury) were identified in sub-surface soils at one test pit location near the center of site under a former site building location at a depth of 7-8 feet below grade. Barium was also identified in sub-surface soils adjacent to the former pump islands. Arsenic was identified in one sediment sample collected from the drainage along the western edge of the property. Lead was detected in several surface soil samples collected from the site. The highest concentrations in surface soil, along with barium, were collected from a sample in the eastern corner of the site.

c) concentrations
VOCs detected above standards in groundwater included acetone, benzene, toluene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, and 1,1,2-trichloroethane. Benzene concentrations ranged from 2 to 353 parts per billion (ppb) in three groundwater monitoring wells. The other VOCs were detected in a single monitoring well, adjacent to the former tank location, and ranged from 10 to 80 ppb. The pesticides aldrin and dieldrin were also detected above groundwater standards in two wells with concentrations ranging from 0.036 to 0.053 ppb.

VOCs (1,2,4-trimethylbenzene, acetone, benzene, ethylbenzene, methylene chloride, and xylenes) were detected above 6NYCRR Part 375 unrestricted use soil cleanup objectives (SCOs) in two sub-surface soils sampled from the sidewalls of the excavation associated with the storage tank removal and adjacent to the former pump island. VOC concentrations detected ranged from 2 to 24,100 ppb in ten samples collected from these locations. All detected concentrations of these compounds at this location were below the residential SCOs.

SVOCs were detected in surface soils near the center of the site at two sample locations. Six SVOCs were detected above the commercial SCOs, which are the target SCOs for the site. The same six SVOCs were detected above commercial SCOs in three sediment samples. Two were collected from the drainage along the western boundary of the site and from the bottom of oil/water separator. Concentrations ranged from 411 to 21,900 ppb.

Four metals (barium, copper, lead, and mercury) were detected above the 6NYCRR Part 375-6.8 soil cleanup objectives for the protection of public health, commercial use in four sub-surface soil samples from the center of the site. The commercial use SCOs are applicable based on the proposed future use of this site as a memorial park. Arsenic was detected above the commercial use SCO in one sample from the sediment of the western drainage. Barium and lead were detected above the commercial use SCOs in one sample from the east of the site.

6.5: 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 action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

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. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the AA report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. 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. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's proposed remedy is set forth at Exhibit D.

The estimated present worth cost to implement the remedy is $35,000. The cost to implement the remedy is estimated to be $6,000 and the estimated average annual cost is $3,850.

The elements of the proposed remedy are as follows:

Based on the results of the investigations at the site, the IRM that has been performed, and the evaluation presented here, the Department is proposing No Further Action and the implementation of ICs/ECs including groundwater monitoring as the proposed remedy for the site. The Department believes that this remedy is protective of human health and the environment and satisfies the remediation objectives described in Exhibit B.

The elements of the IRM already completed and the institutional and engineering controls are listed below:

1. Maintenance of the site cover. A site cover currently exists and will be maintained to allow for commercial and industrial use of the site as a component of any site redevelopment. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soils will exceed the commercial soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use.

2. Imposition of an institutional control in the form of an environmental easement for the controlled property that:
(a) requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3),
(b) limits the use and development of the controlled property for commercial use or industrial use provided that actual land use is subject to local zoning,
(c) restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Department, NYSDOH, or County DOH,
(d) prohibits agriculture or vegetable gardens on the controlled property, and
(e) requires compliance with the Department approved Site Management Plan.

3. A Site Management Plan is required, which includes an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to assure the following institutional and/or engineering controls remain in place and effective:

(a) Institutional Controls: The Environmental Easement discussed in Paragraph 2 above.
(b) Engineering Controls: Maintenance of the site cover.

The Site Management Plan includes, but may not be limited to:

a) An Excavation Plan, which details the provisions for management of future excavations in areas of remaining contamination; and
b) descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions; and
c) maintaining site access controls and Department notification;
d) the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls; and
e) a provision to evaluate the potential for soil vapor intrusion should any building be developed on the site and to implement actions (e.g., mitigation or monitoring) recommended to address exposures related to soil vapor intrusion.
f) a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but not be limited to:
    (i) monitoring of groundwater to assess the performance and effectiveness of the remedy;
    (ii) a schedule of monitoring and frequency of submittals to the Department;
    (iii) monitoring for vapor intrusion for any buildings developed on the site, as may be required pursuant to item e) above.
g) Green remediation principals and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows;
    (i) considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
    (ii) reducing direct and indirect greenhouse gas and other emissions;
    (iii) increasing energy efficiency and minimizing use of non-renewable energy;
    (iv) conserving and efficiently managing resources and materials;
    (v) reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 6.1.1 are also presented.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater and soil.

Wastes are defined in 6 NYCRR Part 375-1.2 (aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375 (au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and Source areas identified at the site (see Figure 3) include; the location of former underground petroleum storage tanks (USTs) in the southwest corner of the property. Petroleum-related volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) were identified in soil and groundwater in this location. The primary contaminants of concern are

The waste/source areas identified at the site were addressed by the IRM(s) described in Section 6.2.

Groundwater

Groundwater samples were collected from monitoring wells installed across the overburden/bedrock interface due to the shallow depth of the overburden soils. Samples were collected from these monitoring wells to assess groundwater conditions on-site. The results indicate that contamination in shallow groundwater at the site exceeds the SCGs for VOCs and pesticides. The VOC contamination was identified at the highest concentrations in the monitoring well directly adjacent to the former petroleum UST location in the southwest corner of the property. Pesticides were detected in two monitoring wells

Table #1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Acetone	78.7	50	1 of 4
Benzene	2.09 - 353	1	3 of 4
Ethylbenzene	30.2	5	1 of 4
Isopropylbenzene	10	5	1 of 4

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
n-Propylbenzene	8	5	1 of 4
Toluene	20.3	5	1 of 4
1,1,2-Trichloroethane	26	1	1 of 4
1,2,4-Trimethylbenzene	16	5	1 of 4
Xylenes	25.2	5	1 of 4
Pesticides/PCBs			
Aldrin	0.053	0.001	1 of 2
Dieldrin	0.036 – 0.039	0.004	2 of 2

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

The primary groundwater contaminants are petroleum-related VOCs associated with operation of the former gas station and the storage of petroleum in underground storage tanks. See Figure 5. The largest concentrations of contamination is located in the monitoring well (MW-04) that was installed directly adjacent to the former underground storage tanks located in the northeastern corner of the site. Pesticides were detected above groundwater standards in the two wells analyzed. Pesticide detections in these wells and may be related to historic agricultural use or may be related to the prior use of these chemicals for pest control.

Based on the findings of the RI, the presence of former petroleum storage activities and automotive maintenance operations has resulted in the contamination of groundwater.

Soil

Surface and subsurface soil samples were collected at the site during the RI. Surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure. Subsurface soil samples were collected from soil borings and test pits at a depth of 1 to 10 feet to assess soil contamination impacts to groundwater. Soils were also collected from the drainage channel along the western boundary of the site and from the bottom of the oil/water separator identified on-site. The results indicate that soils at the site exceed the unrestricted SCG for VOCs, SVOCs, Inorganics, and Pesticides. See Figures 6 and 7 for surface and subsurface sampling results, respectively.

Table #2 - Soils

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG	Restricted Use SCG[d] (ppm)	Frequency Exceeding Restricted SCG
VOCs							
1,2,4-Trimethylbenzene	0.0012 – 24.1	3.6	3 of 37	190	0 of 37	3.6	3 of 37
Acetone	0.0071 – 8.09	0.05	7 of 37	500	0 of 37	0.05	7 of 37
Benzene	0.216 – 0.699	0.06	2 of 37	44	0 of 37	0.06	2 of 37
Ethylbenzene	0.003 – 1.58	1	2 of 37	390	0 of 37	1	2 of 37
Methylene Chloride	0.0095 – 0.365	0.05	2 of 37	500	0 of 37	0.05	2 of 37
Xylene	0.012 – 8.79	0.26	2 of 37	500	0 of 37	1.6	2 of 37
SVOCs							
Benzo(a)anthracene	0.234 – 17.6	1	6 of 37	5.6	2 of 37	1	6 of 37
Benzo(a)pyrene	0.222 – 17.7	1	6 of 37	1	6 of 37	22	0 of 37
Benzo(b)fluoranthene	0.286 – 20.9	1	7 of 37	5.6	7 of 37	1.7	7 of 37
Benzo(k)fluoranthene	0.277 – 13.7	0.8	6 of 37	56	0 of 37	1.7	4 of 37
Chrysene	0.263 – 21.9	1	6 of 37	56	0 of 37	1	6 of 37
Dibenzo (a,h) anthracene	0.411 – 4.49	0.33	4 of 37	0.56	3 of 37	1,000	0 of 37
Indeno(1,2,3-cd)pyrene	0.468 – 12.3	0.5	6 of 37	5.6	2 of 37	8.2	2 of 37
Naphthalene	0.007 – 20.4	12	1 of 37	500	0 of 37	12	1 of 37
Inorganics							
Arsenic	2.06 – 19.6	13	2 of 25	16	1 of 25	16	1 of 25
Barium	104 – 1,450	350	8 of 25	400	5 of 25	820	4 of 25
Chromium	10.1 – 46.9	30	3 of 25	1,500	0 of 25	N/A	N/A
Copper	3.24 – 454	50	4 of 25	270	1 of 25	1,720	0 of 25
Lead	2.93 – 2,076	63	12 of 25	1,000	2 of 25	450	2 of 25
Mercury	0.0008 – 56.8	0.18	2 of 25	2.8	2 of 25	0.73	2 of 25
Selenium	0.42 – 5.1	3.9	2 of 25	1,500	0 of 25	4	2 of 25
Silver	0.84 – 18	2	2 of 25	1,500	0 of 25	8.3	0 of 25
Zinc	33.1 - 294	109	9 of 25	10,0000	0 of 25	2,480	0 of 25

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG	Restricted Use SCG[d] (ppm)	Frequency Exceeding Restricted SCG
Pesticides/PCBs							
4,4-DDE	0.003 – 0.041	0.0033	3 of 11	62	0 of 11	17	0 of 11
4'4-DDT	0.002 – 0.14	0.0033	3 of 11	47	0 of 11	136	0 of 11
4,4'-DDD	0.0041 – 0.34	0.0033	3 of 11	92	0 of 11	14	0 of 11
Dieldrin	0.015 – 0.019	0.005	2 of 11	1.4	0 of 11	0.1	0 of 11
Endrin	0.017 – 0.018	0.014	2 of 11	89	0 of 11	0.06	0 of 11

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

The primary soil contaminants are VOCs, SVOCs as polycyclic aromatic hydrocarbons (PAHs), inorganics, and pesticides.

VOC contaminants were detected above the 6NYCRR Part 375-6.8 unrestricted use and the protection of groundwater soil cleanup objectives in two confirmatory soil samples collected from the south and west base sidewall (TC-01 and TC-02). See Figure 7. All contaminants detected were below the 6NYCRR Part 375-6.8 restricted use soil cleanup objectives for the protection of public health for commercial use which is the remedial objective for this site.

PAHs were detected in seven soil samples above the 6NYCRR Part 375-6.8 unrestricted use and the protection of groundwater soil cleanup objectives. These contaminants were not identified in groundwater samples. PAHS were also detected in these seven soil samples above the 6NYCRR Part 375-6.8 restricted use soil cleanup objectives for the protection of public health for commercial use. Six of these samples were collected from site surface soils, three from the drainage channel on the western boundary of the site, two from surface soils collected from the center of the site, and one from soils collected from the bottom of a former oil/water separator discovered on-site. One PAH was identified in a subsurface soil sample collected from the beneath the former office building. PAH contamination may be related to historic fill identified on-site and/or with the past use of this site for automotive service operations. In addition, the detections of PAHs in the drainage channel may be due to runoff that enters this drainage from Ridge Road. Potential exposure to these contaminants was addressed through the placement of a soil cover on-site as an interim remedial measure.

Nine inorganic contaminants were detected above the 6NYCRR Part 375-6.8 unrestricted use soil cleanup objectives in both surface and subsurface soils. Five of these inorganics (Arsenic, Barium, Copper, Lead, and Mercury) were detected above the 6NYCRR Part 375-6.8 restricted use soil cleanup objective for the protection of groundwater. None of these contaminants were detected in groundwater. These same five inorganics were detected at concentrations above the 6NYCRR Part 375-6.8 restricted use soil cleanup objectives for the protection of public health for commercial use. Arsenic was detected at these concentrations in one sample collected from soils in the drainage to the west of the site. No other samples collected from the drainage detected Arsenic above the unrestricted use soil cleanup objective. Barium was detected at three general locations; one surface soil sample in the vicinity of the former garage that also showed elevated Lead concentrations (SS-01), in the vicinity of the former pump island (GP-18 and PI-01), and in a test pit excavated beneath the former office building (TP-01). Barium was detected consistently at varying levels of concentration on the site. The presence of Barium may be associated with the past automotive-related uses of the site. Copper, Lead and Mercury were detected at these concentrations in test pit TP-01 excavated beneath the former office building. The sample was collected at a depth of 7 to 8 feet below grade. These contaminants were not detected at these concentrations in other surface or subsurface soils on-site. The presence of these contaminants in soils beneath the former office building may be related to a former automotive service pit that was identified beneath the building.

Pesticides were detected above the 6NYCRR Part 375-6.8 unrestricted use soil cleanup objectives at three sample locations. The detected concentrations were below all restricted use soil cleanup objectives. The highest concentrations were of DDE and DDT in samples collected from test pit TP-01. These contaminants were not detected above groundwater standards in groundwater samples collected from the site. Endrin and Dieldrin were also detected at this location and Dieldrin was detected above groundwater standards in two monitoring wells.

Based on the findings of the Remedial Investigation, the presence of VOCs, SVOCs, Inorganics, and Pesticides has resulted in the contamination of soil. Soil contamination identified during the RI was addressed during the

IRM described in Section 6.2 through the placement of cover soils over locations where contaminated soils exceed the 6NYCRR Part 375-6.8 restricted use soil cleanup objective for the protection of public health for commercial use.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Further Action

The No Further Action Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2This alternative leaves the site in its present condition and does not provide any additional protection of the environment.

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(s) described in Section 6.2. This alternative includes institutional controls, in the form of an environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs.

Present Worth: *$19,000*
Capital Cost: *$6,000*
Annual Costs: *$850*

Alternative 3: No Further Action with Long-Term Groundwater Monitoring and Site Management

The No Further Action with Site Management Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2. and Site Management and Institutional Controls and Engineering Controls are necessary to confirm the effectiveness of the IRM. This alternative includes long-term groundwater monitoring for VOCs and inorganics as well as institutional controls, in the form of an environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs.

Present Worth: *$35,000*
Capital Cost: *$6,000*
Annual Costs: *$3,850*

Alternative #4: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative would include: the excavation of all contaminated soils to below the 6 NYCRR Part 375-6.8 unrestricted use soil cleanup objectives, the design, installation, and operation of a dual-phase vacuum extraction system to address petroleum related contamination in soils and groundwater along with associated groundwater monitoring.

Capital Cost: *$250,000*

{

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1:No Further Action	0	0	0
Alternative 2: No Further Action with Site Management	$6,000	$850	$19,000
Alternative 3: No Further Action with Long-Term Groundwater Monitoring and Site Management	$6,000	$3,850	$35,000
Alternative #4: Restoration to Pre-Disposal or Unrestricted Conditions	$250,000	0	$250,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing **Alternative 3: No Further Action with Long-Term Groundwater Monitoring and Site Management** as the remedy for this site. Alternative #3 would confirm that the remediation goals for the site have been met by the IRM actions discussed in Section 6.2. The elements of this remedy are described in Section 7.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the AA 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.

The proposed remedy, **Alternative 3: No Further Action with Long-Term Groundwater Monitoring and Site Management,** would satisfy this criterion by maintaining the soil cover to restricting public exposure to contamination. The monitoring of groundwater will confirm that petroleum related contamination decreases as a result of the removal of the contaminated source materials/soils during the IRM. Institutional controls in the form of a site management plan and environmental easement will restrict the use of the site, the use of groundwater from the site, and any future disturbance of soils at the site to limit public exposure to remaining contamination. Alternative 1 (No Action) does not provide for cover maintenance or any other site management provisions and is therefore not protective public health and will not be evaluated further. Alternative 2 does not provide for the monitoring of groundwater contamination to confirm the effectiveness of the IRM. Alternative 4 is protective via removal of all soil contaminated above the “Unrestricted” soil cleanup objective and directly addresses groundwater contamination but does so at a much higher cost.

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.

Alternatives 2, 3, and 4 comply with SCGs for soils via a site cover or removal of remaining contaminated soils. All three alternatives are expected to bring about groundwater recovery although Alternative 4 provides for the most aggressive means to do so. .

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.

Long-term effectiveness is best accomplished by Alternative 4 which involves the excavation of the contaminated overburden soils and treatment of residual petroleum-related soil and groundwater contamination. Alternatives 2 and 3 are effective in that the magnitude of the remaining risk has been minimized by the implementation of the IRM. Exposure to all remaining contamination is limited in both of these alternatives through the implementation of site use restrictions.

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.

Alternatives 2 and 3 would control mobility via the cover and the institutional controls that will ensure the cap is maintained but will not reduce the toxicity or volume of contaminants remaining. The groundwater monitoring proposed for alternative 3 confirms that the groundwater contamination has been controlled and is not expanding. Alternative 4, reduces the toxicity and mobility of waste (approximately 1,000 cubic yards of contaminated soil) that is excavated and disposed off-site. Alternative 4 permanently reduces the toxicity, mobility, and volume of petroleum-related contaminants that are not removed via soil excavation through the vacuum extraction and treatment of on-site soil vapor and groundwater.

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.

Alternatives 2 and 3 have no short term impacts as residual contamination is not disturbed. Alternative 4 has short-term impacts related to potential exposures during excavation and transport of contaminated soils and through the extraction and treatment of soil vapor and groundwater.

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.

Alternatives 2 and 3 are favorable in that they are readily implementable. Alternative 4 is also implementable, but the volume of soil excavated under this alternative would necessitate increased truck traffic on local roads and the operation of remedial technologies for an extended period of time.

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.

Alternatives 2 and 3 have similar costs while Alternative 4 is significantly more costly, due to the large volume of soil to be handled, and remedial technology to be implemented. The significant increased cost of Alternative 4 is disproportionate to the relatively minor benefits it affords relative to long term effectiveness and Alternative 4 has greater short term impacts and is not as implementable as Alternatives 2 and 3.

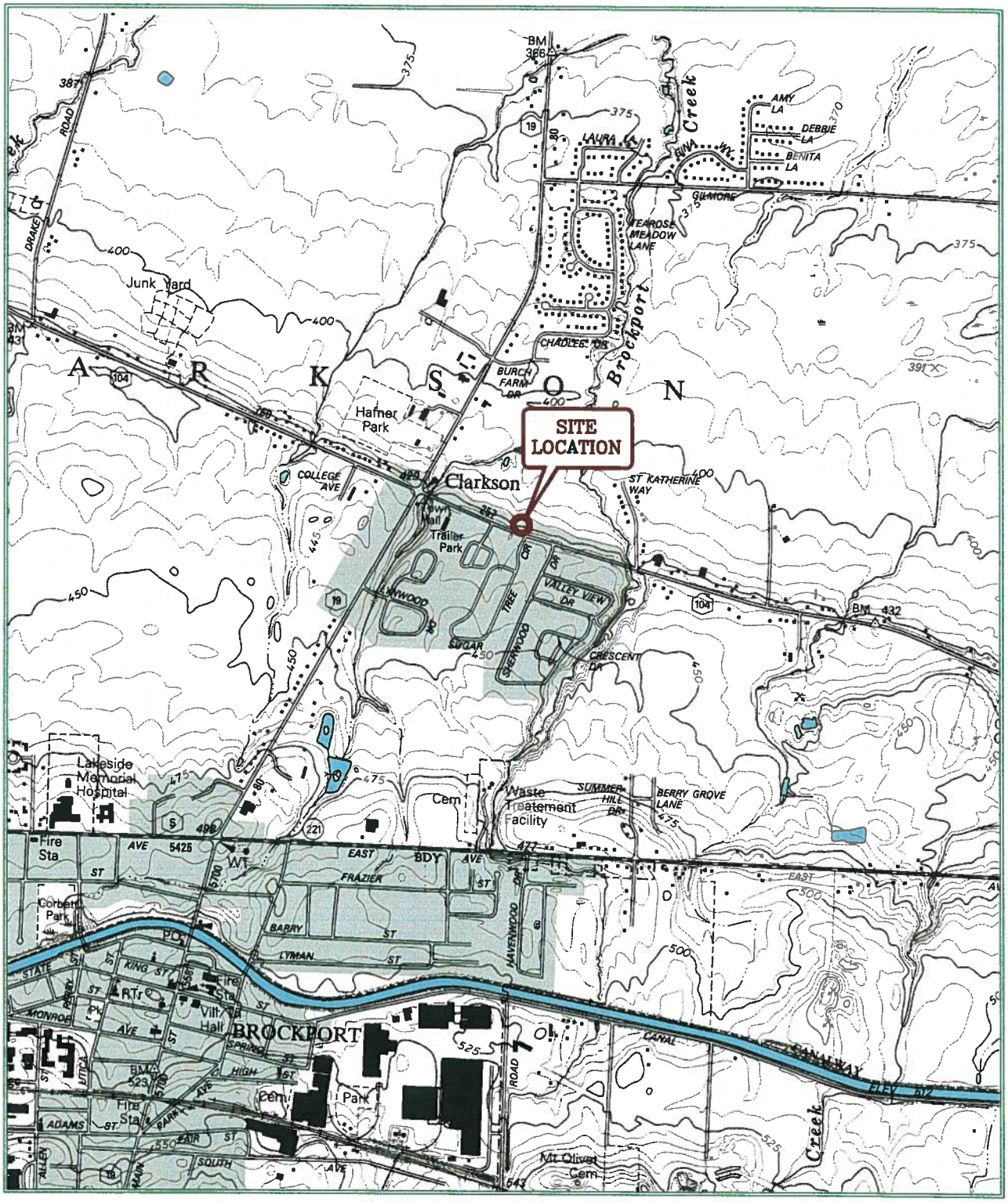
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

The anticipated use of the site is a memorial park, regarded as a passive recreational use, so achieving commercial use criteria will be suitable. Alternatives 2 and 3 would allow for this use and ensure that public exposure to residual contamination is controlled.

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 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.

Alternative #3 is being proposed because, as described above, the IRM has addressed site contamination through the removal of contaminated soils and the placement of a soil cover to prevent exposure to residual contamination. Long term effectiveness will be assured via institutional controls and site monitoring.



SCALE: 1" = 2000'

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FIGURE 1.

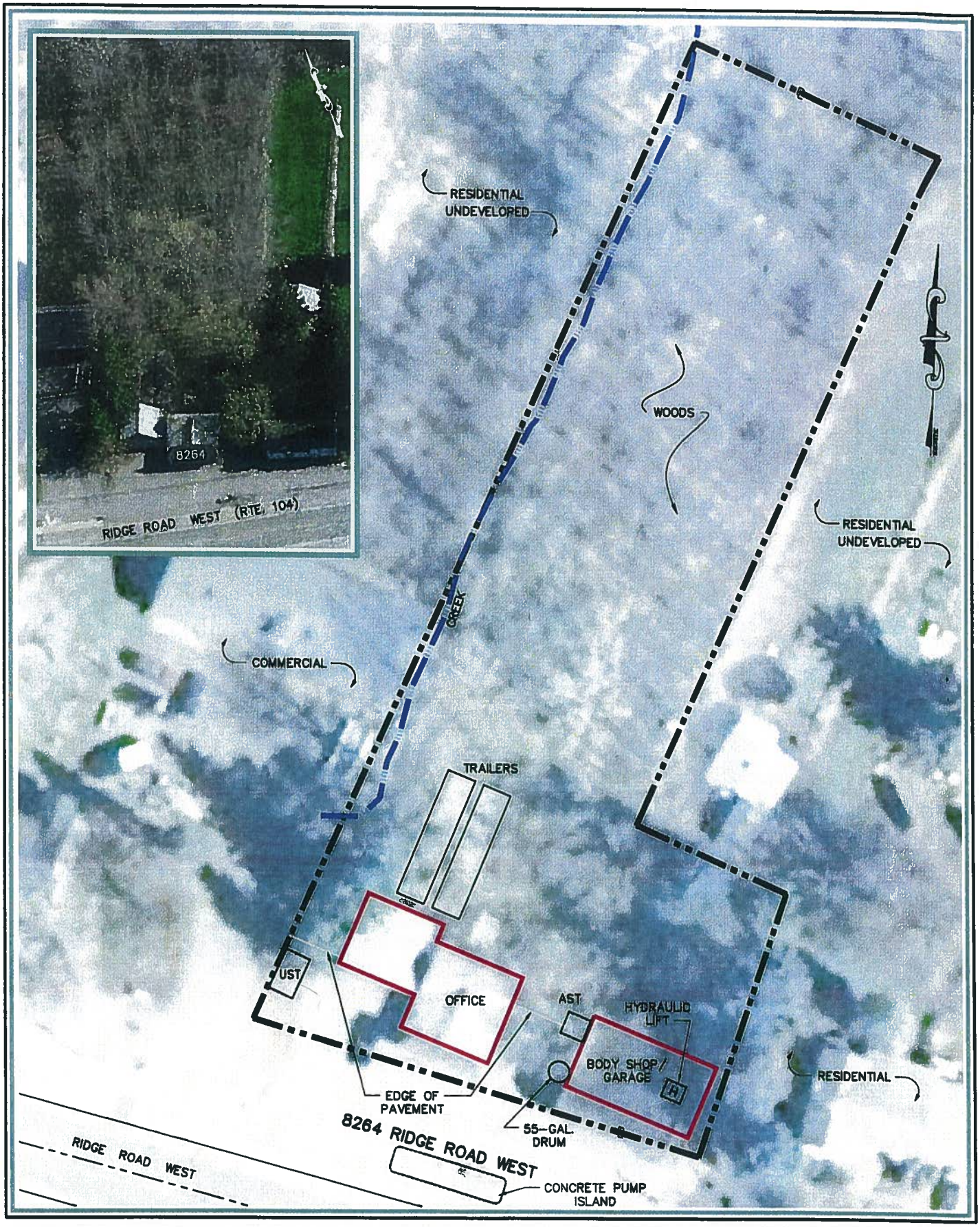
SITE LOCATION MAP

FMR. GAS STATION -- REMEDIAL INVESTIGATION
8264 RIDGE ROAD WEST
TOWN OF CLARKSON NEW YORK

DATE:	JULY 2010
SCALE:	1:24,000
DRAWN BY:	DLS

MAP SOURCE: NYS DOT RASTER QUADRANGLE
BROCKPORT / MONROE COUNTY
DOT EDITION DATE: 1997 / USGS CONTOUR DATA: 1971

J:\Projects\40500 Clarkson\40503 Brownfield Inv-Cleanup\Cadd\RI Report\Fig.1_SiteMap & HospRte.dwg, 8/11/2010 9:06:49 AM, diane'AC2009



LU ENGINEERS
Civil and Environmental
JOSEPH C. LU ENGINEERING AND LAND SURVEYING, P.C.
2230 PENFIELD ROAD PENFIELD, NEW YORK 14526
PHONE: 585.377.1450 FAX: 585.377.1266

FIG. 2
SITE PLAN
8264 RIDGE ROAD WEST
TOWN OF CLARKSON NEW YORK

DATE:	SEPTEMBER 2008
SCALE:	±1" = 40'
DESIGNED/DRAWN/CHECKED	JB/DS/GA
P.N.	40503

J:\Projects\40500 Cla...on\40503 Brownfield Inv-Cleanup\Cadd\Sampling Maps.dwg, 12/15/2008 11:08:14 AM, diane, AC2008

fence in 24" tree

metal fence post

S 69°55'23" E 86.14'

MW-03

Drum Area

SS-06

TP-12

TP-11

GP-01

GP-02

SD-02

N/F
Ronald A. Beardslee
&
Cheryl M. Beardslee
TA#054.14-1-22
#8258 Ridge Road

S 25°30'41" W 223.50'

GP-03

GP-04

N/F
Town of Clarkson
TA#054.14-1-21
#8264 Ridge Road
30,366.847 Sq. Ft.
(0.697 Acre)

N/F
Randall L. Dangler
&
Donna J. Dangler
TA#054.14-1-20
#8280 Ridge Road

N 22°59'28" E 322.47'

GP-05

GP-06

SS-05

Limits of Fill Area

SD-01

Top of Fill Area

TP-9

GP-07

GP-08

TP-7

TP-6

SS-04

TP-8

wood fence post

S 68°43'58" E 50.17'

metal fence post 2.2' W 6.4' S

SD-03

SS-03

GP-09

storage trailers

GP-10

MW-02

TP-5

TP-4 (OIL/WATER SEPARATOR)

SS-01

SD-04

TP-3 (SEPTIC TANK)

GP-15

S 14°57'22" W 85.25'

inv. 421.01'

MW-04

FMR. "GREASE PIT"

TOTAL DEPTH = 11 ft.

SS-02

TC-06

GP-11

TP-10

TC-04

TC-05

TP-01A

TP-01B

TP-2

GP-14

TOTAL DEPTH = 9 ft.

TC-03

275 gal. AST

005

hydraulic oil reservoir (removed)

TP-1

004

fmr. building

fmr. garage

LP-01

TC-02

MW-01

GP-12

hydraulic lift (removed)

GP-16

FLOOR DRAIN SAMPLE

24" cmp

001

002

003

TC-07

TC-08

TC-01

N 75°30'32" W 139.80'

GP-19

Assumed Highway Boundary

Assumed Highway Boundary

GP-13

EXCAVATION AREAS

RTC 11
NG 8275

conc. sidewalk

CAB Rim 429.20'

GP-20

Conc. Island (removed)

PI-01

GP-17

GP-18

RTC 12

edge of paved shoulder

edge of paved shoulder

Little Ridge Road, Part 4 S. H. 257
New York State Route 104
(99.0' Right-of-Way)

MONROE COUNTY SURVEY MONUMENT (DO NOT DISTURB)

TANK		
TANK 001	--	2,000 gal.
TANK 002	--	2,000 gal.
TANK 003	--	2,000 gal.
TANK 004	--	1,000 gal.

LEGEND

- SEDIMENT SAMPLES
- SURFACE SOIL SAMPLES
- TANK CLOSURE SAMPLES
- TEST PITS
- BORING LOCATIONS
- MONITORING WELL
- SUBSURFACE SOIL SAMPLE
- TANK

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Figure 3

SAMPLE LOCATION PLAN

FORMER GAS / SERVICE STATION

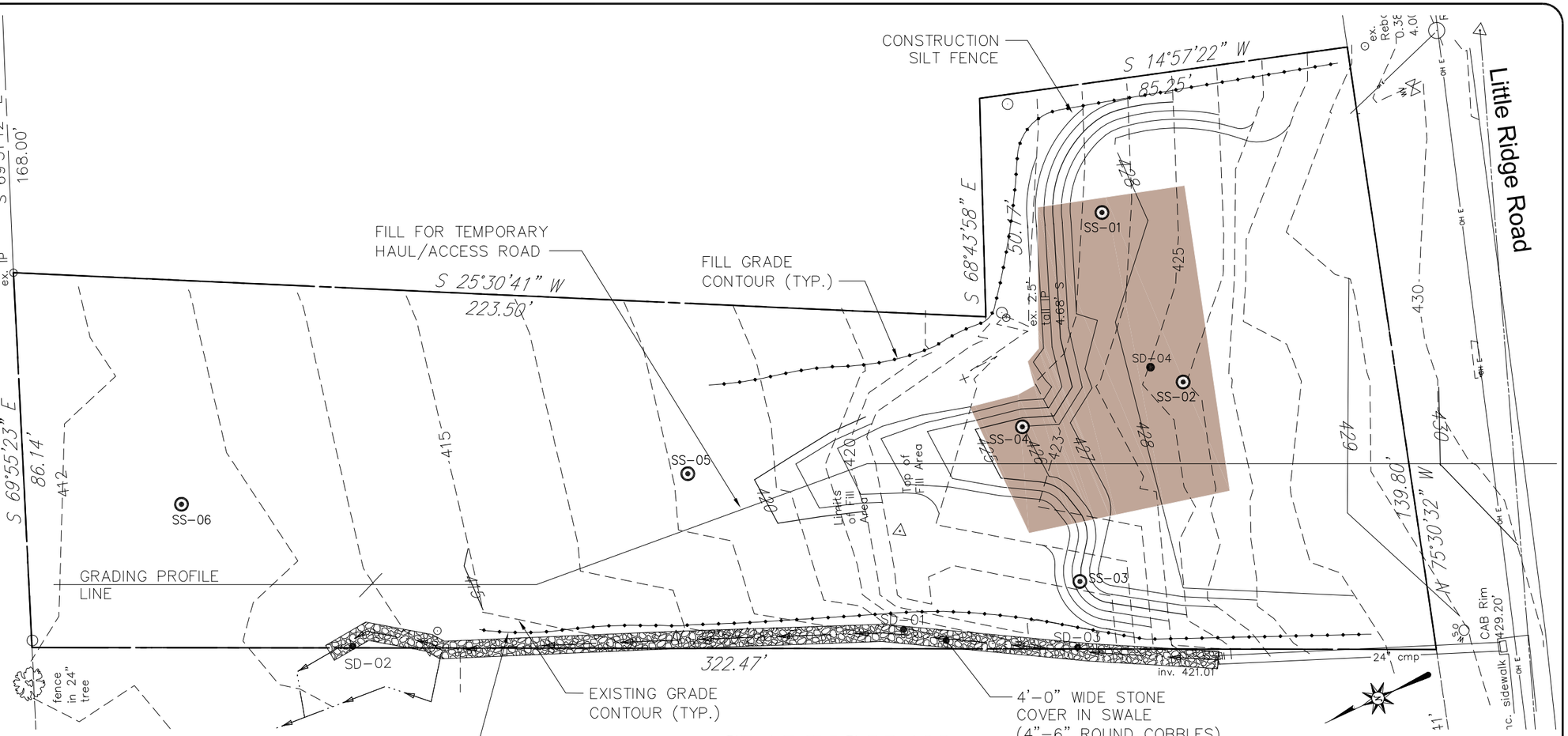
IRM REPORT

8264 RIDGE ROAD WEST

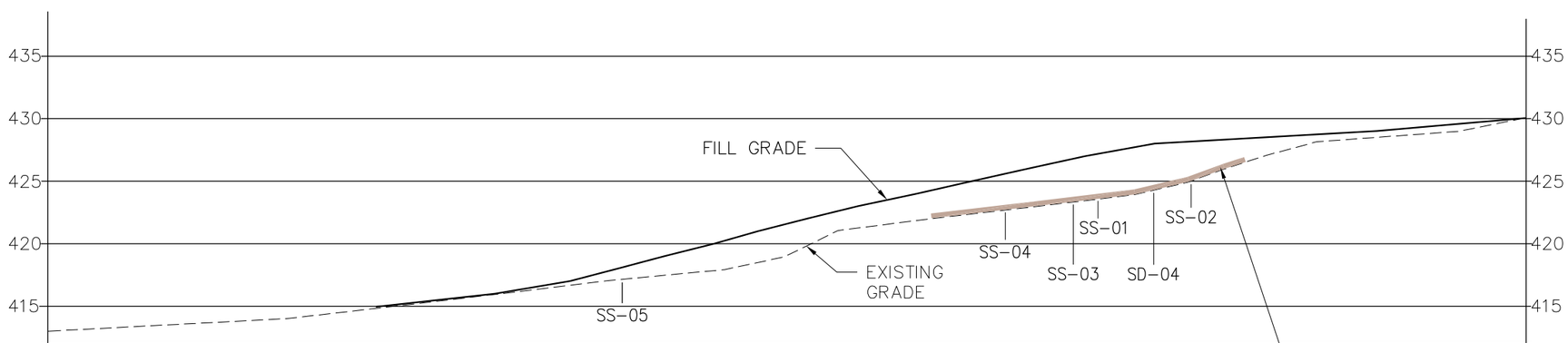
TOWN OF CLARKSON | MONROE COUNTY | NEW YORK

DATE:	JULY 2010/JANUARY 2011
SCALE:	1" = 25'
DESIGNED/DRAWN/CHECKED	LS/DS/GA
P.N. 40503	ERP Site# E828143

J:\Projects\40500 Clarkson\40503 Brownfield Inv-Cleanup\Cadd\IRM\Fig.2_IRM--Sample Location Plan.dwg, 2/28/2011 11:30:13 AM, diane*AC2009



GRADING PLAN



GRADING PROFILE

HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE: 1"=4'

DATE	REVISIONS	BY

DRAWING ALTERATION

WARNING: It is a violation of the New York State Education Law, Article 145, Section 7209, Special Provision 2, for any person unless he is acting under the direction of a Licensed Professional Engineer or Land Surveyor to alter an item in any way. If an item bearing the seal of an engineer or land surveyor is altered, the altering engineer or land surveyor shall affix to the item his seal and notation "altered by" followed by his signature and date of such alteration, and a specific description of the alteration.

BY: _____

DATE: _____

Lu Engineers
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175 Sully's Trail, Suite 202
Corporate Crossings Office Park
Pittsford, NY 14534
(Phone) 385.7417
(Fax) 385.3741
luengineers.com

PROJECT:

FORMER SERVICE STATION SITE
8264 RIDGE ROAD WEST
TOWN OF CLARKSON
NEW YORK

CLIENT:

TOWN OF CLARKSON
NEW YORK

DRAWING

Figure 4

FILL AND GRADING PLAN

DESIGNED BY: JH	SCALE: NONE
DRAWN BY: JH/DS	DATE: JULY 2010
CHECKED BY: LN/GLA	PROJECT No. 40503
SHEET 1 OF 1	DRAWING No. 02

CADNAME

J:\Projects\40500 Clarkson\40503 Brownfield Inv-Cleanup\Cadd\VRM\Conceptual Grading Plan.dwg, 2/28/2011 11:25:40 AM, diane"AC2009

fence in 24" tree

metal fence post

S 69°55'23" E 86.14'

	MW-03
Sodium	262,000
Thallium	7
Dieldrin	0.036 J

MW-03

403

SS-06

Drum Area

TP-12

TP-11

404

GP-02

GP-01

405

SD-02

406

GP-03

S 25°30'41" W 223.50'

407

GP-04

N/F
Ronald A. Beardslee
&
Cheryl M. Beardslee
TA#054.14-1-22
#8258 Ridge Road

408

N/F
Town of Clarkson
TA#054.14-1-21
#8264 Ridge Road
30,366.847 Sq. Ft.
(0.697 Acre)

N/F
Randall L. Dangler
&
Donna J. Dangler
TA#054.14-1-20
#8280 Ridge Road

409

N 22°59'28" E 322.47'

GP-05

GP-06

FLOW

410

SS-05

Limits of Fill Area

SD-01

411

Top of Fill Area

TP-9

GP-08

TP-7

TP-6

GP-07

412

S 68°43'58" E 50.17'

wood fence post

metal fence post 2.2' W 6.4' S

SS-04

TP-8

SD-03

413

SS-03

GP-09

GP-10

fmr. storage trailers

TP-5

MW-02

TP-4 (OIL/WATER SEPARATOR)

SS-01

414

TP-3 (SEPTIC TANK, REMOVED)

GP-15

inv. 421.01'

MW-04

SS-02

S 14°57'22" W 85.25'

TC-06

GP-11

415

TP-10

TC-05

TP-01A

TP-01B

TP-2

TC-03

TC-04

004

GP-14

416

fmr. garage

hydraulic oil reservoir (removed)

MW-01

TP-1

fmr. building

LP-01

TC-02

001

002

003

GP-12

hydraulic lift (removed)

GP-16

417

FLOOR DRAIN SAMPLE

TC-07

TC-08

GP-19

N 75°30'32" W 139.80'

TC-01

GP-13

Assumed Highway Boundary

Assumed Highway Boundary

EXCAVATION AREAS

RTC 11
NG 8275

conc. sidewalk

CAB Rim 429.20'

GP-20

Conc. Island (removed)

PI-01

GP-17

GP-18

RTC 12

edge of poved shoulder

edge of paved shoulder

MONROE COUNTY SURVEY MONUMENT (DO NOT DISTURB)

Little Ridge Road, Part 4 S. H. 257
New York State Route 104
(99.0' Right-of-Way)

TANK 001 -- 2,000 gal.
TANK 002 -- 2,000 gal.
TANK 003 -- 2,000 gal.
TANK 004 -- 1,000 gal.

SAMPLE LOCATIONS LEGEND

- SEDIMENT SAMPLE
- SURFACE SOIL SAMPLE
- TANK CLOSURE SAMPLE
- TEST PIT
- BORING LOCATION
- MONITORING WELL

GROUNDWATER ELEVATIONS (SEPT. 16, 2009)

	MW-1	MW-2	MW-3	MW-4
PVC ELEVATION (ft)	428.00	423.91	415.53	426.17
DEPTH TO WATER	12.31	11.69	13.15	10.73
WATER ELEVATION (ft)	415.69	412.22	402.38	415.44

ANALYTICAL RESULTS LEGEND

Results shown exceed NYS Groundwater Standards (6NYCRR Part 703.5)

(Results shown in ug/L)

	MW-04
Acetone	78.7 J
Benzene	353.0
Ethylbenzene	30.2
Isopropylbenzene	10.0 J
n-Propylbenzene	8.0 J
Toluene	20.3
1,1,2-TCA	26.0
1,2,4-Trimethylbenzene	16.0 J
Xylenes	25.2
Barium	1,510
Iron	366
Manganese	5,450
Sodium	514,000
Thallium	9

	MW-02
Benzene	2.09
Barium	1,380
Iron	16,100
Magnesium	38,700
Manganese	1,300
Sodium	253,000

	MW-01		
Benzene	15.3	Barium	1,060
Aldrin	0.053 J	Magnesium	46,700
Dieldrin	0.039 J	Manganese	580
Endrin	0.034 J	Sodium	465,000

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Figure 5

GROUNDWATER RESULTS & CONTOUR MAP

FORMER GAS / SERVICE STATION
REMEDIAL INVESTIGATION REPORT
8264 RIDGE ROAD WEST
TOWN OF CLARKSON | MONROE COUNTY | NEW YORK

DATE: JANUARY 2011
SCALE: 1"= 25'
DESIGNED/DRAWN/CHECKED LS/DS/GA
P.N. 40503 ERP Site# E828143

J:\Projects\40500 Clarkson\40503 Brownfield Inv-Cleanup\Cadd\RI Report\Fig.7_GW Contours.dwg, 7/26/2011 2:46:36 PM, diane*AC2009

fence in 24" tree

metal fence post

S 69°55'23" E 86.14'

N/F
Randall L. Dangler
&
Donna J. Dangler
TA#054.14-1-20
#8280 Ridge Road

MW-03

Drum Area

	SS-06
Barium	357,000
Chromium	36,700

SS-06

TP-12

TP-11

N 22°59'28" E 322.47'

GP-01

GP-02

INFERRED AREA OF REMAINING SURFACE SOILS EXCEEDING UNRESTRICTED USE SCOs

N/F
Ronald A. Beardslee
&
Cheryl M. Beardslee
TA#054.14-1-22
#8258 Ridge Road

	SD-02
Benzo (a) anthracene	1,550
Benzo (a) pyrene	16,000
Benzo (b) fluoranthene	18,200
Benzo (k) fluoranthene	13,600
Chrysene	19,700
Dibenzo (a,h) anthracene	4,000
Indeno (1,2,3-cd) pyrene	11,100

SD-02

	SD-01
Arsenic	19,600
Benzo (a) anthracene	5,990
Benzo (a) pyrene	5,970
Benzo (b) fluoranthene	7,680
Benzo (k) fluoranthene	4,140
Chrysene	7,350
Dibenzo (a,h) anthracene	1,730
Indeno (1,2,3-cd) pyrene	3,870

4' WIDE STONE COVER IN DITCH (4"-6" COBBLES), MIN. 12" DEEP

GP-03

GP-04

S 25°30'41" W 223.50'

N/F
Town of Clarkson
TA#054.14-1-21
#8264 Ridge Road
30,366.847 Sq. Ft.
(0.697 Acre)

LEGEND

- SEDIMENT SAMPLES
- SURFACE SOIL SAMPLES
- TANK CLOSURE SAMPLES
- TEST PITS
- BORING LOCATIONS
- MONITORING WELL

	SS-04
Benzo (a) anthracene	1,500
Benzo (a) pyrene	1,700
Benzo (b) fluoranthene	1,910
Benzo (k) fluoranthene	1,370
Chrysene	1,730
Dibenzo (a,h) anthracene	411
Indeno (1,2,3-cd) pyrene	1,260

GP-05

GP-06

ANALYTICAL RESULTS LEGEND	
	Value Exceeds Residential Use SCOs
	Value Exceeds Restricted-Residential Use SCOs
	Value Exceeds Commercial Use SCOs
	Value Exceeds Industrial Use SCOs

(Results shown in ppb)

SS-05

Limits of Fill Area

SD-01

Top of Fill Area

	SD-03
Benzo (a) anthracene	17,600
Benzo (a) pyrene	17,700
Benzo (b) fluoranthene	20,900
Benzo (k) fluoranthene	13,700
Chrysene	21,900
Dibenzo (a,h) anthracene	4,490
Indeno (1,2,3-cd) pyrene	12,300

SD-03

GP-08

TP-9

TP-7

TP-6

GP-07

	SD-04
Benzo (a) anthracene	1,310
Benzo (a) pyrene	1,290
Benzo (b) fluoranthene	1,280
Benzo (k) fluoranthene	1,270
Chrysene	1,440
Indeno (1,2,3-cd) pyrene	892

SS-04

TP-8

wood fence post

S 68°43'58" E 50.17'

metal fence post 2.2' W 6.4' S

SS-03

fmr. storage trailers

GP-09

GP-10

	SS-02
Benzo (a) anthracene	5,140
Benzo (a) pyrene	5,450
Benzo (b) fluoranthene	6,580
Benzo (k) fluoranthene	4,150
Chrysene	5,980
Indeno (1,2,3-cd) pyrene	4,470

MW-02

TP-5

TP-4

(OIL/WATER SEPARATOR)

SD-04

TP-3 (SEPTIC TANK, removed)

SS-01

	SS-01
Barium	960,000
Lead	606,000

SS-02

inv. 421.01

MW-04

TC-06

GP-11

TP-01A

TP-01B

TP-2

GP-15

SHADED AREA INDICATES AREA COVERED WITH GEOTEXTILE PRIOR TO PLACEMENT OF SOIL COVER

S 14°57'22" W 85.25'

TP-10

TC-04

TC-05

GP-14

TC-03

004

TP-1

fmr. garage

hydraulic oil reservoir (removed)

TANK 001 -- 2,000 gal.
TANK 002 -- 2,000 gal.
TANK 003 -- 2,000 gal.
TANK 004 -- 1,000 gal.

TC-02

001

002

003

fmr. building

MW-01

LP-01

hydraulic lift (removed)

GP-16

FLOOR DRAIN SAMPLE

24" cmp

TC-07

GP-12

TC-08

N 75°30'32" W 139.80'

GP-19

Assumed Highway Boundary

TC-01

GP-13

EXCAVATION AREAS

Assumed Highway Boundary

RTC 11
NG 8275

conc. sidewalk

CAB Rim 429.20'

GP-20

Conc. Island (removed)

PI-01

GP-17

GP-18

RTC 12

edge of paved shoulder

edge of paved shoulder

Little Ridge Road, Part 4 S. H. 257
New York State Route 104
(99.0' Right-of-Way)

MONROE COUNTY SURVEY MONUMENT (DO NOT DISTURB)

J:\Projects\40500 Clarkson\40503 Brownfield Inv-Cleanup\Cadd\RI Report\Fig.4_Surface Soil & Sediment Results.dwg, 7/26/2011 1:40:05 PM, diane'AC2009

Figure 6

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ENVIRONMENTAL • TRANSPORTATION • CIVIL

SURFACE SOIL & SEDIMENT SAMPLE RESULTS

FORMER GAS / SERVICE STATION
REMEDIAL INVESTIGATION REPORT
8264 RIDGE ROAD WEST
TOWN OF CLARKSON | MONROE COUNTY | NEW YORK

DATE:	JANUARY 2011		
SCALE:	1" = 25'		
DESIGNED/DRAWN/CHECKED		LS/DS/GA	
P.N.	40503	ERP Site#	E828143

fence in 24" tree
metal fence post
S 69°55'23" E 86.14'
MW-03
Drum Area
SS-06
TP-12
TP-11
GP-01
Barium 400
GP-02
SD-02
N/F
Randall L. Dangler
&
Danna J. Dangler
TA#054.14-1-20
#8280 Ridge Road
N/F
Ronald A. Beardslee
&
Cheryl M. Beardslee
TA#054.14-1-22
#8258 Ridge Road
GP-03
GP-04
S 25°30'41" W 223.50'
N/F
Town of Clarkson
TA#054.14-1-21
#8264 Ridge Road
30,366.847 Sq. Ft.
(0.697 Acre)
GP-05
GP-06
N 22°59'28" E 322.47'
GP-07
Lead 123
Zinc 159
SS-05
Limits of Fill Area
SD-01
Top of Fill Area
TP-9
GP-08
TP-7
TP-6
GP-07
SD-03
SS-03
GP-09
SS-04
TP-8
wood fence post
S 68°43'58" E 50.17'
GP-10
metal fence post
2.2' W 6.4' S
storage trailers
MW-02
TP-5
fmr. storage
TP-4 (OIL/WATER SEPARATOR)
SS-01
SD-04
TP-3 (SEPTIC TANK, removed)
GP-15
SS-02
MW-04
TC-06
GP-11
TP-2
TP-10
TC-05
TP-01B
TC-04
TC-03
004
GP-14
hydraulic oil reservoir (removed)
TP-01A
fmr. garage
TP-1
TC-02
001
MW-01
fmr. building
LP-01
002
GP-12
hydraulic lift (removed)
GP-16
TC-07
003
24" cmp
TC-08
N 75°30'32" W 139.80'
GP-19
FLOOR DRAIN SAMPLE
TC-01
GP-13
EXCAVATION AREAS
Assumed Highway Boundary
Assumed Highway Boundary
RTC 11
NG 8275
conc. sidewalk
CAB Rim 429.20'
GP-20
Conc. Island (removed)
GP-17
PI-01
GP-18
RTC 12
edge of paved shoulder
edge of paved shoulder
Little Ridge Road, Part 4 S. H. 257
New York State Route 104
(99.0' Right-of-Way)
MONROE COUNTY SURVEY MONUMENT (DO NOT DISTURB)

ANALYTICAL RESULTS LEGEND

Value Exceeds Unrestricted Use SCOs
Value Exceeds Residential Use SCOs
Value Exceeds Restricted-Residential Use SCOs
Value Exceeds Commercial Use SCOs
Value Exceeds Industrial Use SCOs

(Results shown in ppm)

LEGEND

- SEDIMENT SAMPLES
- SURFACE SOIL SAMPLES
- TANK CLOSURE SAMPLES
- TEST PITS
- BORING LOCATIONS
- MONITORING WELL
- INFERRED AREA OF SUB-SURFACE SOIL EXCEEDING UNRESTRICTED USE SCOs (FOR REMEDIAL ALTERNATIVES ANALYSIS)

	TP-01A	TP-01B
Arsenic	15.20	9.45
Benzo (b) fluoranthene	1.16	0.76
Barium	1,450.00	1,290.00
Chromium	46.90	35.10
Copper	237.00	454.00
Lead	2,040.00	2,070.00
Mercury	26.50	56.80
Selenium	5.10	N/D
Silver	18.00	3.34
Zinc	294.00	221.00
4,4'-DDD	0.320	0.340
4,4'-DDE	0.035	0.041
4'4-DDT	0.140	0.120
Dieldrin	0.015	0.019
Endrin	0.017	0.018

	TC-02
1,2,4-Trimethylbenzene	4.440
Benzene	0.699
Ethylbenzene	1.580
Xylene	8.790

	TC-01
1,2,4-Trimethylbenzene	5.080
Benzene	0.216
Ethylbenzene	1.300
Xylene	8.590

	PI-01
1,2,4-Trimethylbenzene	24.100
Barium	.655
Napthalene	20.400

	GP-20
Barium	368

	GP-18
Barium	936
4,4'-DDD	0.00416

TANK 001 -- 2,000 gal.
TANK 002 -- 2,000 gal.
TANK 003 -- 2,000 gal.
TANK 004 -- 1,000 gal.

Figure 7

SUB-SURFACE SOIL RESULTS

FORMER GAS / SERVICE STATION
REMEDIAL INVESTIGATION REPORT
8264 RIDGE ROAD WEST
TOWN OF CLARKSON | MONROE COUNTY | NEW YORK

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ENVIRONMENTAL • TRANSPORTATION • CIVIL

DATE: JANUARY 2011
SCALE: 1" = 25'
DESIGNED/DRAWN/CHECKED LS/DS/GA
P.N. 40503 ERP Site# E828143

J:\Projects\40500 Clarkson\40503 Brownfield Inv-Cleanup\Cadd\RI Report\Fig.6_Sub-Surface Soil Results.dwg, 7/27/2011 8:11:29 AM, diane'AC2009