

Soil and Groundwater Management Plan

**38 Reynolds Street, Rochester, NY
NYSDEC Spill #0170133**

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1. Introduction

This site-specific Site Management Plan (SMP) was developed to address residual impacts from an unidentified source at the property located at 38 Reynolds Street, City of Rochester, County of Monroe, New York (Site). The location of the Site is depicted on the project locus map included as Figure 1. Laboratory testing of subsurface investigation soil and groundwater samples collected from Geoprobe borings and Microwells in 2001, documented the presence of residual volatile organic compounds (VOCs) characteristic of medium and heavy weight petroleum products, diesel and lube oil, respectively. It is assumed the contamination was caused by a former heating oil tank or discharges to a garage floor drain formerly located on the property.

This SMP should be implemented when work performed at the Site has the potential to disturb soil/fill and/or groundwater in proximity to the area of impact identified on Figure 2.

1.1. Statement of purpose

The purpose of this SMP is to provide protocols for managing soil/fill and/or groundwater impacted with residual petroleum constituents identified on Figure 2, should such impacts be encountered during future construction activities at the Site. This SMP establishes goals, procedures, and appropriate response actions to be used by on-site personnel for handling and disposal/reuse of the residual petroleum impacted media.

2. Site Description

The parcel of land at 38 Reynolds Street is a vacant lot at the northeast corner of the intersection of Reynolds Street and Clifton Street. The parcel is located in a residential area within the City of Rochester limits and is approximately 0.13 acres in size. The Site is zoned R-2 (Residential) and is currently classified as 311- Residential Vacant Land according to the NYS Office of Real Property Services. The site was originally intended for redevelopment as part of the City of Rochester's Home Expo 2001 campaign.

City records indicate the parcel was occupied by two (2) structures. A 2 1/2 story frame structure, located on the west side of the parcel, was used as a multi-family residence. The second structure, an unattached garage, was located on the northeast corner of the parcel and was constructed in 1916. Both structures were demolished in 1998. The 1971 Sanborn Fire Insurance, included as Figure 3, illustrates the configuration of the structures formerly occupying the site. No evidence of underground petroleum storage tanks associated with the property was indicated in the City permit records or the Sanborn Maps.

A visual survey of the area immediately surrounding the site identified the following land uses:

North: Residential
East: Vacant; Residential
South: Residential
West: Residential

Drinking water for the area is supplied by the City. Subsurface utilities include natural gas, water, sewer and electric. Additional electric and telephone service is overhead.

3. Summary of Subsurface Investigation

In May 2001, the City of Rochester (City) began excavation of a basement foundation for construction of a new home at 38 Reynolds Street (Figure 1). During excavation, elevated levels of petroleum vapors were detected in soils removed from the hole. Construction on the parcel was suspended, and the hole was backfilled and a subsurface investigation was completed on May 30 and 31, 2001. Geoprobe soil borings were advanced at locations across the site for soil sampling and analysis and to determine the nature and extent of contamination at the Site. No source soils were removed from the Site at the time of the investigation.

3.1. Summary of Investigative Methods

The procedures used throughout the subsurface investigation were designed to aid in the collection of subsurface information relative to the overburden materials at the site. Specifically, the procedures were designed to identify and delineate any subsurface contamination at the site.

The Geoprobe subsurface investigation was conducted by MARCOR Remediation, Inc (MARCOR) in conjunction with City of Rochester DEQ personnel on May 30 and 31, 2001. Additional Geoprobe point locations were advanced on the eastern adjacent property (24 Clifton Street) on June 18, 2001 to further delineate subsurface contamination. Prior to the commencement of the investigation all underground utilities were cleared by the Underground Utilities Protective Organization (UFPO) or marked by utilities personnel.

A total of twenty-eight (28) Geoprobe borings were advanced at the 38 Reynolds Street property and seven (7) Geoprobe points were advanced on the Clifton Street property. Borings were advanced to depths ranging from 6.5 to 16 feet below ground surface (bgs) using a Geoprobe 5400 truck mounted unit (Figure 2). Soils were continuously sampled from 48" Macro-Core acetate liners. Soils were characterized and visual observations were recorded on Soil Boring Logs. A copy of the Boring Logs is included as Appendix A. Headspace analysis was performed on each sample in the field using a portable Microtip 2000-HL photoionization detector (PID). Soil samples exhibiting the highest headspace elevations from each boring were retained for possible laboratory analysis. Groundwater was encountered in several of the borings throughout the investigation at approximately eight (8) feet bgs. Four (4) groundwater samples were obtained for laboratory analysis from Microwells installed at GP16, GPC-2, GPC-3 and GPC-7.

3.2. Summary of Site Conditions

The geology of the site consists of unconsolidated glacial soils overlying carbonate bedrock. Geologic maps of the Rochester region indicate that the unconsolidated glacial soils consist of lacustrine silt and clay deposited in the late Pleistocene. The bedrock under the site is Lockport Dolomite consisting of dolomitic limestone and shale. The depth to bedrock is estimated at 15 to 20 feet below ground surface (bgs).

Accurate stratification of soil types was unable to be determined at portions of the Reynolds Street parcel due to the recent excavation and backfilling operations at the site. Soil samples from the property

extremes were glacio-lucustrine in nature, consisting predominantly of brown sandy silts with smaller amounts of coarse to fine gravels and traces of larger cobbles. Although the soils at the center of the site had been mixed, the content appeared to be consistent with the undisturbed soils from the property extremes. Macrocore samples from borings at the Clifton Street property were undisturbed and confirmed the characterization of the Reynolds Street subsurface as brown sandy silts with smaller amounts of coarse to fine gravels and traces of larger cobbles. Bedrock was not encountered at any of the boring locations. Groundwater was encountered at approximately eight (8) feet bgs.

Borings on both sites were advanced at irregular intervals across the site to provide for more complete coverage. Most borings were advanced to between 6.5 to 16 feet bgs. Borings located on the western side of the Reynolds site were advanced to an average depth of 6.5 to 8.0 feet bgs due to interference from the remains of the previous structure's foundation.

Elevated headspace concentrations (10+ ppm) in the soil were encountered throughout the Reynolds site at various depths. The highest concentrations were detected in soils from the southern portion of the site from four to eight (4 to 8) feet bgs. Gray to black staining of the soil was also apparent from the southern samples. No staining or other evidence of a significant source of contamination was apparent from the samples obtained from the east, north and west sides of the site, and elevated headspace concentrations are likely attributable to soil mixing during the backfilling operations. Elevated headspace concentrations from the Clifton site were encountered in boring locations GPC-2 and GPC-6. Figure 3 illustrates the headspace concentrations recorded for each soil sample. Copies of the subsurface logs are included as Appendix A of this report.

Soil samples from six (7) locations (GP1a, GP8, GP16, GP19, GP21, GP23 and GPC-6) at various depth intervals were selected and submitted to Paradigm Environmental Services, Inc. (NYS ELAP ID No. 10958) for laboratory analysis. Samples were analyzed for Volatile Aromatic Compounds (VOCs) by NYSDEC S.T.A.R.S. 8021 B full list and, with the exception of sample GPC-6, for Total Petroleum Hydrocarbon fingerprinting by TPH 310.13 methodologies. Four (4) groundwater samples were also submitted for analysis by NYSDEC S.T.A.R.S. 8021 B full list and for Total Petroleum Hydrocarbon fingerprinting by TPH 310.13 methodologies.

VOC Contaminant levels for all soil samples were found to be below NYSDEC Part 375 *Unrestricted Use* Cleanup Objectives. TPH fingerprint analysis of GP19, GP21 and GP23 showed detectable levels of hydrocarbons characteristic of heavy weight lube oils. TPH fingerprint analysis identified measurable concentrations of medium weight petroleum hydrocarbons consistent with diesel fuel or heating oil at borings GP8 and GP16. TPH for petroleum hydrocarbons was below detectable limits for the GP1a sample. Table 1 illustrates the soil sample laboratory analysis results in comparison to NYSDEC Part 375 *Unrestricted Use* Soil Cleanup Objectives. A copy of the soil laboratory analysis results is included in Appendix B.

Groundwater laboratory analysis results indicated VOC contaminant concentrations were below NYSDEC T.O.G.s 1.1.1 Guidance Values for all sampled wells with the exception of Microwell GP-16. Groundwater was detected in GP-16 at approximately 8.0 feet below ground surface (bgs). The total VOC contaminant concentration level at Microwell GP-16 was 5,287 ppb total. Contaminants from GP16 were identified as medium weight petroleum diesel fuel. Table 2 illustrates the groundwater sample laboratory analysis results in comparison to NYSDEC TOGs 1.1.1 Guidance values. A copy of the groundwater laboratory analysis results is included in Appendix B.

4. Conclusions

Based on the results of the Subsurface Investigation, including: field observations, soil headspace analysis results and laboratory sample results, petroleum impacted soils and groundwater exist at the site. Heavy weight petroleum contamination characteristic of lube oils was detected in soils underlying the northeast corner of the parcel directly below the former garage and extending in a southeasterly direction onto the Clifton Street property. No immediate source of the contamination was observed during the subsurface investigation; however, it is likely that the source originated from years of automobile fluids leaking directly onto the ground surface or into garage floor drains. The topography of the area and the delineation of the contaminant plume support a southeasterly groundwater flow direction.

Medium weight petroleum hydrocarbon contamination was identified from soil samples from the south central portion of the site. All constituent concentrations in the soil were below the NYSDEC Part 375 *Unrestricted Use* SCOs. No immediate source of the contamination was observed during the subsurface investigation, however, it is likely that the source is a former or yet to be discovered leaking underground heating oil tank. The horizontal and vertical limits of contamination have not been fully identified.

Groundwater at the Site exhibited elevated VOC concentrations above the NYSDEC TOGs 1.1.1 guidance values. There are currently no potable water sources in the area of the site to be impacted by contaminant leachate. However, seasonal fluctuations in local groundwater are unknown at the site and the water table may rise to encounter residual contaminants in the subsurface.

5. Site Management Plan (SMP)

This SMP provides procedures to mitigate exposure to petroleum-impacted media that could be encountered during future construction activities or commercial use of the Site. In addition, this SMP provides information on how to identify impacted material, and also provides options for the management, disposal and/or re-use of impacted subsurface material. The procedures presented herein are intended to reduce potential exposure to construction workers and building occupants during future operation of the Site should impacted material be encountered that requires management. A site-specific Health and Safety Plan (HASP) that includes a Community Air Monitoring Program (CAMP) to be implemented during activities that disturb potentially impacted subsurface material is included in Appendix C of this SMP.

During construction activities that have the potential to disturb impacted subsurface materials, an environmental professional must monitor and document the work completed for compliance with the requirements of this SMP. In addition, the New York State Department of Environmental Conservation (NYSDEC) Spills Unit must be notified if residual petroleum-impacted media is encountered. The owner of the Site is responsible for petroleum impacted media unless a different entity acceptable to the NYSDEC is indentified as the responsible party.

5.1. Petroleum Impacted Media

This section describes the petroleum-impacted media documented at the Site and provides information on the identification, handling, analytical laboratory testing, disposal or re-use of these materials.

5.1.1. Identification of Contaminated Media

During the subsurface investigation, soils exhibiting elevated headspace concentrations (10+ ppm) were encountered throughout the Reynolds site at various depths. The highest concentrations were detected in soils from the southern portion of the site from four to eight (4 to 8) feet bgs. Gray to black staining of the soil was also apparent from the southern samples. For purposes of this SMP, soil/fill exhibiting the properties described above should be considered petroleum-impacted, and handled as such unless testing is done to quantify the constituents of this subsurface material.

The studies conducted to date have identified groundwater within the overburden at the location of monitoring well GP-16 at depth of approximately 8.0 feet bgs. If groundwater is encountered during construction activities at the Site, it could be impacted by petroleum related constituents (e.g., VOCs). Groundwater impacted with petroleum-related constituents could be characterized by the presence of a rainbow colored sheen, gasoline-type odors, or elevated PID responses.

5.1.2. Handling

Petroleum-impacted soil/fill that is excavated or disturbed should be removed, segregated from non-impacted media, and placed on, and covered with, plastic sheeting. Alternatively, the petroleum-impacted material can be placed in 55-gallon drums or a roll-off disposal container (depending on the quantity of material generated), or the material may be directly loaded onto trucks for off-site disposal (refer to Section 5.1.4.).

Groundwater or standing water removed from excavations containing a measurable amount of free product or sheen must be containerized (i.e., placed in sealed New York State Department of Transportation (NYSDOT)-approved 55-gallon drums or a holding tank) prior to characterization and disposal.

5.1.3. Analytical Laboratory Testing

Based on previous test results for samples from the Site, the recommended analytical laboratory testing program for petroleum-impacted media (soil, fill, groundwater) is summarized below:

- NYSDEC Spill Technology and Remediation Series (STARS)-list VOCs via United States Environmental Protection Agency (USEPA) Method 8260
- NYSDEC STARS-list SVOCs via USEPA Method 8270

The actual analytical laboratory testing program may vary depending on the nature of the soil, fill, and groundwater encountered, and requirements of the disposal facility or publicly-owned treatment works (POTW).

The analytical laboratory test results for characterization of soil and groundwater samples should be compared to the appropriate criteria listed below.

- NYSDEC Part 375 Soil Cleanup Objectives (SCOs) to assist in determining if soil or fill media require removal, off-site disposal and/or treatment, or can be re-used on-site.

- Technical and Operational Guidance Series (NYSDEC TOGS 1.1.1) groundwater standards and guidance values to assist in determining if groundwater: 1) can be discharged on-site; 2) requires pre-treatment and/or can be discharged to the public combined sewer system under a sewer use permit; or 3) requires off-site disposal at a regulated treatment/disposal facility.
- Applicable portions of the Monroe County Pure Waters (MCPW) Rules and Regulations, and Sewer Use Law, to assist in determining if water from the Site (groundwater, excavation water, well water, etc.) requires pre-treatment and/or can be discharged to the public combined sewer under a Sewer Use Permit, or requires off-site disposal at a treatment/disposal facility.

5.1.4. Disposal of Petroleum Impacted Media

Comparison of analytical laboratory test results to the appropriate criteria may indicate that petroleum-impacted soil and/or fill encountered during construction activities at the Site requires disposal off-site in accordance with applicable regulations. In addition, excavated subsurface material may require off-site disposal due to construction requirements (e.g., geotechnical considerations, space available on-site for storage and subsequent re-use, etc.). Based on existing data and information, the petroleum-impacted fill and/or soil that contains VOCs described herein will likely be characterized as non-hazardous waste.

Water (e.g., groundwater, standing water) that is generated/removed during construction activities (if any) that meet TOGS 1.1.1 groundwater standards and guidance values can be discharged on-site. Water that is generated and removed during construction activities at the Site (if any) that does not meet TOGS 1.1.1 groundwater standards and guidance values must be: 1) discharged to the public combined sewer under a sewer use permit; or, 2) transported and disposed off-site at a regulated facility. If the water contains free phase gasoline, petroleum sheen, or a total VOC and SVOC concentration greater than 2.13 mg/l, it should be anticipated that MCPW will require pre-treatment and confirmatory sampling prior to authorizing discharge to the public combined sewer system under a sewer use permit.

Transporters removing contaminated media from the Site must have the appropriate regulatory permits (e.g., NYSDEC Part 364 permit, etc.), and the selected disposal facility of each waste stream (e.g., soil/fill to landfill, water to POTW, etc.) must be approved by the appropriate regulatory agency for accepting the specific waste. This includes contaminated material that may be defined as non-hazardous waste and hazardous waste.

5.1.5. Re-Use of Soil or Fill

Soil or fill material that does not contain petroleum constituents above NYSDEC Part 375 Unrestricted Use SCOs can be left in place, or re-used on or off-site. Any soils to be used off-Site must be approved by the NYSDEC. However, to the extent deemed appropriate, geotechnical properties of the soil or fill should be considered prior to it being re-used on or off-site.

5.2. Health and Safety Monitoring

During future construction work at the Site that has the potential to encounter petroleum impacted media, such as that described in Section 3.1, the site-specific HASP with CAMP included in Appendix A must be implemented. The HASP and CAMP outline policies and procedures to protect workers and the

public from potential environmental hazards posed during future site activities, including redevelopment activities.

5.3. Management of Potential Future Disturbances

Workers involved with future on-site work (e.g., new installation/repair of buried utilities, etc.) that have the potential to disturb petroleum-impacted soil, fill and/or groundwater should be made aware of the potential exposure hazards. The owner of the Site will be responsible for notifying future on-site workers of potential exposure hazards. Workers should be provided with the previous reports, the exposure assessment, and this SMP, which includes the associated HASP/CAMP. These documents contain information on the type and location of petroleum impact encountered at the Site and address how to handle, treat, transport, dispose, or re-use the impacted materials in a manner that precludes exposure. Precautions should be implemented to minimize disturbance of soil or fill that result in air-borne release of particulates. Areas where work has been completed should be repaired (e.g., clean soil/fill re applied, paved, etc.).

6. Engineering Controls

The potential for vapor intrusion in to the existing or future buildings should be evaluated. If vapor intrusion is a concern, engineering controls in the form of a vapor barrier, sub-slab depressurization system, etc., may be warranted in the existing or future buildings as part of the redevelopment of this Site. In the event engineering controls are deemed necessary, the appropriate regulatory agencies (i.e., MCDPH, the NYSDEC, and/or the NYSDOH) should be consulted to approve or accept the proposed controls.

7. Institutional Controls

The Site's location is "flagged" in the City's Activities Use Limitations (AUL) Institutional Controls system requiring DEQ site review prior to the issuance of any building or construction permits.

8. Site Contacts

A copy of this SMP has been provided to the NYSDEC and the City DEQ. During future real estate transactions, the current owner will be responsible for providing this SMP to the new owner(s).

NYSDEC Contact: Mike Zamiarski, P.E.

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