Interim Remedial Measures Work Plan

Weber-Knapp Company
441 Chandler Street
Jamestown, New York

NYSDEC Site # C907048

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Date: July 2022

CERTIFICATION STATEMENT

I, Barton F Kline, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this *Interim Remedial Measures Work Plan* was prepared in substantial accordance with applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

B. F. Kline P.E.

July 12, 2022 DATE

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1.0 Introduction

The property addressed 441 Chandler Street, Jamestown, New York (the Site) has been accepted into the New York State (NYS) Brownfield Cleanup Program (BCP) to evaluate and remediate environmental impacts. This work plan presents a scope of work to complete an interim remedial measure (IRM). This IRM Work Plan was developed in accordance with NYSDEC Department of Environmental Restoration (DER)-10 "Technical Guidance for Site Investigation and Remediation", and the applicable requirements of the NYS Brownfield Cleanup Program.

As defined within DER-10, a non-emergency or non-time critical IRM is an action that may be undertaken at any time during the course of the remedial program, in response to actual or potential environmental or public health exposures identified at the site. The use of a non-emergency IRM is encouraged when a source of contamination or exposure pathway can be effectively addressed prior to completion of the investigation and remedy selection process.

The goal of the IRM to be completed at the Site will be to address areas of contamination and environmental conditions that are considered to have the greatest potential for human exposure and/or contaminant migration. Specifically, the IRM activities planned for the Site include:

- Extraction (i.e., via pumping), and treatment of trichloroethene (TCE) impacted groundwater from overburden and bedrock groundwater zones in the area where a vapor degreaser operated between about 1969 and 1993, when it was decommissioned.

1.1 Site Description

The Site is comprised of approximately 2.65 acres of land identified as Tax Parcel 387.08-3-20, and it is developed with an approximate 105,000 square foot slab-on-grade building originally constructed in 1910 with subsequent additions through the 1960s. Currently manufacturing (i.e., sheet metal cutting/stamping, welding, metal turning, and powder coat finishing), warehousing, and office operations are conducted within the building at the Site. A Project Locus Map is included as Figure 1.

The location of the former vapor degreaser that operated in the central portion of the building at the Site, and the location of an apparent sump that was utilized as part of the operation of former vapor degreaser (i.e., since backfilled with concrete), are shown on Figure 2.

1.2 Remedial Investigation, IRM and Pre-Design Study Completed under the BCP Program

This section summarizes the work completed to date in the vicinity of the proposed IRM. Additional information regarding the studies/remedial activities completed in this portion of the Site is included in a report titled *Remedial Investigation Alternatives Analysis Report, Weber-Knapp Company, 441 Chandler Street, City of Jamestown, Chautauqua County, New York BCP Site Number C907048*, prepared by Day Environmental Inc. (DAY), dated May 2021.

1.2.1 2020 Remedial Investigation

The Remedial Investigation (RI) field studies were completed between February 2020 and July 2020, and these studies included:

- Records Review - including previous studies completed at the Site, Sanborn fire insurance maps, building plans provided by Weber-Knapp, and sanitary sewer utility maps and records obtained from the City of Jamestown Board of Public Utilities;
- Dye testing - performed on select portions of the current storm and sanitary sewer systems at the Site to confirm the information obtained during the records review and assess discharge locations;
- Surface Soil Samples - collection and testing of surface soil samples from areas of the Site where soil is exposed;
- Test Borings, Soil Vapor Points and Monitoring Wells - advancement of 26 test borings and the installation of 14 groundwater monitoring wells and five soil vapor points [Note: Monitoring well locations are shown on Figure 2.];
- Subsurface Soil Samples – collection of soil samples during the advancement of the test borings for observation, field screening and subsequent analytical laboratory testing of select samples;
- Groundwater Sampling – included the completion of two groundwater sampling events in April 2020 and July 2020 to collect samples for testing of field parameters and submittal to an analytical laboratory for testing of various parameters;
- Hydraulic Conductivity Testing - completed in select overburden and bedrock groundwater monitoring wells to assess hydraulic conductivities;
- Soil Vapor Studies - included the collection and testing of soil vapor points samples, and the collection and testing of paired sub-slab and adjacent indoor air samples from locations within the building at the Site;
- Sediment Samples - included the collection of sediment samples from the east bank of the Chadakoin River for observation, field screening and subsequent analytical laboratory testing [Note: a subsequent sediment delineation study was completed between July and September 2021 to delineate a source area of VOC in sediment and subsurface soil in the vicinity of a stormwater outfall to the Chadakoin River. This study is not pertinent to the proposed IRM and is described in other documents.];
- Analytical Laboratory Testing - testing of select samples and associated quality assurance/quality control (QA/QC) samples by a NYSDOH Environmental Laboratory Approval Program-certified laboratory;
- Data Validation - evaluation of the analytical laboratory results by a third-party data validator to prepare data usability summary reports (DUSR);
- Survey and Site Mapping - measurement of ground surface and monitoring well elevations by a licensed land surveyor referenced to the North American Vertical Datum, and

determination of sample locations in the field by tape measuring from fixed locations at the Site, and/or using a Global Positioning System receiver; and

- Investigation Derived Waste - containerization of investigation derived waste in steel 55-gallon drums for storage in an unoccupied portion of facility until the waste was characterized and ultimately disposed.

1.2.2 2020 Soil Removal IRM

Between September 2019 and February 2020, a soil removal IRM was completed at the Site that included:

- Advancement of 20 test borings (designated IRM-01 through IRM-20) and installation of two groundwater monitoring wells (designated IRM-05 and IRM-10), to delineate the source area of the impacts. [Note: The approximate locations of the monitoring wells are presented on Figure 2];
- The saw cutting and removal of an approximate 200 ft^2 section of concrete floor in the area of the former vapor degreaser;
- Excavation and removal of soil to depths up to 13.5 ft. below the surface of the concrete floor;
- Placement of the excavated soil in roll-off containers staged in an asphalt paved parking area south of the building at the Site. A "Contained-In" assessment was completed to characterize the soil prior to removal. Based on the findings of this evaluation, a portion of the soil (43.73 tons) was disposed off-site as a hazardous waste and a portion of the soil (117.58 tons) was disposed off-site as a non-hazardous waste;
- Dewatering was completed using sump pumps placed in the bottom of the excavation. The water removed from the excavation (7,221-gallons) was placed in a frac tank and subsequently disposed off-site at a regulated treatment facility;
- During backfilling of the excavation with pea gravel and crusher run imported from an off-site source deemed to be free of contaminants, three 4-inch diameter groundwater monitoring points consisting of an approximate 5-foot-long slotted screen connected to solid riser pipe, were installed extending from the bottom of the excavation to the top of the concrete floor. These monitoring points are designated MP-1, MP-2 and MP-3. [Note: The approximate locations of the monitoring points are presented on Figure 2];
- Following backfilling and installation of the monitoring points, the concrete floor was replaced.

1.2.3 2022 Pre-Design Studies

Pre-design studies were conducted at the Site between January 2022 and March 2022 for the purpose of collecting data needed to complete the initial design of a groundwater extraction and treatment system intended to address chlorinated volatile organic compound (chlorinated VOC)-impacted groundwater identified during the RI in the apparent source areas of the Site, and to prevent impacted groundwater from migrating off-site. The scope of work completed as part of the

pre-design studies is outlined in the work plan titled *Pre-Design Investigation Work Plan, Weber-Knapp Company 441 Chandler Street, Jamestown, New York, NYSDEC BCP Site Number: C907048*, prepared by DAY, dated October 2021 (Pre-Design Work Plan). The Pre-Design Work Plan was approved by the NYSDEC on December 10, 2021. The scope of work included (refer to Figure 2 for the approximate well locations discussed below):

- Installation of two overburden groundwater extraction wells (designated EW-1 and EW-2), with screened intervals that interface with the upper glacial till unit at the Site.
- Installation of four overburden groundwater monitoring wells (designated MW-15, MW-16, MW-17 and MW-18), with screened intervals within the upper glacial till unit at the Site.
- Installation of one overburden groundwater monitoring well (designated MW-19), with screened interval within the upper overburden/fill layers in the Allen Street ROW, adjacent to the east of the Site.
- Installation of three bedrock groundwater monitoring wells (designated MW-20, MW-21 and MW-22), within the upper bedrock unit in the Allen Street ROW, adjacent to the east of the Site.
- Installation of one bedrock groundwater monitoring well (designated MW-23), within the upper bedrock unit in the vicinity of the 2020 soil removal IRM.
- Development of wells MW-15 through MW-23, EW-1 and EW-2.
- Hydraulic conductivity testing of select new and existing wells.
- Pump tests, consisting of the continuous pumping/extraction of groundwater for periods ranging from approximately 23 hours to 44 hours from the following wells:
    - Glacial till zone extraction well EW-1;
    - Glacial till zone extraction well EW-1 in tandem with nearby glacial till zone monitoring well MW-03;
    - Glacial till zone extraction well EW-2;
    - Bedrock zone monitoring well MW-07; and
    - Bedrock zone monitoring well MW-07 in tandem with nearby IRM backfill monitoring point MP-3.
- Treatment of approximately 6,500 gallons of groundwater (generated during the pump tests) using granular activated carbon (GAC) and subsequent discharge of the treated water to the City of Jamestown municipal sewer system following secondary treatment in the Weber-Knapp wastewater treatment system (i.e., located at 415 Chandler Street).
- Testing of groundwater removed during the pumping test (inflow samples) and corresponding outflow samples collected following treatment via GAC.

A description of the of the pump tests performed at bedrock zone monitoring well MW-07 and IRM backfill monitoring point MP-3, and a presentation of the test results, are presented in Section 2.2.

1.3 Proposed IRM

The IRM will consist of the extraction of groundwater from an apparent source area of TCE identified at the Site. It is currently anticipated that the components of the IRM will consist of the following:

- Installation of compressed-air-driven pumps in wells MW-07 and MP-1 with associated air supply and groundwater discharge piping (refer to Figure 2 for the approximate locations of the wells).
- Construction of a pretreatment system to remove chlorinated VOC from the extracted groundwater. Refer to the flow schematic presented as Figure 3, and detail plans presented as Figure 4.
- Discharge of the treated groundwater to the City of Jamestown Board of Public Utilities (Jamestown BPU) municipal sewer system.
- Routine monitoring/measurement of pumping rates, groundwater drawdowns, and the collection and analytical testing of influent (untreated) and effluent (treated) extracted groundwater samples.
- Preparation and submittal of monthly reports documenting the status of the IRM.

2.0 Summary of Environmental Conditions

This section presents a summary of the findings of work conducted to date in the proposed IRM area.

2.1 Groundwater Investigation Summary and Findings

The groundwater monitoring wells advanced/installed in proximity of the former vapor degreaser are presented in the table below. This table also includes the approximate distance and direction of these wells relative to the sump pit associated with the vapor degreaser was formerly located, well interface elevations (i.e., the top and bottom of the screened interval or open rock interval) and subsurface zone (i.e., materials present in the zone of the well interface). The groundwater monitoring well locations are depicted on Figure 2.

Well Designation	Approximate Distance (Ft.)/Direction from Source	Elevation (Ft. AMSL)		Subsurface Zone
		Top of Well Interface	Bottom of Well Interface	
MW-A	4 / west	1286	1281	Upper Overburden
MW-B	81 / northwest	1287	1282	Upper Overburden
MW-E	17 / north	1282	1280	Glacial Till
MW-F	13 / southwest	1282	1280	Glacial Till
MW-I	128 / south	1289	1283	Upper Overburden
MW-L	103 / north	1287	1281	Upper Overburden
TB-11	113 / northeast	1289	1283	Upper Overburden
IRM-05	38 / west	1284	1279	Upper Overburden
IRM-10	41 / north	1283	1278	Upper Overburden
MP-1	5 / west	1286	1281	Upper Overburden
MP-2	13 / northwest	1286	1281	Upper Overburden
MP-3	20 / north	1286	1281	Upper Overburden
MW-04	102 / west	1281	1273	Glacial Till
MW-07	35 / northeast	1281	1272	Bedrock
MW-10	131 / south	1281	1272	Bedrock
MW-11	67 / south	1289	1283	Upper Overburden
MW-16	110 / northwest	1283	1273	Glacial Till
MW-17	120 / southwest	1283	1273	Glacial Till
MW-19	145 / southeast	1295	1290	Upper Overburden
MW-20	143 / southeast	1288	1278	Bedrock
MW-21	115 / east	1288	1272	Bedrock
MW-22	143 / northeast	1287	1271	Bedrock
MW-23	46 / northwest	1252	1241	Bedrock

The concentration of TCE and its breakdown products (1,1 DCE, cis-1,2 DCE, trans-1,2 DCE and vinyl chloride (VC)] detected in groundwater samples collected during the RI study in samples

collected from wells within the IRM area are summarized below. The sample results are presented, in order from greatest to least, by the total concentration of chlorinated VOC (CVOC).

Well Designation	Date	Concentrations presented in ug/l or parts per billion (ppb)					
		1,1-DCE	Cis-1,2-DCE	Trans-1,2-DCE	TCE	VC	Total CVOC
Groundwater Standard [1]		***5***	***5***	***5***	***5***	***2***	***NA***
MW-A	7/15/2020	250	85,000	150	5,300	6,800	97,500
MW-E	7/15/2020	95	25,000	130	40,000	570	65,795
MW-F	7/15/2020	86	57,000	96	U (10)	840	58,022
MW-07	7/15/2020	280	33,000	130	3,500	1,100	38,010
	4/21/2020	91	10,000	U (70)	17,000	290	27,381
MP-1	7/15/2020	40	21,000	110	10	1,000	22,160
IRM-05	7/15/2020	10	3,400	9.5	2.3	2,800	6,222
MP-3	7/15/2020	16	4,200	13	41	33	4,303
MW-04	4/20/2020	U (0.84)	4.0	U (3.5)	U (0.88)	520	524.0
MW-I	7/15/2020	U (0.20)	13	U (0.20)	100	0.29	113.3
	4/20/2020	U (0.17)	7.5	U (0.70)	65	U (0.07)	72.5
MW-B	4/21/2020	0.60	25	U (0.70)	1	17	43.6
	7/15/2020	0.54	25	0.33	0.92	10	36.8
MW-04	7/15/2020	U (0.20)	1.0	U (0.20)	U (0.20)	30	31.0
MW-10	4/20/2020	U (0.17)	22	U (0.70)	0.21	2.6	24.8
	7/15/2020	U (0.20)	16	U (0.20)	U (0.20)	1.8	17.8
MW-11	4/21/2020	U (0.17)	3.3	U (0.70)	U (0.18)	5.8	9.1
	7/15/2020	U (0.20)	0.87	U (0.20)	1.3	1.2	3.37
MW-L	7/15/2020	U (0.20)	1.1	U (0.20)	0.73	0.36	2.19
IRM-10	7/15/2020	U (0.20)	0.67	U (0.20)	U (0.20)	0.48	1.15
MW-L	4/20/2020	U (0.17)	U (0.70)	U (0.70)	0.71	0.28	0.99
TB-11	7/15/2020	U (0.20)	0.29	U (0.20)	0.43	U (0.20)	0.72
MP-2	NA	A sample from MP-2 was not tested during the RI					NA

Notes:

(1) Groundwater Standards as referenced in NYSDEC Technical and Guidance Series (TOGS) 1.1.1 dated June 1998 as amended by the NYSDEC's supplemental tables dated April 2000 and June 2004.

Monitoring Wells MW-15 through MW-23 were not installed at the time of the RI

U (0.2) = Not detected at a concentration greater than the detection limit shown in parenthesis

At the time of the Remedial Investigation (RI) fieldwork, evidence of impacts to groundwater was observed in select monitoring wells located in the area of the proposed groundwater extraction IRM. Specifically, oil sheen was observed during the development of monitoring well MW-07. However, a measurable amount of light non-aqueous phase liquid (LNAPL) was not observed in the development water, or within the MW-07 well casing subsequent to development. LNAPL (e.g., petroleum products) was measured during the RI fieldwork in the following monitoring wells:

- MW-A: approximately 1.25 ft. of LNAPL was measured on July 1, 2020, approximately 1.15 ft. of LNAPL was measured on July 15, 2020 and approximately 2.37 ft. of LNAPL was measured on January 7, 2021. Note: MW-A is a 1-inch diameter monitoring well, as such, the NAPL thickness may be biased high.]
- MW-11: approximately 0.31 ft of LNAPL was measured on January 7, 2021.
- MP-2: approximately 0.09 ft of LNAPL was measured on January 7, 2021.
- MP-3: approximately 0.07 ft of LNAPL was measured on January 7, 2021.

To date, dense non-aqueous phase liquid (DNAPL) (e.g., chlorinated VOC) has not been detected in any of the monitoring wells installed at the Site.

2.2 Pump Test and Results

The results of the pump testing completed in the IRM area are discussed in this section.

2.2.1 Description of the Test Performed

On March 25, 2022, pumping was initiated in bedrock well MW-07 and continued for approximately 22.6 hours, at which point, the pumping in bedrock well MW-07 was paused while a second pump was placed in monitoring point MP-3. Following a pump check that lasted approximately 10 minutes, both pumps were started and run continuously for an additional 23.1 hours. The pump test ended on March 27, 2022. [Note: this pump test was the third of three pump tests completed in succession between March 21 and 27, 2022. The first pump test was completed between March 21 and 23, 2022 in till zone wells located approximately 160 ft. to the west-northwest of MW-07 (i.e., EW-1 and MW-03). The second pump test was completed between March 23 and 25, 2022 in a till zone well located approximately 200 ft. to the southwest of MW-07. The first two pump tests are not discussed further in this section.]

QED AutoPump® top inlet pumps operated by compressed air were used in both wells. The pumps were positioned in the bottom of the wells to maximize drawdown of the groundwater. The QED AutoPump® operates at a variable discharge rate that is dependent on the recharge of the well, thus maintaining a 'stable' water level in the well. The water levels were maintained at approximately 1275.5 ft. amsl in MW-07 and 1284.5 ft. amsl MP-3.

2.2.2 Pumping Rate

Pumping rates were measured at approximate one- to two-hour intervals during the pump test (i.e., except during overnight periods lasting around 6.9 hours and 9.9 hours, respectively) by means of timing the volume of groundwater captured from the pump discharge hose into a graduated container. The pumping rate within bedrock monitoring well MW-07 varied between 0.3 gallons per minute (gpm) at the start of the test, to around 0.25 gpm after the first (22.6-hour) period, approximately 0.2 gpm following the addition of pumping in IRM monitoring point MP-3, and approximately 0.13 gpm after the second (23.1-hour) period. The pumping rate within IRM monitoring point MP-3, was measured at approximately 3.7 gpm near the beginning of the second (23.1-hour) period, and around 1.3 gpm near the end of the second (23.1-hour) period. An

estimated 410 gallons of water was pumped from bedrock monitoring well MW-07 during the first (22.6-hour) period and an estimated 230 gallons of water was pumped from this well during the second (23.1-hour) period. An estimated 3,215 gallons of water was pumped from IRM monitoring point MP-3 during the second (23.1-hour) period.

2.2.3 Groundwater Depression in Response to Pumping

The chart presented as Figure 5 depicts the groundwater elevations determined in surrounding wells, based on depth to water measurements collected during the pump test described above. As indicated on Figure 5, and as summarized below, groundwater elevations decreased in each of the wells monitored during one or both periods.

Well Designation	Change in Groundwater Elevation (Ft.) Period 1	Change in Groundwater Elevation (Ft.) Period 2	Total Change in Groundwater Elevation (Ft.)
MW-A	NM	NM	NM
MW-B	-0.05	-0.33	-0.38
MW-E	-0.42	-2.55	-2.97
MW-F	-0.57	-1.2	-1.77
MW-I	NM	NM	NM
MW-L	-0.06	-0.19	-0.25
TB-11	-0.05	-0.06	-0.11
IRM-05	-0.08	-2.31	-2.39
IRM-10	-0.18	-2.82	-3.00
MP-1	-0.17	-2.99	-3.16
MP-2	-0.12	-2.99	-3.11
MW-04	0.04	-1.37	-1.33
MW-10	-0.93	-0.18	-1.11
MW-11	-0.09	-1.3	-1.39
MW-16	NM	NM	NM
MW-17	NM	NM	NM
MW-19	NM	NM	NM
MW-20	-0.01	-0.03	-0.04
MW-21	-0.16	-0.21	-0.37
MW-22	-0.36	0.55	0.19
MW-23	0.04	-0.05	-0.01

NM = Not Measured

The decrease in groundwater elevation measured during the first (22.6-hour) period was evident (i.e., the drawdown was of sufficient quantity and appeared to be in response to the pumping at bedrock monitoring well MW-07) in glacial till zone monitoring wells MW-E, MW-F and in bedrock zone monitoring wells MW-10, MW-21, and MW-22. Drawdowns in response to the

pumping of MW-07 were not evident in the other wells monitored during the first (22.6-hour) period.

The decrease in groundwater elevation measured during the second (23.1-hour) period (i.e., with the additional pumping from IRM monitoring point MP-3) were evident in upper overburden zone monitoring wells/points MW-B, MW-11, IRM-05, IRM-10, MP-1, and MP-2; in glacial till zone monitoring wells MW-E, MW-F, and MW-04; and in bedrock zone monitoring wells MW-10 and MW-21. Drawdowns were not evident in the other wells monitored during the second (23.1-hour) period. [Note: Approximately 0.49 inches of precipitation was recorded at a nearby National Weather Service meteorological station between March 26 and 27, 2022. Thus, the groundwater drawdowns in some of the monitoring wells could have been reduced.]

2.2.4 Groundwater Impacts and Treatment

Samples of the impacted groundwater pumped from bedrock monitoring well MW-07 collected on March 26 and 27, 2022 were collected prior to, and following, treatment of the water though the GAC. Sample of groundwater pumped from IRM monitoring point MP-3 was also collected before and after treatment on March 27, 2022.

During the initial pumping, sheen was observed on the effluent water collected on March 26, 2022 from the MW-07 waste stream (i.e., prior to treatment through GAC). In addition, chemical-type odors and trace amounts of LNAPL were observed in the effluent water discharged from MP-3 within the first 0.5 hours after the start of pumping at this location on March 26, 2022.

Each groundwater sample was submitted to Alpha Analytical, Inc. of Westborough MA (Alpha) and tested for NYSDEC TCL VOCs utilizing USEPA Method 8260 for the purpose documenting VOC concentrations in groundwater to assess the effectiveness of the treatment system utilized. The concentrations of VOC detected in each sample is presented in the table below:

Sample ID and Date	Detected Compound	Concentration		Groundwater Standard or Guidance Value [3]	Effluent Limit [4]
MW-07 (INPUT) [1] 3/26/2022	Vinyl chloride	1,300	ug/l	2	NA
	1,1-Dichloroethene	320	ug/l	5	NA
	Trichloroethene	120,000	ug/l	5	NA
	cis-1,2-Dichloroethene	30,000	ug/l	5	NA
	Total CVOC	*151,620*	*ug/l*	NA	NA
	Total VOC	*151,620*	*ug/l*	NA	2,130
MW-07 (OUTPUT) [2] 3/26/22	Trichloroethene	0.29 J	ug/l	5	NA
	Acetone	11	ug/l	50	NA
	2-Butanone	18	ug/l	50	NA
	Total CVOC	*0.29 J*	*ug/l*	NA	NA
	Total VOC	*29.29*	*ug/l*	NA	2,130
MP-3 (INPUT) [1] 3/27/22	1,1-Dichloroethene	8.7	ug/l	5	NA
	cis-1,2-Dichloroethene	750	ug/l	5	NA
	Trichloroethene	1,200	ug/l	5	NA
	Vinyl chloride	170	ug/l	2	NA
	Total CVOC	*2,129*	*ug/l*	NA	NA
	Total VOC	*2,129*	*ug/l*	NA	2,130
MP-3 (OUTPUT) [2] 3/27/22	Acetone	16	ug/l	50	NA
	Total CVOC	*U*	*ug/l*	NA	NA
	Total VOC	*16*	*ug/l*	NA	2,130
MW-07 (INPUT) [1] 3/27/22	1,1-Dichloroethene	390	ug/l	5	NA
	cis-1,2-Dichloroethene	44,000	ug/l	5	NA
	Trichloroethene	93,000	ug/l	5	NA
	Vinyl chloride	2,300	ug/l	2	NA
	Total CVOC	*139,690*	*ug/l*	NA	NA
	Total VOC	*139,690*	*ug/l*	NA	2,130
MW-07 (OUTPUT) [2] 3/27/22	2-Butanone	25	ug/l	50	NA
	Acetone	14	ug/l	50	NA
	Total CVOC	*U*	*ug/l*	NA	NA
	Total VOC	*39*	*ug/l*	NA	2,130

Notes:

Results in micrograms per liter (ug/l) or parts per billion (ppb)

(1) Groundwater effluent samples designated 'inflow' and 'input' were collected from the waste stream **prior to** treatment through granular activated carbon (GAC).

(2) Groundwater effluent samples designated 'outflow' and 'output' were collected from the waste stream **following** treatment through granular activated carbon (GAC).

(3) Groundwater Standards or Guidance Values as referenced in NYSDEC Technical and Guidance Series (TOGS) 1.1.1 dated June 1998 as amended by the NYSDEC's supplemental tables dated April 2000 and June 2004

(4) City of Jamestown Board of Public Utilities Industrial Wastewater Discharge Effluent Limitation for total toxic organics (TTO), Issued September 1, 2017 for Permit Number 11 (Expires August 31, 2022)

J = estimated concentration U = Not Detected CVOC = Chlorinated VOC

Note: Since the treated water was discharged to the sanitary sewer system, the groundwater standard/guidance values are provided for reference purposes only.

3.0 IRM Scope of Work

The IRM will include extraction and treatment of TCE-impacted groundwater from the identified source area. The IRM activities will be observed and documented by DAY and/or Weber-Knapp Company employees who have received the appropriate training and instruction for the work proposed.

3.1 Permits

The Weber-Knapp Company is currently permitted to discharge industrial waste water to the Jamestown BPU municipal sewer system under the Industrial Wastewater Discharge Permit (IWDP) #11, dated September 1, 2017. IWDP #11 expires on August 31, 2022. Jamestown BPU will be contacted to review the impacts associated with the increased discharges from this IRM (and the projected impacts from additional pumping to be completed during the full-scale groundwater pumping and treatment), and the permit will be revised accordingly.

3.2 Site Preparation and Control

Planned IRM work will require control measures to ensure the safety of Site workers and the public. The IRM area is within the building at the Site. Access to the building is limited to Weber-Knapp Company employees and authorized visitors accompanied by Weber-Knapp Company employees. The public will not be permitted to enter within the designated remedial or treatment system areas. Figure 6 indicates the location of the IRM area, significant existing features in the IRM area, and the anticipated layout of the Site during IRM activities. GPS and/or tape measurements will be used to locate IRM-related features at the time of installation.

3.2.1 IRM Area Controls

Facility activities in the vicinity of the IRM area (i.e., powder-coat and dye-stamping processes) are performed during the 1st shift at the facility (i.e., between the hours of 6 AM and 2 PM). In order to minimize the exposure of Weber-Knapp personnel to dust and vapors during saw cutting (described below), these IRM activities will be conducted after 2 PM.

Utility trenches will be constructed from the well heads (i.e., currently anticipated to include bedrock monitoring well MW-07 and IRM monitoring point MP-1) to nearby support columns/walls by saw-cutting channels into the concrete floor. Conduit will be placed into each channel to facilitate the installation of air and water hoses to each well head pump. Following installation of the conduit, the trenches will be backfilled with concrete and refinished to the original floor elevation. The conduit and utility trenches will help minimize potential exposure of the Weber-Knapp Company employees to the discharge piping that will transport the impacted groundwater to the treatment system. Once installed on the vertical column, the discharge piping will be sleeved and/or otherwise shielded from the concrete floor surface to a height of approximately six ft. above the floor in order to protect the discharge piping from accidental contact (e.g., collision while operating a forklift).

Prior to the start of saw-cutting activities, the IRM area will be isolated, to the extent practicable, from the adjacent areas of the building by creating a physical barrier and institutional controls (e.g., delineating the exclusion zone perimeter using traffic cones, survey tape, and/or other barriers or posting notices) to control entry to the exclusion zone. If necessary, plastic sheeting will be installed to prevent fugitive dust/vapors from leaving the work areas.

Note: It is anticipated that the construction of the utility trenches and conduit will generate minimal waste, which will consist of broken concrete floor slab (sub-slab material disturbance will be minimal, and this material will preferentially be left in place). Samples of the concrete floor slab were collected from the IRM area and tested prior to the 2020 Soil Removal IRM. The results of this testing was provided to the NYSDEC, and approval for the "contained in" determination was received. The response from the NYSDEC, dated January 22, 2020, indicated "Concentrations detected for individual VOCs were all significantly less than their current 'contained-in' soil action levels and Land Disposal Restriction concentrations. No hazardous constituents exhibited a hazardous waste characteristic by exceeding their TCLP regulatory level…the concrete, approximately 150 cubic feet, does not have to be managed as hazardous waste and can be disposed at Chautauqua County Landfill in Ellery, New York as a non-hazardous." As such, it is anticipated that any concrete waste generated during the IRM will be disposed as a non-hazardous waste.

3.2.2 Treatment System Area Controls

The treatment system will be constructed/operated within the existing Boiler Room at the Site. The location of the Boiler Room is depicted on Figure 6. The Boiler Room is located at the perimeter of the building, and access (via locked doors) is limited to authorized personnel. The proposed location of the treatment system discharge to the municipal sanitary sewer (i.e., a manhole located in the concrete floor slab within the Boiler Room, in the approximate location depicted on Figure 6) is also isolated from unauthorized Weber-Knapp Company employees and the public.

3.3 IRM Implementation

The IRM-related components are shown on Figure 3, Figure 4 and Figure 6. The following sections describe the specific remedial work anticipated as part of the IRM.

3.3.1 Influent Groundwater Characteristics and Loadings

Based upon pump test results, the total groundwater flow rate to be initially generated by the two proposed groundwater extraction wells is estimated at approximately 1.5 gpm. However, to also allow for the potential addition of future extraction wells (as needed), the groundwater treatment system processes and equipment will be designed with a continuous treatment capacity of at least 10 gpm.

Based upon review of analytical laboratory data for groundwater samples collected from the proposed groundwater capture area, it is anticipated that the influent water discharged into the groundwater treatment system will initially average up to 23 mg/l total CVOCs, with the largest influent CVOC concentrations anticipated to be TCE and cis-1,2-DCE (at up to 15 mg/l and 7 mg/l, respectively). The CVOC concentrations in groundwater are expected to decline over time.

The only well location in the groundwater extraction area with significant free product detected to date is MW-A (refer to Figure 2), and only minimal quantities of a light non-aqueous phase liquid (LNAPL) have been observed at this location (presumably residual cutting oil from parts cleaned in the vapor degreaser). While monitoring data indicates that the amount of free product present in the groundwater extraction area is limited, the groundwater extraction and treatment system will be designed to accommodate the removal of minor amounts of free product from the groundwater extraction area, if encountered in during the pumping of bedrock monitoring well MW-07 and/or monitoring point MP-1.

3.3.2 Groundwater Extraction System Process

Bedrock monitoring well MW-07 and monitoring point MP-1 will be fitted with automated, controllerless, air-operated pumps to maximize the possible drawdown in each of the extraction wells. The groundwater pumps will initially be suspended just off the bottom of each extraction well (within one foot or less) to achieve maximum drawdown.

The extraction well pumps are positive displacement pumps with a manufacturer's rated capacity of 8 gpm or more that do not require calibration, and they will be powered by the existing compressed air system at the Site. The extraction pump discharge flowrates may be manipulated by raising or lowering the pump within the extraction well, or by adjusting/throttling the compressed air pressure and/or flowrate to each pump. A typical cut sheet for these pumps is included in Appendix A (pumps to be this make and model or equivalent).

An air supply hose, air vent hose and groundwater discharge hose (see Figure 4) will be installed with each of the groundwater extraction well pumps. Each indoor extraction well hose assembly will be run horizontally below the concrete slab to a nearby column or wall, following which it will be run vertically in hard conduit for protection at floor level (approximately 6 feet), after which each hose/pipe assembly will be run overhead to the groundwater treatment area (see Figure 6). The air supply and groundwater return manifold assemblies in the groundwater treatment area will be as indicated in Figure 4. The extraction well pump vent hoses will be vented to outdoors at location(s) to be determined at time of well pump installation.

3.3.3 Groundwater Treatment System Process

A flow schematic for the groundwater treatment system is provided as Figure 3. As shown, groundwater from bedrock monitoring well MW-07 and monitoring point MP-1 will be piped into the top of the equalization tank. The equalization tank will be a sealed, closed-top polyethylene tank (minimum 200 gallons) that will serve to mix the incoming groundwater and create more uniform combined groundwater characteristics for VOC treatment prior to discharge. The equalization tank will serve as a lift station for the VOC treatment, with level sensors inside the tank triggering the VOC treatment process feed pumps P1 and P2.

The P1 and P2 feed pumps will be electrical centrifugal pumps designed to provide a minimum flowrate of 15 gpm, each. Operation of a single pump will be sufficient to meet anticipated steady-

state flowrates (1.5 gpm); however, these feed pumps will be installed to operate on a lead-lag basis, to provide redundant pump operation in case of malfunction of one of the pumps.

The pumped groundwater will flow through a positive displacement, mechanical flowmeter/totalizer, following which it will be transferred to an air tray tower. The air tray tower will be rated for a minimum 25 gpm design capacity, with a minimum of three stages to provide a manufacturer-estimated overall VOC removal rate of 95% or higher for the VOC contaminants of concern at the rated 25 gpm design flowrate (VOC removal rates will increase at the anticipated 1.5 gpm average steady-state flowrate). A typical cut sheet for the air tray tower is included in Appendix A (air tray tower to be this make and model type or equivalent). A blower will be operated intermittently, in conjunction with the feed pumps, at a minimum estimated air flow rate of 200 cubic feet per minute to provide the VOC removal through the air tray tower.

Treated water from the air tray tower will flow by gravity to the sanitary sewer in compliance with local sewer discharge permit requirements.

3.3.4 Groundwater Extraction and Treatment System Air Emissions

The groundwater extraction and treatment system is designed to minimize potential indoor air impacts and personnel exposure to the VOCs of concern. Specifically, the extraction and treatment system design incorporates a fully enclosed and vented system. Pumps, tanks, equipment and piping are all sealed (and vented to outdoors) to prevent vapors from entering the indoor air in the treatment area. The building location selected for the groundwater treatment process equipment is an isolated, unmanned area on an outside edge of the facility (see Figure 6). The treatment area is isolated from the remainder of the facility by one door, which will be maintained closed under normal operations (opening only when needed for restricted maintenance access to the boiler room). The positive pressure HVAC system in the building will further assist in ensuring that airflow between the building and treatment system area will be from the building and into the treatment area, and operation of the air stripper will provide steady air turnover in the groundwater treatment area. (Note: The air stripper will not adversely impact the Site's existing positive pressure ventilation system effectiveness.)

The majority of the VOCs that will be emitted from the air tray tower exhaust (well pump and tank vents) are anticipated to have negligible VOC emissions. The air tray tower emissions are subject to NYSDEC oversight, and it is anticipated that the primary VOCs of concern from an air emissions standpoint will be TCE and cis-1,2-DCE. Based on the anticipated total groundwater flowrate (1.5 gpm) and maximum expected VOC concentrations in groundwater (15 mg/l TCE and 7 mg/l cis-1,2-DCE), and assuming a 95% removal rate in the air tray tower, the maximum anticipated individual VOC potential emissions to air will be 0.010 lb/hr TCE and 0.005 lb/hr cis-1,2-DCE. Total CVOC potential emissions (assuming a maximum of 23 mg/l CVOCs under the same conditions listed above) are anticipated to be up to 0.016 lb/hr. To minimize potential issues with this exhaust, the exhaust duct will be installed to discharge above roof level, at least 10 feet above ground, and at least 10 feet from any building openings or air intakes.

3.3.5 System Startup and Anticipated Groundwater Extraction

The pumps in bedrock monitoring well MW-07 and monitoring point MP-1 will be activated and inspected/tested to ensure that the pumps are operating and that the supply (i.e., compressed air) and discharge (i.e., air and water) piping connections and fittings are not leaking.

It is anticipated that the pumps will be operated concurrently and generate/discharge groundwater at a combined pumping rate of around 1.5 gpm. However, this rate may increase or decrease over time depending on subsurface conditions. Following system startup, the pumping rate will be measured and recorded twice per day (i.e., approximately every 4 hours during 1st shift) until the rate stabilizes (i.e., variation of less than 0.2 gpm over 5 measurements). Once stabilization is documented, the pumping rate will be measured and recorded at weekly, or less, intervals depending on the conditions encountered.

3.4 Wellfield Monitoring

Groundwater levels in monitoring wells/points in the vicinity of bedrock monitoring well MW-07 and monitoring point MP-1 will be measured to document the influence of the pumping on groundwater levels. It is anticipated that for the first two weeks of pumping, daily measurements of depth to groundwater (i.e., measured to the nearest hundredth of a foot, in reference to the top of the PVC or steel well casing using a Heron model H.OIL oil-water interface meter, or equivalent) will be performed for the following locations (refer to Figure 2):

Upper Overburden Zone	Glacial Till Zone	Bedrock Zone
MW-B	MW-E	MW-10
MW-I	MW-F	MW-20
MW-L	MW-04	MW-21
TB-11	MW-16	MW-22
IRM-05	MW-17	MW-23
IRM-10		
MP-3		
MW-11		
MW-19		

Assuming stabilized conditions have been achieved within the initial two weeks of pumping, the measurements of depth to groundwater in the above listed monitoring wells will be completed at twice-weekly intervals (or less frequently depending on the conditions encountered during initial monitoring events) to document the drawdown created by pumping.

3.5 Treatment System Monitoring

The treatment system monitoring will be completed as required for compliance with the effluent sewer discharge permit. Groundwater treatment system effluent samples will be collected in accordance with Jamestown BPU sewer permit requirements, typically 24-hour composite sampling of the effluent discharge, and analyzed for parameters as specified, and at the frequency specified, in the pending sewer discharge permit (anticipated to include TTO VOCs).

The treatment system effluent samples will be placed in pre-cleaned laboratory containers, labeled, and preserved with ice. The samples will be transported under chain-of custody control to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory.

3.6 Dust and Vapor Monitoring and Mitigation Procedures

Procedures for dust and vapor monitoring are presented in the HASP and the Community Air Monitoring Plan (CAMP) included as Appendix B.

Continuous perimeter and work zone air monitoring will be conducted during saw-cutting of concrete floor slabs using Thermo Scientific, Inc. Data RAMs and MiniRAE 3000s (or equivalents) as specified in the CAMP.

4.0 QA/QC Protocols

DAY will be responsible for the project management, coordination and scheduling, and quality assurance/quality control (QA/QC) of IRM activities. General QA/QC procedures, including sample preparation and holding times, are described in the Quality Assurance Project Plan (QAPP), presented as Appendix C.

Samples will be obtained, handled and characterized in accordance with NYSDEC Analytical Services Protocol (ASP) methods. Once obtained, samples will be immediately labeled and stored on ice in a cooler. An appropriately qualified New York State Department of Health (NYSDOH) Environmental Laboratory Approval Plan (ELAP) Contract Laboratory Protocol (CLP) certified subcontracted laboratory will be retained to complete the required testing. Analytical laboratory methods reflect the requirements of the NYSDEC ASP, Revised June 2000. Chain-of-custody requirements will be adhered to for designated analyses.

5.0 Health and Safety

A site-specific Health and Safety Plan (HASP) has been prepared for this project and is included as Appendix B. The HASP will be reviewed by DAY employees, and by Weber Knapp employees assisting with the IRM monitoring operations, before starting site work. Other entities can adopt the protocols set forth in the HASP, or can develop their own HASP which must be submitted to the NYSDEC and NYSDOH. Monitoring of the work area will be conducted during construction of IRM processes using the following (or equivalent) instrumentation:

- Aerosol particulate meter (Thermo Scientific Data RAM)
- MiniRAE 3000 PIDs equipped with a 10.2 eV or 10.6 eV lamps.

Air monitoring at the Site will be continuous during the saw-cutting of concrete floor slabs.

DAY employees conducting the various IRM activities will have completed the Occupational Health and Safety (OSHA) 40-hour Hazardous Waste Operations (HAZWOPER) training with current refresher courses. Weber Knapp employees assisting with the IRM monitoring operations will have completed 24-hour HAZWOPER training. A copy of the HASP will be available on-site at all times during the IRM activities.

6.0 Project Organization

The key personnel responsible for the implementation of this project are anticipated as follows:

Ray Kampff	DAY Project Manager (585) 454-0210 x1108 rkampff@daymail.net
Carla Crampton	DAY Field Team Leader (585) 454-0210 x1116 ccrampton@daymail.net
Donald Pangborn	Weber Knapp Company Representative (716) 484-9135 x203 dpangborn@weberknapp.com
Erik Dahlgren	Weber Knapp Company Representative (716) 484-9135 x231 edahlgren@weberknapp.com

7.0 IRM Construction Completion Report

When appropriate as a part of the overall IRM project schedule, and in accordance with project and NYSDEC requirements, an IRM Construction Completion Report will be prepared for the IRM work specified herein that is anticipated to include:

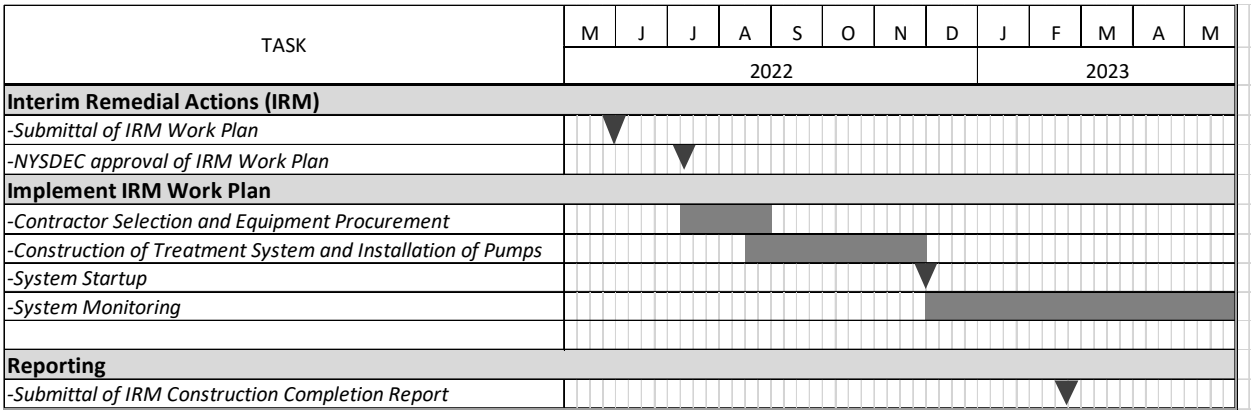
- A discussion of the IRM work completed;
- As-built drawings of the pumping and treatment systems;
- Pumping rates, treatment volumes, and groundwater elevation data;
- Photographs (as needed); and
- Analytical laboratory reports and chain-of-custody documentation for monitoring activities described herein.

Initially, a draft copy of this report will be provided for NYSDEC review and comment, and subsequently hard and/or electronic copies of the final report will be submitted.

8.0 Schedule

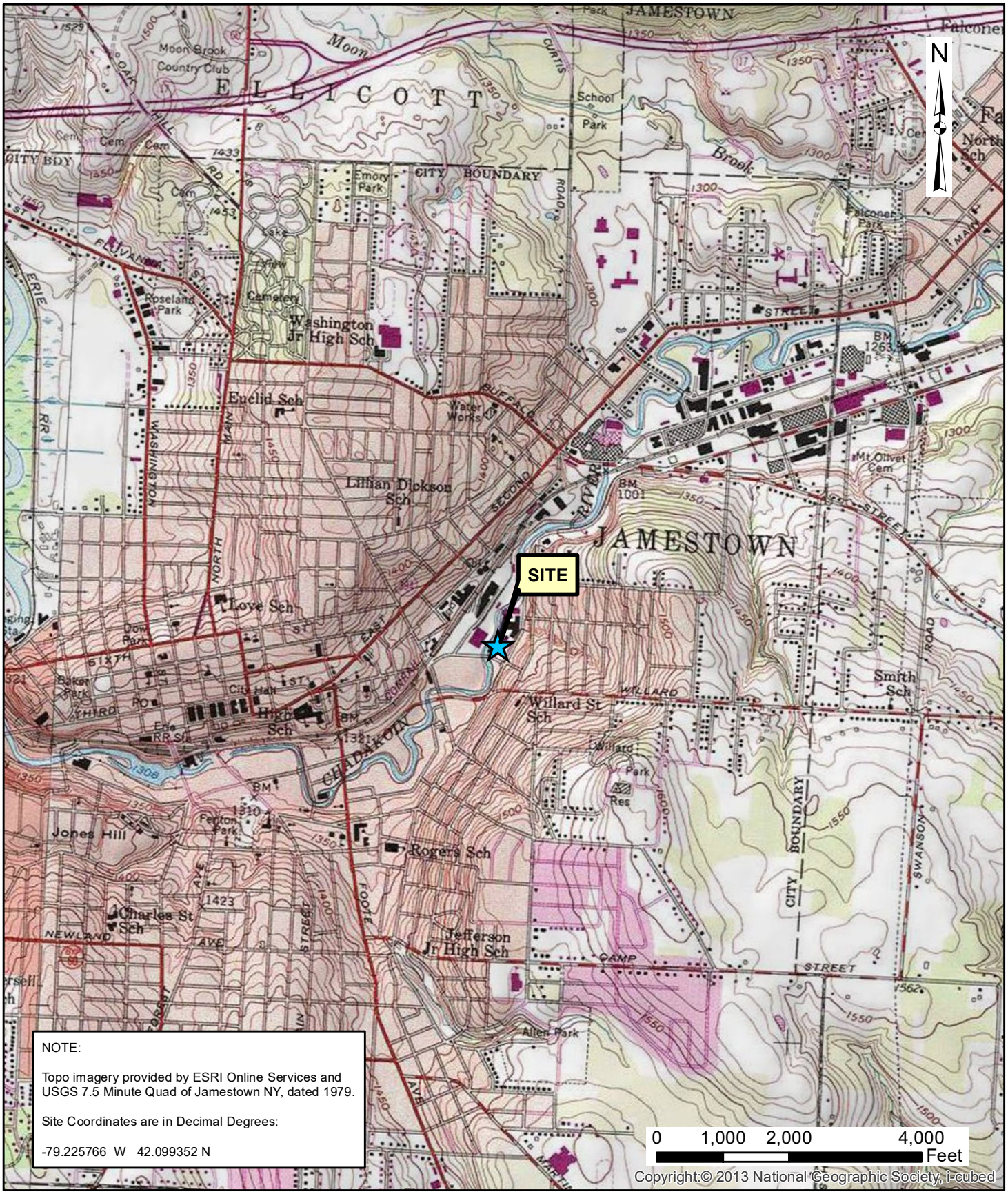
A preliminary project schedule for 2022 that includes the anticipated fieldwork and report submission is presented below. This schedule is subject to change, and will be updated, as necessary, following determination of the availability of IRM contractors and selection/availability of equipment and supplies

Operation of the IRM groundwater extraction and treatment system will continue into 2023 and beyond as an integral portion of the overall Site remedy.



If necessary, updates to this schedule will be provided to the NYSDEC as the project progresses. Note: The schedule for construction of the treatment system outlined herein is currently estimated to take up to 14 weeks, but may be completed sooner, depending on the availability of materials and subcontractors.

FIGURES



NOTE:

Topo imagery provided by ESRI Online Services and USGS 7.5 Minute Quad of Jamestown NY, dated 1979.

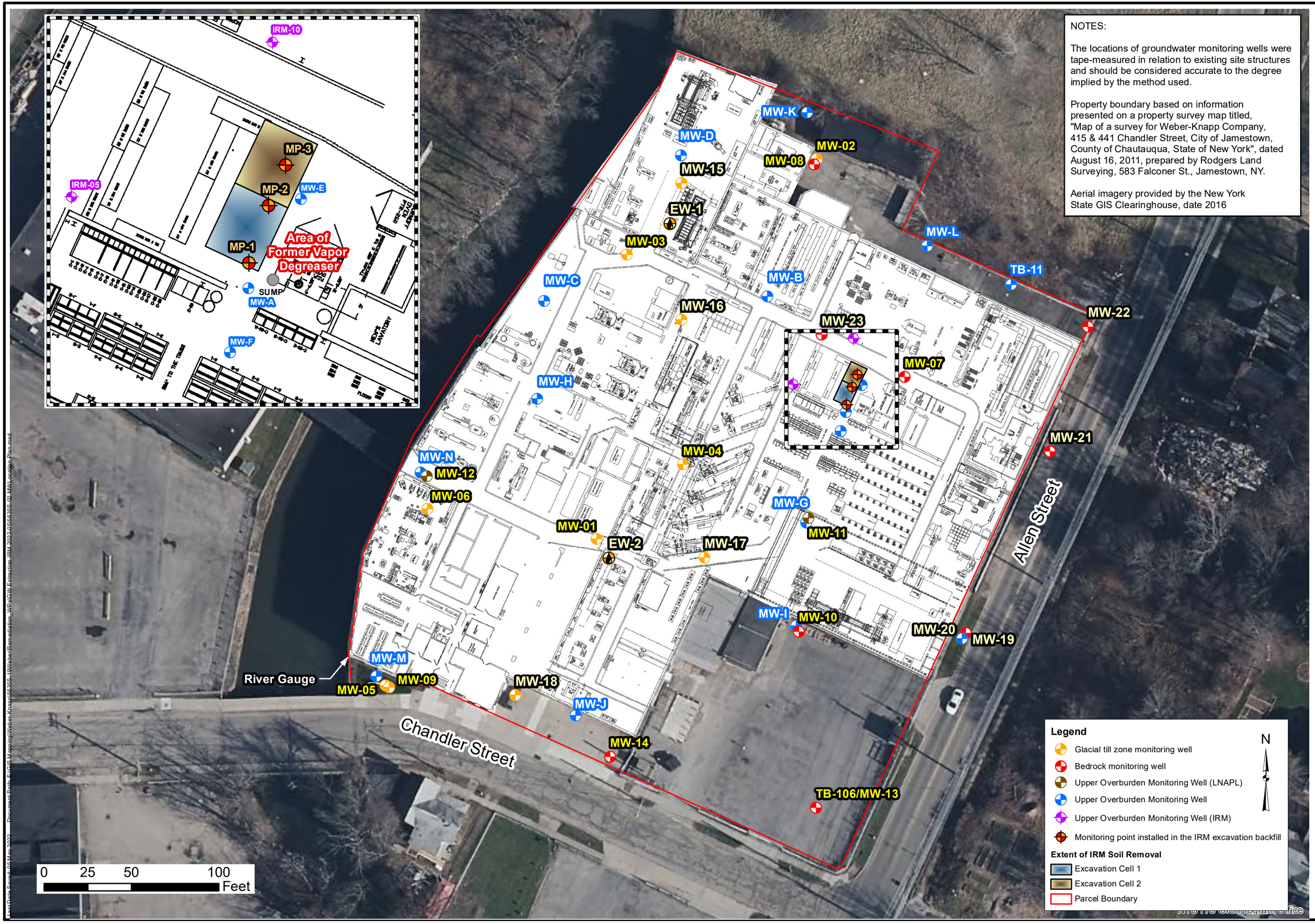
Site Coordinates are in Decimal Degrees:

-79.225766 W 42.099352 N

Document Path: E:\GIS Mapping\Weber-Knapp\5635S-19\Weber\Remediation_WP\sGW Extraction IRM 2022-05\5635S01 Project Locus Map.mxd

Last Date Saved: 04 May 2022

Date: 05-04-2022 Drawn By: CAH Scale: AS NOTED	**DAY ENVIRONMENTAL, INC.** Environmental Consultants Rochester, New York 14606 New York, New York 10170	Project Title: 441 CHANDLER STREET JAMESTOWN, NEW YORK NYSDEC SITE ID C907048 INTERIM REMEDIAL MEASURES WORK PLAN Drawing Title: Project Locus Map	Project No. 5635S-19 FIGURE 1



NOTES:

The locations of groundwater monitoring wells were tape-measured in relation to existing site structures and should be considered accurate to the degree implied by the method used.

Property boundary based on information presented on a property survey map titled, "Map of a survey for Weber-Knapp Company, 415 & 441 Chandler Street, City of Jamestown, County of Chautauqua, State of New York", dated August 16, 2011, prepared by Rodgers Land Surveying, 583 Falconer St., Jamestown, NY.

Aerial imagery provided by the New York State GIS Clearinghouse, date 2016

DESIGNED BY	DATE	DRAWN BY	DATE DRAWN	SCALE	DATE ISSUED
CAH	05-2022	CAH	05-2022	AS NOTED	05-04-2022

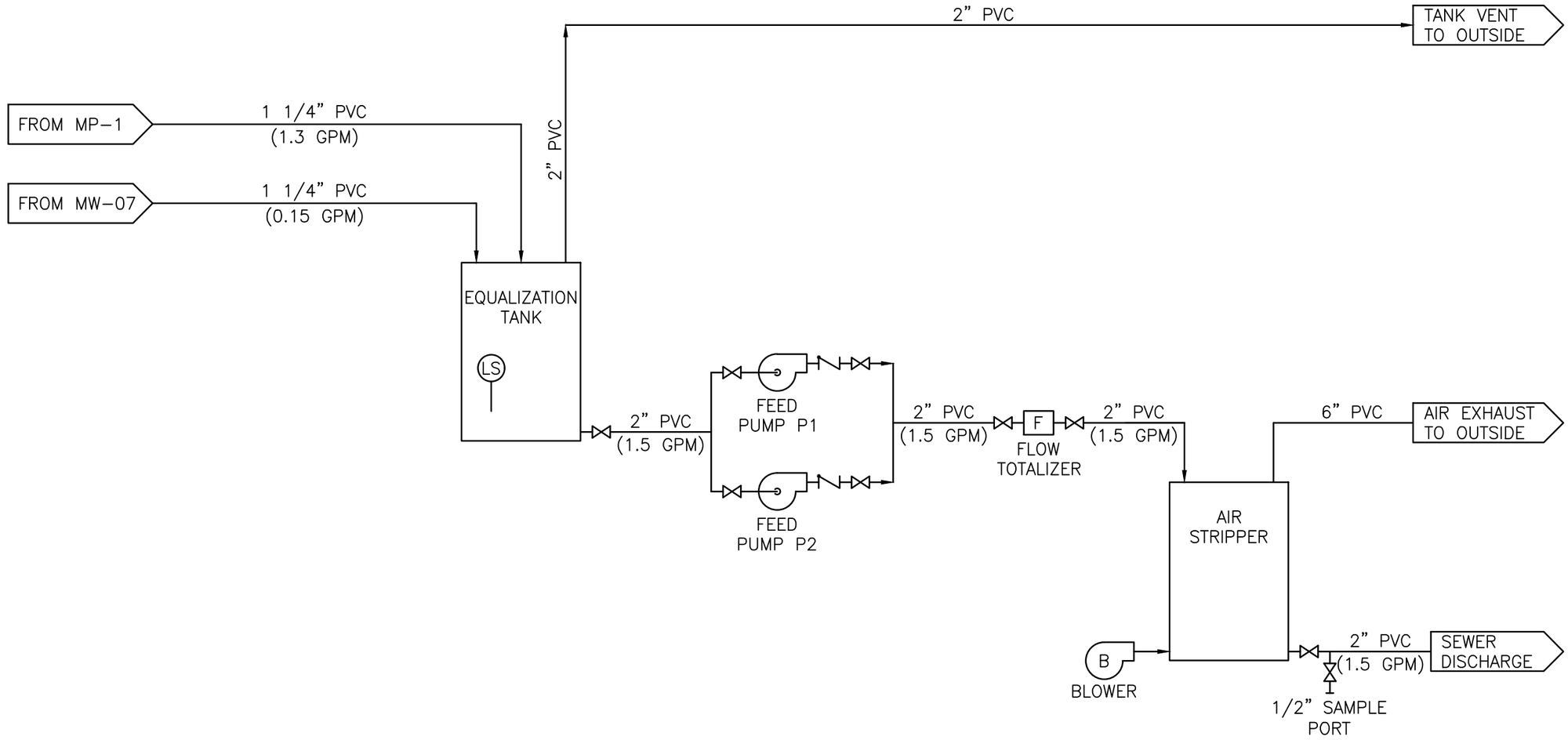
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14606

Project Title
441 CHANDLER STREET
JAMESTOWN, NEW YORK
NYSDEC SITE ID C907048
INTERIM REMEDIAL MEASURES WORK PLAN

Drawing Title
Monitoring Well Location Plan

Project No.
5635S-19

FIGURE 2



FLOW SCHEMATIC

LEGEND

- VALVE
- CHECK VALVE
- (LS) LEVEL SENSOR

NOTES:

1. FLOWRATES SHOWN ARE ESTIMATED STEADY STATE DAILY AVERAGES.
2. PIPE SIZING SUBJECT TO CHANGE PENDING EQUIPMENT SELECTION AND PROCUREMENT.

DESIGNED BY: CAH — DATE: 5-2022
DRAWN BY: RJM — DATE DRAWN: 5-20-2022
SCALE: No Scale — DATE ISSUED: 5-20-2022

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14606
NEW YORK, NEW YORK 10170

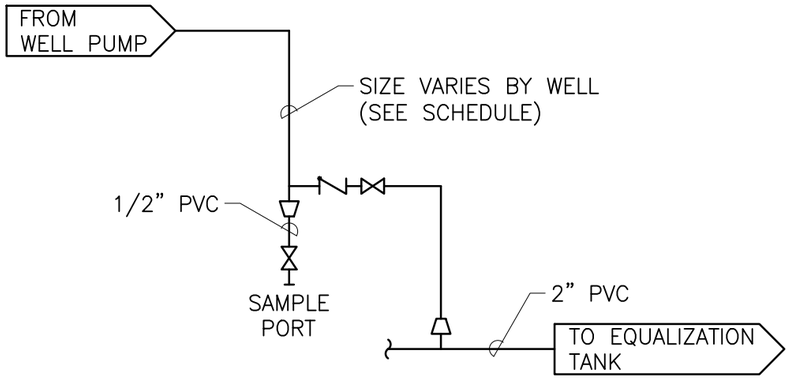
PROJECT TITLE
441 CHANDLER STREET
JAMESTOWN, NEW YORK
NYSDEC SITE ID C907048
INERIM REMEDIAL MEASURES WORK PLAN

DRAWING TITLE
Flow Schematic

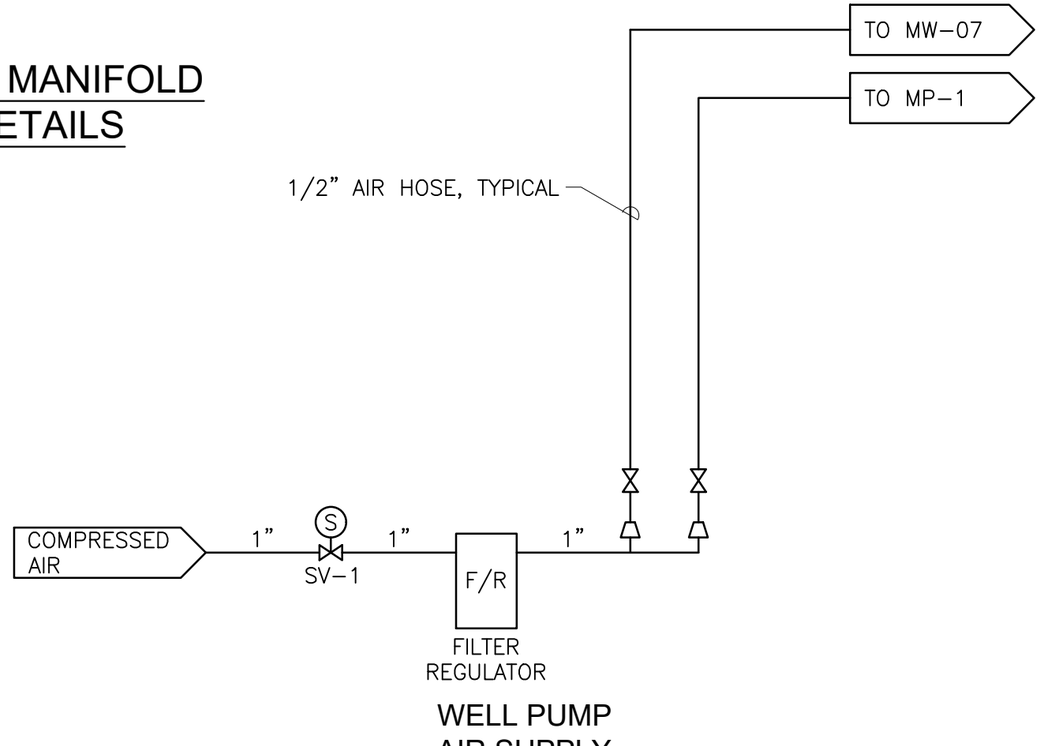
PROJECT NO.
5635S-19

FIGURE 3

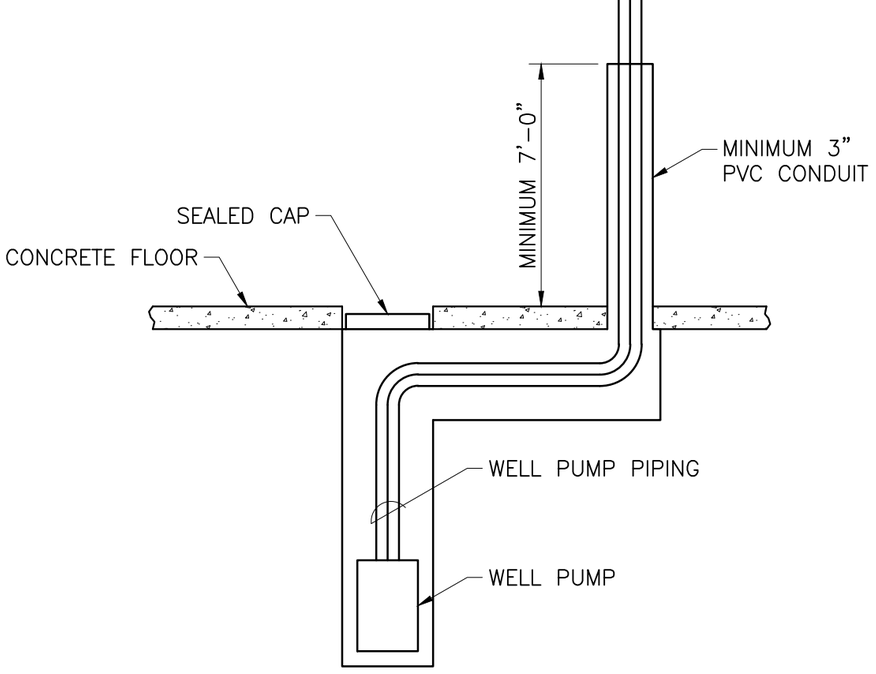
WELL PUMP MANIFOLD AREA DETAILS



WELL PUMP GROUNDWATER RETURN (TYPICAL)



WELL PUMP AIR SUPPLY



WELL PUMP DETAIL (TYPICAL)

WELL PUMP DETAIL

Extraction Well
Well Pump Assembly Schedule

Extraction Well	Minimum Piping/Tubing ID Size (inches) Compressed Air Supply	Groundwater Return	Pump Air Exhaust
MW-07	1/2	1-1/4	3/4
MP-1	1/2	1-1/4	3/4

LEGEND

- REDUCER
- VALVE
- CHECK VALVE
- S — SOLENOID VALVE (SV-1)

NOTES:

1. PIPE SIZING SUBJECT TO CHANGE PENDING EQUIPMENT SELECTION AND PROCUREMENT.

DESIGNED BY: CAH | DRAWN BY: RJM | SCALE: No Scale
DATE: 5-2022 | DATE DRAWN: 5-20-2022 | DATE ISSUED: 5-20-2022

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14606
NEW YORK, NEW YORK 10170

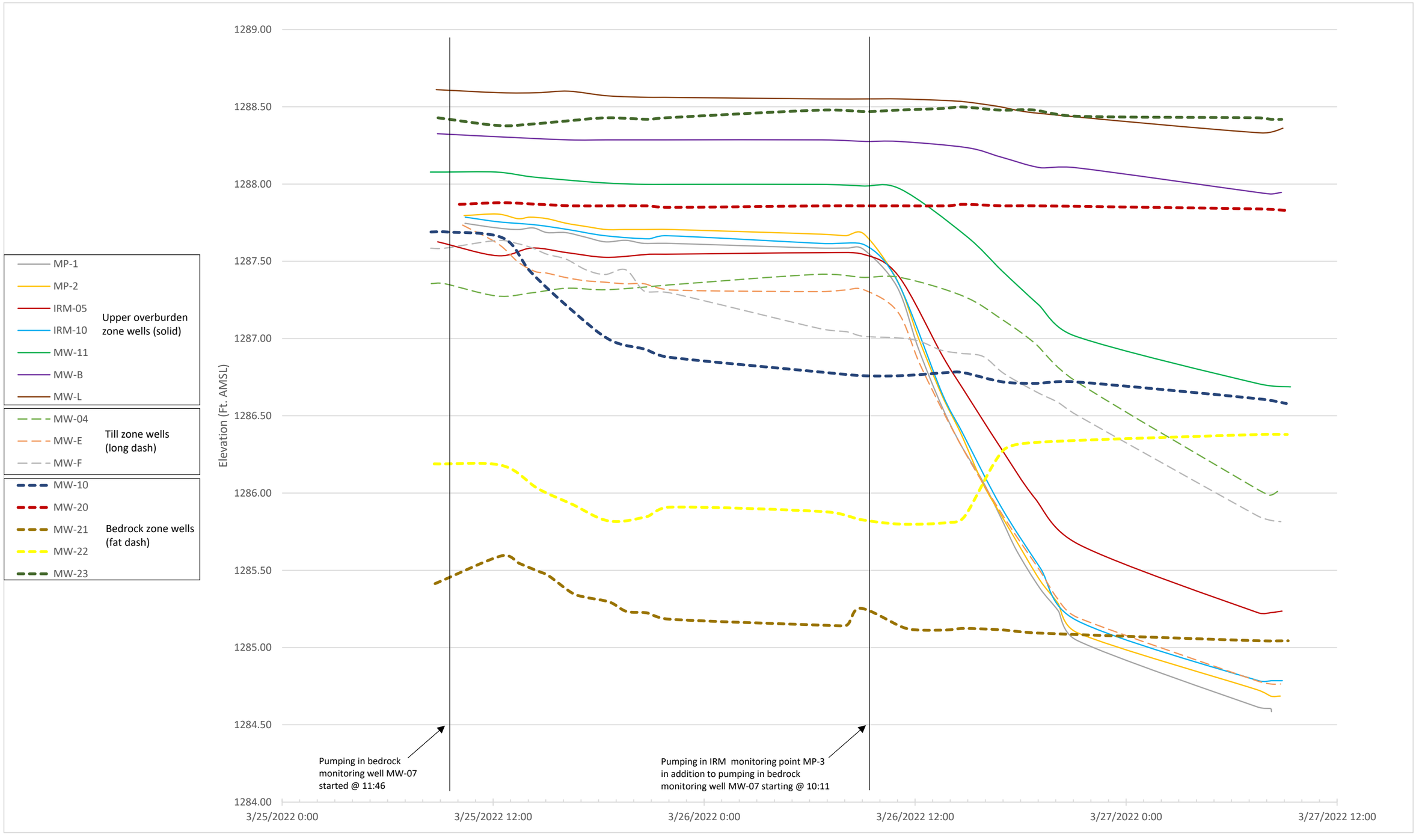
PROJECT TITLE
441 CHANDLER STREET
JAMESTOWN, NEW YORK
NYSDEC SITE ID C907048
INERIM REMEDIAL MEASURES WORK PLAN

DRAWING TITLE
Well Pump and Manifold Area Details

PROJECT NO.
5635S-19

FIGURE 4

Figure 5
441 Chadler Street, Jamestown, New York
Chart Depicting Groundwater Elevation Change in Response to Pumping MW-07 and MP-3



NOTES:

The locations of groundwater monitoring wells were tape-measured in relation to existing site structures and should be considered accurate to the degree implied by the method used.

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Aerial imagery provided by the New York State GIS Clearinghouse, date 2016

0 5 10 Feet

Air Exhaust (through roof)
Air Tray Tower
Blower
Feed Pump P2
Feed Pump P1
GROUNDWATER TREATMENT SYSTEM AREA
Sanitary Sewer Manhole (GWTS Discharge Point)
Equalization Tank
Air Manifold
PLC Control Panel
Laser Rock
CLEAVER BROOKS BOILER
NORTH AMERICAN BOILER
NYS ITS GIS Program Office

MW-L
TB-11
MW-B
MW-16
MW-23
IRM-10
MW-22
IRM-05
MW-04
MW-F
MW-21
MW-11
MW-17
Allen Street
MW-J
MW-20
MW-19
MW-10

MP-3
MW-07
MW-E
GROUNDWATER EXTRACTION AREA
MP-1
SUMP
0 15 Feet

Approximate location of the outfall to the Jamestown BPU sanitary sewer (manhole ID 3B1) located in the Chandler St. ROW

0 25 50 100 Feet

N

Legend

- Bedrock zone extraction well
- Soil removal IRM backfill extraction well
- IRM monitoring well
- Well pump supply/return piping (overhead)
- Onsite sanitary sewer
- Groundwater treatment system component
- Utility trench
- Onsite sanitary sewer manhole
- Parcel boundary

Extent of 2020 IRM Soil Removal

- Excavation cell 1
- Excavation cell 2

DESIGNED BY	CAH
DATE	05-2022
DRAWN BY	CAH
DATE DRAWN	05-2022
SCALE	AS NOTED
DATE ISSUED	05-17-2022

DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14606

Project Title
441 CHANDLER STREET
JAMESTOWN, NEW YORK
NYSDEC SITE ID C907048
INTERIM REMEDIAL MEASURES WORK PLAN

Drawing Title
Groundwater Extraction Plan and Location of Treatment System

Project No.
5635S-19

FIGURE 6

Last Date Saved: 18 May 2022 Document Path: E:\GIS Mapping\Webel-Knapp\5635S-19\Webel\Remediation_WP\GW Extraction IRM 2022-05\5635S-03 Discharge Plan.mxd

APPENDIX A

E-Z Tray®

The #1 Choice in Sliding Tray Air Stripper Technology

The only self-contained Air Stripper certified by NSF to NSF/ANSI Standard 61

QED's E-Z Tray® and E-Z Stacker® Air Strippers are covered by U.S. Patents: 5,518,668; 8,523,152; and 8,678,353

QED®

Innovative Environmental Products

Leadership in Technology, Design, and Support

QED leads the way in innovative air strippers, making them easier to operate and maintain:

1. The original, patented sliding-tray air strippers
2. From the top process technology experts in the industry, with 20+ years of successful air stripper application experience
3. Continued innovation for improved performance and reduced maintenance costs

E-Z Tray®

- Lower long-term O&M costs due to easier tray maintenance than tower-type or stacking tray strippers
- Lightweight, slide-out trays that don't require hoists, regardless of the size of the air stripper
- Requires less building space, which can lower building costs

E-Z Stacker®

- Sized and priced to be the economical choice for low to moderate-flow cleanup applications
- Highly efficient VOC removal
- Positive-seal engineering prevents leakage problems

* QED's E-Z Tray® and E-Z Stacker® Air Strippers are covered by U.S. Patents: 5,518,668; 8,523,152; and 8,678,353

Highly effective VOC removal rates and lightweight trays that allow for quick and easy maintenance by one person

Air flows up through perforated trays creating a turbulent froth zone with a high air-to-liquid surface area for mass transfer of volatile organic compounds (VOCs).

A conventional air stripper needs more than twice the access and tray removal space as an E-Z Tray® Air Stripper.

Optional hinged door allows for easy access without door removal.

Slide-out trays allow maintenance by one person.

E-Z Stacker® Air Strippers provide a lower cost solution for low flow removal of volatile organic compounds (VOCs) from groundwater.

Sliding Tray Air Strippers

E-Z Tray®

Exclusive Design Results in VOC Removal Efficiencies of up to 99.99% at Flow Rates up to 1,000 GPM.

NSF

The only self-contained Air Stripper certified by NSF to NSF/ANSI Standard 61

The E-Z Tray® Air Stripper is a sliding tray, stainless steel air stripper used to remove volatile organic compounds (VOCs) from contaminated groundwater and waste streams. The exclusive design of the E-Z Tray stripper results in very high removal efficiencies in an easier to maintain process unit.

Any air stripping process subject to fouling conditions has to contend with periodic cleaning in order to retain treatment efficiencies and capacity. Tower air strippers can become maintenance headaches when the tower packing becomes clogged and cemented together with bio-fouling or precipitants. When the perforated trays in stacking tray air strippers become fouled they require major disassembly, cranes or hoists, and lots of access space.

Unlike traditional air strippers, E-Z Tray Air Strippers from QED use removable, lightweight, front slide-out trays. This unique feature provides many advantages, including one person cleaning and less building space.

E-Z Tray Air Strippers are available in configurations with 4 or 6 trays, with maximum flow rates from 50 gpm (4-100 Lpm) all the way up to 1,000 gpm (3,784 Lpm).

ig%Capacity Process ir Strippers

These air strippers are engineered to serve in larger, process-type projects involving multiple treatment stages, where they are an effective component of large-scale water or wastewater processes in manufacturing, refining, chemical processing, and other industries. They can act as a pre-treatment stage for other process elements, such as large aerobic bio treatment units, removing VOCs at much lower airflow rates to reduce the costs of off-gas treatment.

All of this, combined with the easier maintenance and a smaller footprint, has led QED's E-Z Tray sliding tray Air Strippers to become the preferred choice for major remediation and process stream projects in the U.S. and abroad.

The Advantages of E-Z Tray over Conventional Air Strippers

E- ray ir Strippers

- Single person cleaning
- Easy process monitoring and inspection, even while in operation
- Reduced footprint for installation and maintenance
- High removal efficiencies easier to maintain
- Easily modeled online to facilitate process evaluation

ower ir Strippers

- Packing condition and liquid and air flow distribution are very difficult to observe
- Small footprint but very tall structure required
- More difficult to keep operating at design performance
- More complex process design assistance required
- Laborious packing replacement and interior cleaning required

Stacking ray ir Strippers

- Major disassembly steps and crew needed
- Difficult or impossible to observe air and liquid flow distribution during operation
- Lots of space needed for disassembly, to access all sides and to lift and store tray stages
- More difficult to keep operating at design performance
- Online modeler not offered

Online Modeler with Accessible Technical Support!

The first Online Performance Modeler, developed to assist you in selecting the most effective air stripping package for your groundwater cleanup project

Try it for yourself today! Use our exclusive online stripper modeler at **www.qedenv.com/modeler** *to spec the exact size and configuration for your project. Then talk to a QED applications specialist toll-free at* **(800) 624-2026** *for fast, free system design assistance and a price quote.*

How it Works

As contaminated groundwater enters through the top of the air stripper, millions of air bubbles are forced by blower pressure up through the perforated trays. This creates a turbulent froth zone with an extremely high air-to-liquid surface area for mass transfer of volatile organic compounds (VOCs) from liquid to air. Using the froth instead of a conventional tower packing delivers high VOC removal efficiencies even under fouling conditions, and it is easier to inspect and maintain.

The only self-contained Air Stripper certified by NSF to NSF/ANSI Standard 61

"QED's E-Z Tray® Air Stripper is the first self-contained air stripper that has earned certification from NSF International, demonstrating QED's dedication to enhancing water quality," said Theresa Bellish, Business Unit Manager for NSF International. For the details on the certification visit www.qedenv.com/airstripper.

Stacking Tray Air Strippers

E-Z Stacker®

Innovative Stacking Design Delivers Economical, Reliable Air Stripping

□ow-Cost □□ow-□ aintenence□□ow-□(ow Per□or) ance
The innovative design of E-Z Stacker® Air Strippers delivers many advantages to environmental consultants, remediation contractors, and end users.

E-Z Stacker models are sized and priced to be the most economical choice for many low to moderate flow cleanup applications (up to 40 gpm). Low capital expense and low O&M requirements make the difference.

The unique E-Z Stacker configuration consists of a series of integrally molded shell / tray modules. The multiple sieve tray design uses forced-draft air bubble generation to provide rapid, effective VOC removal.

Easy □isasse) □(y □or □o□tine C(eaning is a □□ick□ Si) p(e □ne-person □o□
The whole stack (4 or 6 trays) can be taken apart by releasing just four or six connections. Trays have no loose parts when disassembled, and cannot be reassembled incorrectly. Two sizes are available in four or six tray versions, for maximum flow ranges from 1-40 gpm.

Engineere□ □or □ a□i) □) □□gge□ness an□ □e(ia□i(ity
Every element of the heavy-duty HDPE construction has been engineered for durable, reliable performance with a multi-step positive seal against leakage.

The plastic construction makes for a low cost, corrosion-resistant air stripper for installations where the waste water has high chloride content, such as energy operations waste water.

Positi□e-Sea(Constr□ction □or □eak-□ree Per□or) ance
Cylindrical shape provides consistent tray-to-tray contact with no loose or weak points from corners or edges. And, the unique 360 degree lockdown ring, made of solid 2x2x.25 steel angle stock, applies even pressure to the whole circumference of the complete stack.

Tray bottom geometry prevents contact between the water and the gaskets, to further reduces chance of leaking. While heavy-duty gaskets are captured on both inboard and outboard edges to eliminate creeping out of position. Continuous molded-in o-ring bead provides optimum gasket compression.

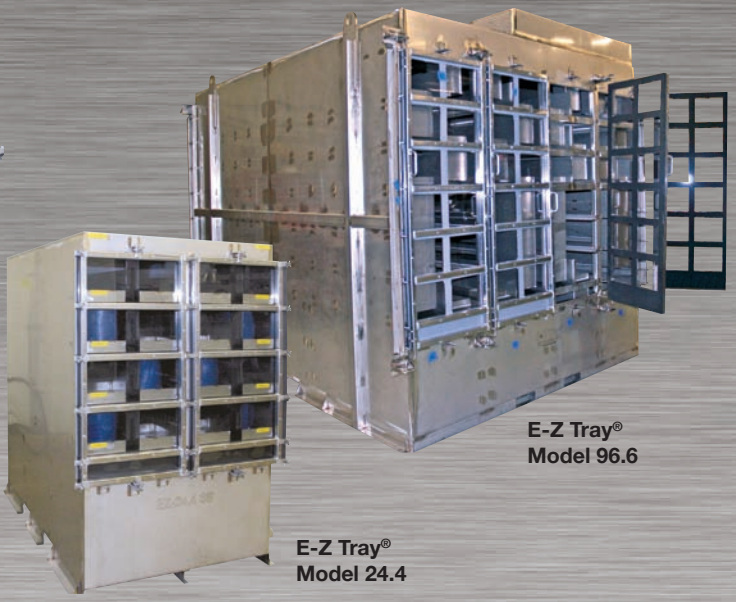
Unlike tedious, potentially weak tray-to-tray latches, the whole stack sets down securely with just four or six easy-access connections.

The competition just doesn't stack up! Call QED today to talk to one of our Applications Specialists about which E-Z Stacker model is the best choice for your project.

Specifications

E-Z Tray®
Model 6.4

E-Z Tray®
Model 16.4



E-Z Tray®
Model 24.4

E-Z Tray®
Model 96.6

E-Z Stacker®

E-Z Tray® Stainless Steel, Removable Tray Air Stripper Specifications

Model No.	Max. Flow Range gpm (Lpm)	Dry Weight lbs. (kg)	Oper. Weight lbs. (kg)	Shell Dimension DxWxH in. (cm)	Trays Per Tier lbs. (kg)	Active Area ft.² (m²)	Nominal Air Flow cfm (m³/min)	Add'l Space for Tray Removal* in. (cm)
4.4	1-50 (4-189)	630 (286)	985 (447)	30 x 34 x 82 (76 x 86 x 208)	4 x 29 (4 x 13)	2.8 (0.26)	210 (5.95)	27 (69)
4.6	1-50 (4-189)	780 (354)	1,219 (553)	30 x 34 x 102 (76 x 86 x 259)	6 x 29 (6 x 13)	2.8 (0.26)	210 (5.95)	27 (69)
6.4	1-65 (4-246)	790 (358)	1,285 (583)	39 x 34 x 82 (99 x 86 x 208)	4 x 40 (4 x 18)	3.8 (0.35)	320 (9.06)	37 (94)
6.6	1-65 (4-246)	978 (443)	1,591 (722)	39 x 34 x 102 (99 x 86 x 259)	6 x 40 (6 x 18)	3.8 (0.35)	320 (9.06)	37 (94)
8.4	1-75 (4-284)	955 (433)	1615 (733)	51 x 34 x 82 (130 x 86 x 208)	4 x 50 (4 x 23)	5.6 (0.52)	420 (11.9)	47 (119)
8.6	1-75 (4-284)	1,182 (536)	1,956 (887)	51 x 34 x 102 (130 x 86 x 259)	6 x 50 (6 x 23)	5.6 (0.52)	420 (11.9)	47 (119)
12.4	1-120 (4-454)	1,165 (528)	2,105 (955)	75 x 34 x 82 (191 x 86 x 208)	4 x 60 (4 x 27)	8.8 (0.82)	600 (17.0)	72 (183)
12.6	1-120 (4-454)	1,442 (654)	2,606 (1,182)	75 x 34 x 102 (191 x 86 x 259)	6 x 60 (6 x 27)	8.8 (0.82)	600 (17.0)	72 (183)
16.4	1-150 (4-566)	1,625 (737)	2,870 (1,302)	52 x 59 x 84 (132 x 150 x 213)	8 x 50 (8 x 23)	11.1 (1.03)	850 (24.1)	47 (119)
16.6	1-150 (4-566)	2,011 (912)	3,553 (1,612)	52 x 59 x 104 (132 x 150 x 264)	12 x 50 (12 x 23)	11.1 (1.03)	850 (24.1)	47 (119)
24.4	1-250 (4-946)	2,100 (953)	3,980 (1,805)	75 x 59 x 84 (191 x 150 x 213)	8 x 60 (8 x 27)	17.5 (1.63)	1,300 (36.8)	72 (183)
24.6	1-250 (4-946)	2,599 (1,179)	4,926 (2,234)	75 x 59 x 104 (191 x 150 x 264)	12 x 60 (12 x 27)	17.5 (1.63)	1,300 (36.8)	72 (183)
36.4	1-375 (1,420)	3,200 (1,451)	6,085 (2,760)	75 x 98 x 96 (191 x 249 x 244)	4 x 60 (4 x 27)	26.3 (2.4)	1,900 (53.8)	72 (183)
36.6	1-375 (1,420)	3,900 (1,769)	7,532 (3,416)	75 x 98 x 116 (191 x 249 x 295)	6 x 60 (6 x 27)	26.3 (2.4)	1,900 (53.8)	72 (183)
48.4	1-500 (1,893)	5,000 (2,270)	12,500 (5,670)	124 x 76 x 96 (315 x 193 x 244)	16 x 60 (16 x 27)	27 (2.51)	2,600 (73.6)	72 (183)
48.6	1-500 (1,893)	5,500 (2,495)	13,000 (5,897)	124 x 76 x 116 (315 x 193 x 295)	24 x 60 (24 x 27)	27 (2.51)	2,600 (73.6)	72 (183)
72.4	10-750 (2,839)	6,400 (2,903)	14,600 (6,622)	149 x 98 x 100 (378 x 249 x 254)	4 x 60 (4 x 27)	52.5 (4.88)	3,800 (108)	2 x 72 (2 x 183)
72.6	10-750 (2,839)	7,800 (3,538)	15,100 (6,849)	149 x 98 x 120 (378 x 249 x 305)	6 x 60 (6 x 27)	52.5 (4.88)	3,800 (108)	2 x 72 (2 x 183)
96.4	10-1,000 (3,785)	11,000 (4,990)	25,000 (11,340)	149 x 124 x 100 (378 x 315 x 254)	32 x 60 (32 x 27)	54 (5.02)	5,200 (147)	2 x 72 (2 x 183)*
96.6	10-1,000 (3,785)	11,500 (5,216)	30,000 (13,608)	149 x 124 x 120 (378 x 315 x 305)	48 x 60 (48 x 27)	54 (5.02)	5,200 (147)	2 x 72 (2 x 183)*

Standard construction is 304 SS, other alloys upon request. *Allow additional space for accessory components (blower, piping, etc.).

E-Z Stacker® Cylindrical, Poly, Low-flow Air Stripper Specifications

Model	Flow gpm (Lpm)	Dry Weight lbs. (kg)	Operation Weight lbs. (kg)	Shell Dim. Diam.xH in. (cm)	No. Trays and Weight: lbs. (kg)	Active Area: ft² (m²)	Nominal airflow: cfm (m³/min)
EZ-2.4P	1-25 (4-94.6)	103 (46.72)	483 (219)	27 x 83 (68.6 x 210.8)	4 @ 18 (8.2)	2.6 (0.24)	140 (3.96)
EZ-2.6P	1-25 (4-94.6)	135 (61.3)	531 (240.9)	27 x 103 (68.6 x 261.6)	6 @ 18 (8.2)	2.6 (0.24)	140 (3.96)
EZ-4.4P	1-40 (4-151.4)	155 (70.3)	1,004 (455.4)	37 x 83 (94.0 x 210.8)	4 @ 37 (16.8)	5.8 (0.54)	280 (7.93)
EZ-4.6P	1-40 (4-151.4)	203 (92.1)	1,134 (514.4)	37 x 102 (94.0 x 259.1)	6 @ 37 (16.8)	5.8 (0.54)	280 (7.93)

* skid mounted

A comprehensive collection of QED's Air Stripper Case Studies can be found online at:

www.qedenv.com/Airstrippers

□e) o□ing □ric%o(oret%ene □□CE□ □ro) □rinking □ ater

The U.S. Army Corps of Engineers decided that the most logical and cost effective groundwater treatment choice was low-profile air strippers. Air stripping is a simple, reliable, and proven technology for the removal of TCE from water supplies.

□reating □iny(C%ori□e in □rinking □ ater wit%□□□□□ □e) o□a(E□iciency

The Cedarburg, Wisconsin Light and Water Utility installed an E-Z Tray Air Stripper in a discreet addition to their existing production pump building to treat groundwater containing vinyl chloride that has been traced back to a nearby landfill.

□e) o□ing C%orinate□ So(□ent Conta) ination in □□stra(ia

A Superfund site in Sydney, Australia chose E-Z Tray Air Strippers organized in series (40 units total) to overcome all of the site's challenges. The client would have used packed towers, but was concerned about workers having easy access to maintain the units, and the highly corrosive environment.

□a((ast □ ater □reat) ent on □(askan Coast(ine

An Alaskan oil terminal collects and treats contaminated ballast water before discharge, while dealing with extreme fluctuations of liquid temperatures and contaminant concentrations. QED ran different scenarios using our on-line air stripper performance model, and the site selected four of the largest 1,000 gallon per minute E-Z Tray units.

Pre-treating □sing □ir Strippers

Two pharmaceutical plants in Puerto Rico use large SBR systems to treat wastewater. New regulations require them to treat the SBR off-gas. Instead of installing a very large CATOX, they decided to pre-treat the wastewater with a more efficient E-Z Tray Air Stripper before it enters the SBRs so they can use a much smaller CATOX unit.

□sing a Co) pact □esign to □reat a □aso(ine Spi((in a □esi□entia(□rea

A petroleum company installed compact E-Z Tray Air Strippers on a small lot in a high-end residential neighborhood on Long Island, New York. Compact shipping containers were used to house three E-Z Tray units and other equipment in the same space that would have been totally filled by just one traditional stripper.

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INNOVATIONS IN LANDFILL AND REMEDIATION PUMPING

t

AutoPump® AP4 Ultra

Low-maintenance pump lasts up to **10 times longer** between service events and requires **50% less** time to clean

Field tests have shown that the New AutoPump® AP4 Ultra (U.S. Patent Number 9,587,483) will last up to 10 times longer between service events. Tested in the most severe applications, the new pump ran longer and was easier to clean than a standard pump.

Several improvements contribute to this new longevity. The AP4 Ultra uses proprietary non-stick finishes on the float and discharge tube to reduce solids buildup, extending the time between cleaning and making it much faster and easier to clean the pump. All metallic parts are 316-grade Stainless Steel, which has greater corrosion resistance and can withstand attacks of the harshest leachate. This pump uses new and improved valve stem connections, no fasteners or cotter pins are required.

"Cleaning has been an easy task, most times just requiring a water spray," said one user. From another, "We removed residue with some clean water and a swipe of the hand."

The Ultra builds upon the established AutoPump® system, which has been the industry leader for over 30 years, and includes QED's unmatched customer service.

Like to try one?

Call (800) 624-2026
or visit www.qedenv.com/ultra.

Extended Uptime
Proprietary finishes reduce buildup and extend the time between cleaning.

Minimized Downtime
These special non-stick finishes require less then half the time to clean than traditional pumps.

316 Stainless Steel
All metallic parts are 316-grade SS for greater corrosion resistance.

New and Improved Valve Stem Connection
No fasteners; no cotter pins. Exhaust seat is easy to adjust.

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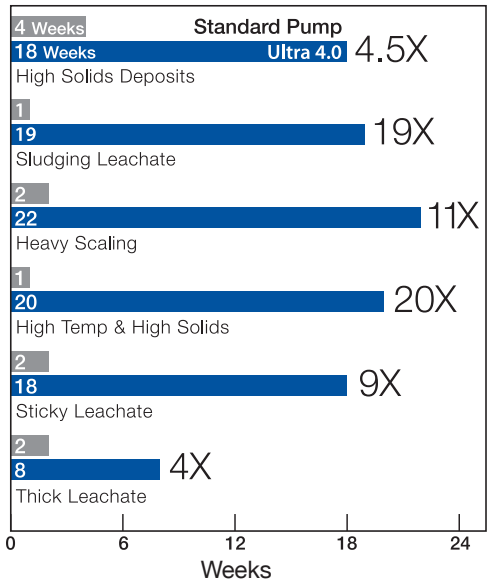
AutoPump® AP4 Ultra

Field Testers Compared the AP4 Ultra to a Standard Pump and Reported the Following:

Extended Uptime



Minimized Downtime

"No soaking required"

"Only required a water spray to clean"

"Easier to clean"

"Teardown and cleaning took absolutely no effort"

"Removed residue with some clean water and a swipe of the hand"

"It's been running for four months and I haven't had to clean it yet"

"Easier to clean by 50%"

AutoPump® AP4 Ultra

	4" Pump Long AP4.0B	4" Pump Short AP4.0B	4" Pump Long AP4.0T	4" Pump Short AP4.0T
Fluid Inlet Diameter	Bottom 3.6 in. (9.1 cm) OD	Bottom 3.6 in. (9.1 cm) OD	Top 3.6 in. (9.1 cm) OD	Top 3.6 in. (9.1 cm) OD
Length	51.4 in. (131 cm)	39.3 in. (104 cm)	56.7 in. (144 cm)	45 in. (110 cm)
Maximum Flow	14 gpm (53 Lpm)	13 gpm (49 Lpm)	10 gpm (38 Lpm)	9 gpm (34 Lpm)
Maximum Depth	250 ft. (76 m)	250 ft. (76 m)	250 ft. (76 m)	250 ft. (76 m)
Actuation Level	38.4 in. (98 cm)	26.7 in. (68 cm)	53.3 in. (135 cm)	41.6 in. (106 cm)

All models are designed for severe conditions.

All backed by the AutoPump's 30 years of field operation and QED's unmatched customer service.

- **24/7 Live Support**
- **14 local Support Offices**
- **East and West Coast Tech Centers**
- **Over 1,000 years of combined experience**
- **On-site installation assistance**
- **OSHA-certified service**
- **Largest inventory of quality pumps, parts, and accessories in the industry; ready for prompt shipment.**

QED®

Innovative Environmental Products

APPENDIX B

HEALTH AND SAFETY PLAN
AND
COMMUNITY AIR MONITORING PLAN

441 CHANDLER STREET
JAMESTOWN, NEW YORK

NYSDEC SITE NO.:C907048

Prepared for: Weber-Knapp Company
441 Chandler Street
Jamestown, New York

Prepared by: Day Environmental, Inc.
1563 Lyell Avenue
Rochester, New York 14606

Project No. 5635S-19

Date: July, 2022

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ATTACHMENTS

Attachment 1 - Figure 1 - Route for Emergency Services

1.0 INTRODUCTION

Day Environmental, Inc. (DAY) prepared this Health and Safety Plan (HASP) to outline policies and procedures to protect workers and the public from potential environmental hazards during the interim remedial measure (IRM) to be conducted at, and in the vicinity of, the property addressed 441 Chandler Street, City of Jamestown, County of Chautauqua, New York (the Site). The Project Locus map presented as Figure 1 shows general location of the Site.

Although the HASP focuses on the specific work activities planned for the Site, it must remain flexible due to the nature of this work. Conditions may change and unforeseen situations can arise that require deviations from the original HASP.

1.1 Site Location and Description

The Site consists of one tax parcel, approximately 2.65 acres in area, and it is located in an urban area in Jamestown, Chautauqua County, New York. The Site is currently developed with an approximate 105,000 square foot, combined one-story and two-story masonry construction building. Currently Weber-Knapp Company owns the Site and the property is used for sheet metal cutting and stamping, welding, metal turning, powder coat finishing and also offices. The remaining portions of the Site are currently covered with asphalt or concrete-paved parking/drive areas, covered storage areas, and/or vegetation (grass and landscaping beds). The Chadakoin River runs along the western edge of the Site.

1.2 Site History/Overview

The Site has been developed since at least 1902. A review of historical documentation indicates that past uses include apparent residential from at least 1902 to at least 1949; the Morse Avenue right-of-way (ROW) from at least 1902 to at least 1930; and the Weber Knapp Company from around 1910 to the present.

The Weber-Knapp Company constructed the building at the Site, starting with the southwest portion around 1910 with additions to the north and east [i.e., over the Morse Avenue Right-of-Way (ROW) and former residential properties] in 1941, 1953, 1960, 1964 and 1966.

The surrounding parcels are vacant or currently used for commercial, residential, or industrial purposes. The nearest residential area is approximately 70 feet northeast, at 562 Allen Street.

1.3 Planned Activities Covered by HASP

This HASP is intended to be used during remedial activities conducted at the Site that have the potential to encounter contaminated materials. Currently, identified activities to be completed at the Site that have the potential to encounter contaminated materials include:

- An IRM, conducted to extract (i.e., via pumping), and treat trichloroethene-(TCE) impacted groundwater from overburden and bedrock groundwater zones in

the area where a vapor degreaser operated between about 1969 and 1993, when it was decommissioned.

This HASP can be modified to cover other site activities as deemed appropriate. Site personnel implementing work the work described above must have the appropriate level of training required by OSHA including 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training and current 8-hour refresher training. The owner of the property, its contractors, and other workers at the Site will be responsible for the development and/or implementation of health and safety provisions associated with Site activities.

2.0 KEY PERSONNEL AND MANAGEMENT

The Project Manager (PM) and Site Safety Officer (SSO) are responsible for formulating health and safety requirements, and implementing the HASP.

2.1 Project Manager

The PM has the overall responsibility for the project and will coordinate with the SSO to ensure that the goals of the project are attained in a manner consistent with the HASP requirements.

2.2 Site Safety Officer

The SSO has responsibility for administering the HASP relative to site activities, and will be in the field while activities are in progress. The SSO's operational responsibilities will be monitoring, including personal and environmental monitoring, ensuring personal protective equipment (PPE) maintenance, and identification of protection levels. The air monitoring data obtained by the SSO will be available for review by regulatory agencies and other on-site personnel.

2.3 Employee Safety Responsibility

Each employee is responsible for personal safety as well as safety of others in the area. The employee will use the equipment provided in a safe and responsible manner as directed by the SSO.

2.4 Key Safety Personnel

The following individuals are anticipated to share responsibility for health and safety of DAY representatives at the Site.

DAY Project Manager	Raymond Kampff and/or David Day, P.E.
DAY Site Safety Officer	Charles Hampton, Heather McLennan, and/or Nathan Simon.

3.0 SAFETY RESPONSIBILITY

Contractors, consultants, state or local agencies, or other parties, and their employees, involved with this project will be responsible for their own safety while on-site. Their employees will be required to understand the information contained in this HASP, and must follow the recommendations that are made in this document. As an alternative, contractors, consultants, state or local agencies, or other parties, and their employees, involved with this project can utilize their own health and safety plan for this project as long as it is found acceptable to the New York State Department of Health (NYSDOH), NYSDEC and the Chautauqua County Department of Health and Human Services (CCDHHS).

4.0 JOB HAZARD ANALYSIS

There are many hazards associated with environmental work on a site, and this HASP discusses some of the anticipated hazards for this Site. The hazards listed below deal specifically with those hazards associated with the management of potentially contaminated media (e.g. soil, fill, groundwater, etc.).

4.1 Chemical Hazards

Chemical substances can enter the unprotected body by inhalation, skin absorption, ingestion, or injection (i.e., a puncture wound, etc.). A contaminant can cause damage to the point of contact or can act systemically, causing a toxic effect at a part of the body distant from the point of initial contact.

A list of selected constituents that have been detected at the Site at concentrations that exceed soil or groundwater standards, criteria and guidance (SCG) values are presented below. This list also presents the Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs), National Institute for Occupational Safety and Health (NIOSH) recommended exposure limits (RELs), and NIOSH immediately dangerous to life or health (IDLH) levels.

CONSTITUENT	OSHA PEL	NIOSH REL	IDLH
Tetrachloroethene (PCE)	678 mg/m^3	NA	1,017 mg/m^3
Trichloroethene (TCE)	537 mg/m^3	134.25 mg/m^3	5,370 mg/m^3
trans 1,2- Dichloroethene (trans 1,2-DCE)	790 mg/m^3	790 mg/m^3	3,970 mg/m^3
cis 1,2- Dichloroethene (cis 1,2-DCE)	790 mg/m^3	790 mg/m^3	3,970 mg/m^3
Vinyl Chloride	2.56 mg/m^3	NA	NA
1,1- Dichloroethene (1,1-DCE)	NA	NA	NA

NA = Not Available mg/m^3 = milligram per cubic meter

The potential routes of exposure for these analytes and chemicals include inhalation, ingestion, skin absorption and/or skin/eye contact. The potential for exposure through any one of these routes will depend on the activity conducted. The most likely routes of exposure for the anticipated environmental activities at the Site include inhalation and skin/eye contact.

4.2 Physical Hazards

There are physical hazards associated with this project, which might compound the chemical hazards. Hazard identification, training, adherence to the planned environmental measures, and careful housekeeping can prevent many problems or accidents arising from physical hazards. Potential physical hazards associated with this project and suggested preventative measures include:

- Slip/Trip/Fall Hazards – Some areas may have wet or frozen surfaces that will greatly increase the possibility of inadvertent slips. Caution must be exercised when using steps and stairs due to slippery surfaces in conjunction with the fall hazard. Good housekeeping practices are essential to minimize the trip hazards.
- Small Quantity Flammable Liquids – Small quantities of flammable liquids will be stored in "safety" cans and labeled according to contents.
- Electrical Hazards – Electrical devices and equipment shall be de-energized prior to working near them. All extension cords will be kept out of water, protected from crushing, and observed regularly to ensure structural integrity. Temporary electrical circuits will be protected with ground fault circuit interrupters. Only qualified electricians are authorized to work on electrical circuits. Heavy equipment (e.g., excavator, backhoe, drill rig) shall not be operated within 10 feet of high voltage lines, unless proper protection form the high voltage lines is provided by the appropriate utility company.
- Noise – Work around large equipment often creates excessive noise. The effects of noise can include:
    - Workers being startled, annoyed, or distracted;
    - Physical damage to the ear resulting in pain, or temporary and or/permanent hearing loss; or
    - Communication interference that may increase potential hazards due to the inability to warn of danger and proper safety precautions to be taken.

  Proper hearing protection will be worn as deemed necessary. In general, feasible administrative or engineering controls shall be utilized when on-site personnel are subjected to noise exceeding an 8-hour time weighted average (TWA) sound level of 90 decibels on the A-weighted scale (dBA). In addition, whenever employee noise exposures equal or exceed an 8-hour TWA sound level of 85 dBA, employers shall administer a continuing, effective hearing conservation program as described in the OSHA Regulation 29 Code of Federal Rules (CFR) Part 1910.95.
- Heavy Equipment – Each morning before start-up, heavy equipment will be checked to ensure safety equipment and devices are operational and ready for immediate use.
- Subsurface and Overhead Hazards – Before any excavation activity, efforts will be made to determine whether underground utilities and potential overhead hazards will be encountered. Underground utility clearance must be obtained prior to subsurface work.

4.3 Environmental Hazards

Environmental factors such as weather, wild animals, insects, snakes and irritant plants can pose a hazard when performing outdoor tasks. The SSO shall make reasonable efforts to alleviate these hazards should they arise.

4.3.1 Heat Stress

The combination of warm ambient temperature and protective clothing increases the potential for heat stress. In particular,

- Heat rash
- Heat cramps
- Heat exhaustion
- Heat stroke

Site workers will be encouraged to increase consumption of water or electrolyte-containing beverages such as Gatorade® when the potential for heat stress exists. In addition, workers are encouraged to take rests whenever they feel any adverse effects that may be heat-related. The frequency of breaks may need to be increased upon worker recommendation to the SSO.

4.3.2 Exposure to Cold

With outdoor work in the winter months, the potential exists for hypothermia and frostbite. Protective clothing greatly reduces the possibility of hypothermia in workers. However, personnel will be instructed to wear warm clothing and to stop work to obtain more clothing if they become too cold. Employees will also be advised to change into dry clothes if their clothing becomes wet from perspiration or from exposure to precipitation.

5.0 SITE CONTROLS

To prevent migration of contamination caused through tracking by personnel or equipment, work areas, and personal protective equipment staging/decontamination areas will be specified prior to beginning operations.

5.1 Site Zones

In the area where contaminated materials present the potential for worker exposure (work zone), personnel entering the area must wear the mandated level of protection for the area. A "transition zone" shall be established where personnel can begin and complete personal and equipment decontamination procedures. This can reduce potential off-site migration of contaminated media. Contaminated equipment or clothing will not be allowed outside the transition zone (e.g., on clean portions of the Site) unless properly containerized for disposal. Operational support facilities will be located outside the transition zone (i.e., in a "support zone"), and normal work clothing and support equipment are appropriate in this area. If possible, the support zone should be located upwind of the work zone and transition zone.

5.2 General

The following items will be requirements to protect the health and safety of workers during implementation of activities that disturb contaminated material.

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increased the probability of hand to mouth transfer and ingestion of contamination shall not occur in the work zone and/or transition zone during disturbance of contaminated material.
- Personnel admitted in the work zone shall be properly trained in health and safety techniques and equipment usage.
- No personnel shall be admitted in the work zone without the proper safety equipment.
- Proper decontamination procedures shall be followed before leaving the Site.

6.0 PROTECTIVE EQUIPMENT

This section addresses the various levels of PPE, which are or may be required at this job site. Personnel entering the work zone and transition zone shall be trained in the use of the anticipated PPE to be utilized.

6.1 Anticipated Protection Levels

The following table summarizes the protection levels (refer to Section 6.2) anticipated for tasks to be implemented during this project.

TASK	PROTECTION LEVEL	COMMENTS/MODIFICATIONS
Site mobilization	D	
Site preparation	D	
Construction work	Modified D/D	
Treatment System monitoring	Modified D/D	
Site breakdown and demobilization	D	

It is anticipated that work conducted as part of this project will be performed in Level D or modified Level D PPE. If conditions are encountered that require Level A or Level B PPE, the work will immediately be stopped. The appropriate government agencies (e.g., NYSDEC, NYSDOH, CCDPH, etc.) will be notified and the proper health and safety measures will be implemented (e.g., develop and implement engineering controls, upgrade in PPE, etc.). If conditions are encountered that require Level C PPE, the work will be temporarily suspended and the work site will be evaluated to limit exposure prior to implementing Level C PPE.

6.2 Protection Level Descriptions

This section lists the minimum requirements for each protection level. Modifications to these requirements can be made upon approval of the SSO. If Level A, Level B, and/or Level C PPE is required, Site personnel that enter the work zone and/or transition zone must be properly trained and certified in the use of those levels of PPE.

6.2.1 Level D

Level D consists of the following:

- Safety glasses
- Hard hat when working with heavy equipment
- Steel-toed or composite-toed work boots
- Protective gloves during sampling or handling of potentially contaminated media
- Work clothing as prescribed by weather

6.2.2 Modified Level D

Modified Level D consists of the following:

- Safety glasses with side shields
- Hard hat when working with heavy equipment
- Steel-toed or composite-toed work boots
- Protective gloves during sampling or handling of potentially contaminated media
- Outer protective wear, such as Tyvek coverall [Tyveks (Sarans) and polyvinyl chloride (PVC) acid gear will be required when workers have a potential to be exposed to impacted liquids or impacted particulates]

6.2.3 Level C

Level C consists of the following:

- Air-purifying respirator with appropriate cartridges
- Outer protective wear, such as Tyvek coverall [Tyveks (Sarans) and PVC acid gear will be required when workers have a potential to be exposed to impacted liquids or particulates]
- Hard hat when working with heavy equipment
- Steel-toed or composite-toed work boots
- Nitrile, neoprene, or PVC overboots, if appropriate
- Nitrile, neoprene, or PVC gloves, if appropriate
- Face shield (when projectiles or splashes pose a hazard) and/or safety glasses with side shields.

6.2.4 Level B

Level B protection consists of the items required for Level C protection with the exception that an air-supplied respirator is used in place of the air-purifying respirator. Level B PPE is not anticipated to be required during this project. If the need for level B PPE becomes evident, activities in the affected area will be stopped until conditions are further evaluated, and any necessary modifications to the HASP have been approved by the PM and SSO. Subsequently, the appropriate safety measures (including Level B PPE) must be implemented prior to commencing site activities.

6.2.5 Level A

Level A protection consists of the items required for Level B protection with the addition of a fully encapsulating, vapor-proof suit capable of maintaining positive pressure. Level A PPE is not anticipated to be required during this project. If the need for level A PPE becomes evident, activities in the affected area will be stopped until conditions are further evaluated, and any necessary modifications to the HASP have been approved by the PM and SSO. Subsequently, the appropriate safety measures (including Level A PPE) must be implemented prior to commencing site activities.

6.3 Respiratory Protection

Any respirator used will meet the requirements of the OSHA 29 CFR 1910.134. Both the respirator and cartridges specified shall be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910). Air purifying respirators shall not be worn if contaminant levels exceed designated respirator cartridge use concentrations. The workers will wear respirators with approval for: organic vapors less than 1,000 ppm; and dusts, fumes and mists with a TWA less than 0.05 milligrams per cubic meter (mg/m^3).

No personnel who have facial hair, which interferes with respirator sealing surface, will be permitted to wear a respirator and will not be permitted to work in areas requiring respirator use.

Only workers who have been certified by a physician as being physically capable of respirator usage shall be issued a respirator. Personnel unable to pass a respiratory fit test or without medical clearance for respirator use will not be permitted to enter or work in areas that require respirator protection.

7.0 DECONTAMINATION PROCEDURES

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when they leave the work site.

7.1 Personnel Decontamination

Personnel involved with activities that involve disturbing contaminated media will follow the decontamination procedures described herein to ensure that material which workers may have contacted in the work zone and/or transition zone does not result in personal exposure and is not spread to clean areas of the Site. This sequence describes the general decontamination procedure. The specific stages can vary depending on the Site, the task, and the protection level, etc.

1. Leave work zone and go to transition zone
2. Remove soil/debris from boots and gloves
3. Remove boots
4. Remove gloves
5. Remove Tyvek suit and discard, if applicable
6. Remove and wash respirator, if applicable
7. Go to support zone

7.2 Equipment Decontamination

In order to reduce the potential for cross-contamination of samples collected during this project, the following procedures will be implemented to ensure that the data collected (primarily the laboratory data) is acceptable.

It is anticipated that most of the materials used to assist in obtaining samples will be disposable one-time use materials (e.g., sampling containers, bailers, rope, pump tubing, latex gloves, etc.). However, when equipment must be re-used (e.g., drill rigs, static water level indicator, split spoon samplers, etc.), it will be decontaminated by at least one of the following methods:

- Steam clean the equipment within a dedicated decontamination area; or
- Rough wash in tap water; wash in mixture of tap water and Alconox-type soap; double rinse with deionized or distilled water; and air dry and/or dry with clean paper towel.

The decontamination area will be set-up in a location to minimize disturbance to properties surrounding the work area.

7.3 Disposal

Disposable clothing will be disposed in accordance with applicable regulations. Liquids (e.g., decontamination water, etc.) or solids (e.g., soil) generated by remedial activities will be disposed in accordance with applicable regulations.

8.0 AIR MONITORING

During saw-cutting of the concrete floor slab, air monitoring will be conducted in order to determine airborne particulate and contamination levels. This ensures that respiratory protection is adequate to protect personnel against the chemicals that are encountered and that chemical contaminants are not migrating off-site. Additional air monitoring may be conducted at the discretion of the SSO. Readings will be recorded and be available for review.

The following chart describes the direct reading instrumentation that will be utilized and appropriate action levels.

Monitoring Device	Action Level	Response/Level of PPE
PID Volatile Organic Compound Meter	< 1 ppm in breathing zone, sustained 5 minutes	Level D
	1-25 ppm in breathing zone, sustained 5 minutes	Cease work, implement measures to reduce air emissions when the work is performed, etc. If levels can not be brought below 1 ppm in the breathing zone, then upgrade PPE to Level C
	26-250 ppm in breathing zone, sustained 5 minutes	Level B, Stop work, evaluate the use of engineering controls, etc.
	>250 ppm in breathing zone	Level A, Stop work, evaluate the use of engineering controls, etc.
RTAM Particulate Meter	< 100 µg/m^3 over an integrated period not to exceed 15 minutes.	Continue working
	> 100 µg/m^3 over an integrated period not to exceed 15 minutes.	Cease work, implement dust suppression, change in way work performed, etc. If levels can not be brought below 150 µg/m^3, then upgrade PPE to Level C

µg/m^3 = microgram per cubic meter ppm = parts per million

8.1 Particulate Monitoring

During saw-cutting of the concrete floor slab, air monitoring will include real-time monitoring for particulates using a real-time aerosol monitor (RTAM) particulate meter at the perimeter of the work zone in accordance with the Final DER-10 Technical Guidance for Site Investigation and Remediation (DER-10) dated May 2010. DER-10 uses an action level of 100 µg/m^3 (0.10 mg/m^3) over background conditions for an integrated period not to exceed 15 minutes. If the action level is exceeded, or if visible dust is encountered, then work shall be discontinued until corrective actions are implemented. Corrective actions may include dust suppression, change in the way work is performed, and/or upgrade of personal protective equipment.

8.2 Volatile Organic Compound Monitoring

During saw-cutting of the concrete floor slab,, a photoionization detector (PID) will be used to monitor total VOCs in the ambient air. The PID will prove useful as a direct reading instrument to aid in determining if current respiratory protection is adequate or needs to be upgraded. The SSO will take measurements before operations begin in an area to determine the concentration of VOCs naturally occurring in the air. This is referred to as a background level. Levels of VOCs will periodically be measured in the air at active work sites, and at the transition zone when levels are detected above background in the work zone.

8.3 Community Air Monitoring Plan

During saw-cutting of the concrete floor slab, this Community Air Monitoring Plan (CAMP) will be implemented. The CAMP includes real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area when activities with the potential to release VOCs or dust are in progress at the Site. This CAMP is based on the NYSDOH Generic CAMP included as Appendix 1A DER-10. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, the intent pf this CAMP is to provide a measure of protection for the downwind community (i.e., Weber-Knapp Employees working in the building in the vicinity of the IRM work) from potential airborne contaminant releases as a direct result of project activities.

Continuous monitoring will be conducted during ground intrusive activities involving potentially contaminated soil, fill material or groundwater. Ground intrusive activities include, but are not limited to, excavation and transport of impacted materials during implementation of the IRM, advancement/installation of test borings or monitoring wells, etc.

Periodic monitoring for VOCs will be conducted during non-intrusive activities involving potentially contaminated soil, fill material or groundwater where deemed appropriate (e.g., during collection of soil samples or groundwater samples, etc.).

8.3.1 VOC Monitoring, Response Levels, and Actions

During saw-cutting of the concrete floor slab, VOCs must be monitored at the downwind perimeter of the immediate work area (i.e., the work zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of the work and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities must be temporarily halted and monitoring must be continued. If the total

organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source or vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less (but in no case less than 20 feet), is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

The 15-minute readings must be recorded and made available for NYSDEC and NYSDOH personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

8.3.2 Particulate Monitoring, Response Levels, and Actions

During saw-cutting of the concrete floor slab, particulate concentrations should be monitored continuously at the downwind perimeter of the work zone at a temporary particulate monitoring station. Upwind concentrations should be measured at the start of the work and periodically thereafter to establish background conditions. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

Readings will be recorded and made available for review.

9.0 EMERGENCY CONTINGENCY PLAN

This section presents the emergency contingency plan (ECP) describing the procedures to be performed in the event of an emergency (e.g., fire, spill, tank/drum release, etc.). To provide first-line assistance to field personnel in the case of illness or injury, the following items will be made immediately available on the Site:

- First-aid kit;
- Portable emergency eye wash; and
- Supply of clean water.

9.1 Emergency Telephone Numbers

The following telephone numbers are listed in case there is an emergency at the Site:

Fire/Police Department:	911
Poison Control Center:	(800) 222-1222
NYSDEC	
Region 9: Headquarters	(716) 851-7220
Spill Hotline	(800) 457-7362
NYSDOH	
Public Health Duty Officer	(866) 881-2809
CCDHHS	
Environmental Health Division	(716) 753-4481
Weber Knapp Company	
Erik Dahlgren	(716) 484-9135 ext. 231
DAY ENVIRONMENTAL, INC.	
Raymond Kampff	Office - (585) 454-0210 x108
NEAREST HOSPITAL:	UPMC Chautauqua 207 Foote Avenue, Jamestown, NY 14701 (716) 487-0141 (Information) (716) 484-2121 (Ambulance)

Directions to the Hospital: Head southeast on Chandler Street toward Allen Street. Turn right onto Allen Street. Turn Left onto Maple Street. Turn right onto Garfield Street. Garfield Street turns left and becomes Sherman Street. Turn right onto Prather Avenue. Turn right into the hospital at 207 Foote Avenue, Jamestown, NY 14701.

9.2 Evacuation

Although unlikely, it is possible that a site emergency could require evacuating personnel from the Site. If required, the SSO will give the appropriate signal for site evacuation (i.e., hand signals, alarms, etc.).

All personnel shall exit the Site and shall congregate in an area designated by the SSO. The SSO shall ensure that all personnel are accounted for. If someone is missing, the SSO will alert emergency personnel. The appropriate government agencies will be notified as soon as possible regarding the evacuation, and any necessary measures that may be required to mitigate the reason for the evacuation.

9.3 Medical Emergency

In the event of a medical emergency involving illness or injury to one of the on-site personnel, Emergency Medical Services (EMS) and the appropriate government agencies should be notified immediately. The area in which the injury or illness occurred shall not be entered until the cause of the illness or injury is known. The nature of injury or illness shall be assessed. If the victim appears to be critically injured, administer first aid and/or cardio-pulmonary resuscitation (CPR) as needed. If appropriate, instantaneous real-time air monitoring shall be done in accordance with air monitoring outlined in Section 8.0 of this HASP.

9.4 Contamination Emergency

It is unlikely that a contamination emergency will occur; however, if such an emergency does occur, the specific work area shall be shut down and immediately secured. If an emergency rescue is needed, notify Police, Fire Department and EMS units immediately. Advise them of the situation and request an expedient response. The appropriate government agencies shall be notified immediately. The area in which the contamination occurred shall not be entered until the arrival of trained personnel who are properly equipped with the appropriate PPE and monitoring instrumentation as outlined in Section 8.0 of this HASP.

9.5 Fire Emergency

In the event of a fire on-site, all non-essential site personnel shall be evacuated to a safe, secure area. The Fire Department will be notified immediately, and advised of the situation and the identification of any hazardous materials involved. The appropriate government agencies shall be notified as soon as possible.

The four classes of fire along with their constituents are as follows:

Class A: Wood, cloth, paper, rubber, many plastics, and ordinary combustible materials.

Class B: Flammable liquids, gases and greases.

Class C: Energized electrical equipment.

Class D: Combustible metals such as magnesium, titanium, sodium, potassium.

Small fires on-site may be actively extinguished; however, extreme care shall be taken while in this operation. Approaches to the fire shall be done from the upwind side if possible. Distance from on-site personnel to the fire shall be close enough to ensure proper application of the extinguishing material but far enough away to ensure that the personnel are safe. The proper extinguisher shall be utilized for the Class(es) of fire present on the site. If possible, the fuel source shall be cut off or separated from the fire. Care must be taken when performing operations involving the shut-off of valves and manifolds, if present.

Examples of proper extinguishing agent as follows:

Class A: Water
Water with 1% Aqueous Film Forming Foam (AFFF) (Wet Water)
Water with 6% AFFF or Fluorprotein Foam
ABC Dry Chemical

Class B: ABC Dry Chemical
Purple K
Carbon Dioxide
Water with 6% AFFF

Class C: ABC Dry Chemical
Carbon Dioxide

Class D: Metal-X Dry Powder

No attempt shall be made against large fires, these shall be handled by the Fire Department.

9.6 Spill or Air Release

In the event of a spill or air release of hazardous materials on-site, the specific area of the spill or release shall be shut down and immediately secured. The area in which the spill or release occurred shall not be entered until the cause can be determined and site safety can be evaluated. Non-essential site personnel shall be evacuated to a safe and secure area. The appropriate government agencies shall be notified as soon as possible. The spilled or released material shall be immediately indentified and appropriate containment measures shall be implemented, if possible. Real-time air monitoring shall be implemented as outlined in Section 8.0 of this HASP. If the materials are unknown, Level B protection is mandatory. If warranted, samples of the materials shall be acquired to facilitate identification.

10.0 ABBREVIATIONS

AFFF	Aqueous Film Forming Foams
CAMP	Community Air Monitoring Program
CCDHHS	Chautauqua County Department of Health and Human Services
CFR	Code of Federal Regulations
cis 1,2-DCE	cis 1,2-dichloroethene
CPR	Cardio-Pulmonary Resuscitation
DAY	Day Environmental, Inc.
dBA	Decibels on the A-Weighted Scale
ECP	Emergency Contingency Plan
EMS	Emergency Medical Service
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IDLH	Immediately Dangerous to Life or Heath
IDW	Investigation Derived Waste
mg/m^3	Milligram Per Meter Cubed
NIOSH	National Institute for Occupational Safety and Health
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
PCE	Tetrachloroethene
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PM	Project Manager
PM-10	Particulate Matter Less Than 10 Micrometers In Diameter
PPE	Personal Protection Equipment
ppm	Parts Per Million
PVC	Polyvinyl Chloride
REL	Recommended Exposure Limit
RTAM	Real-Time Aerosol Monitor
SCG	Standards, Criteria and Guidance
SSO	Site Safety Officer
TCE	Trichloroethene
TWA	Time-Weighted Average
UST	Underground Storage Tank
$\mu g/m^3$	Micrograms Per Meter Cubed
VOC	Volatile Organic Compound

ATTACHMENT 1

Figure 1 – Route for Emergency Services

From 441 Chandler St, Jamestown, NY 14701
To 207 Foote Ave, Jamestown, NY 14701

4 min (0.8 mile)

via Allen St

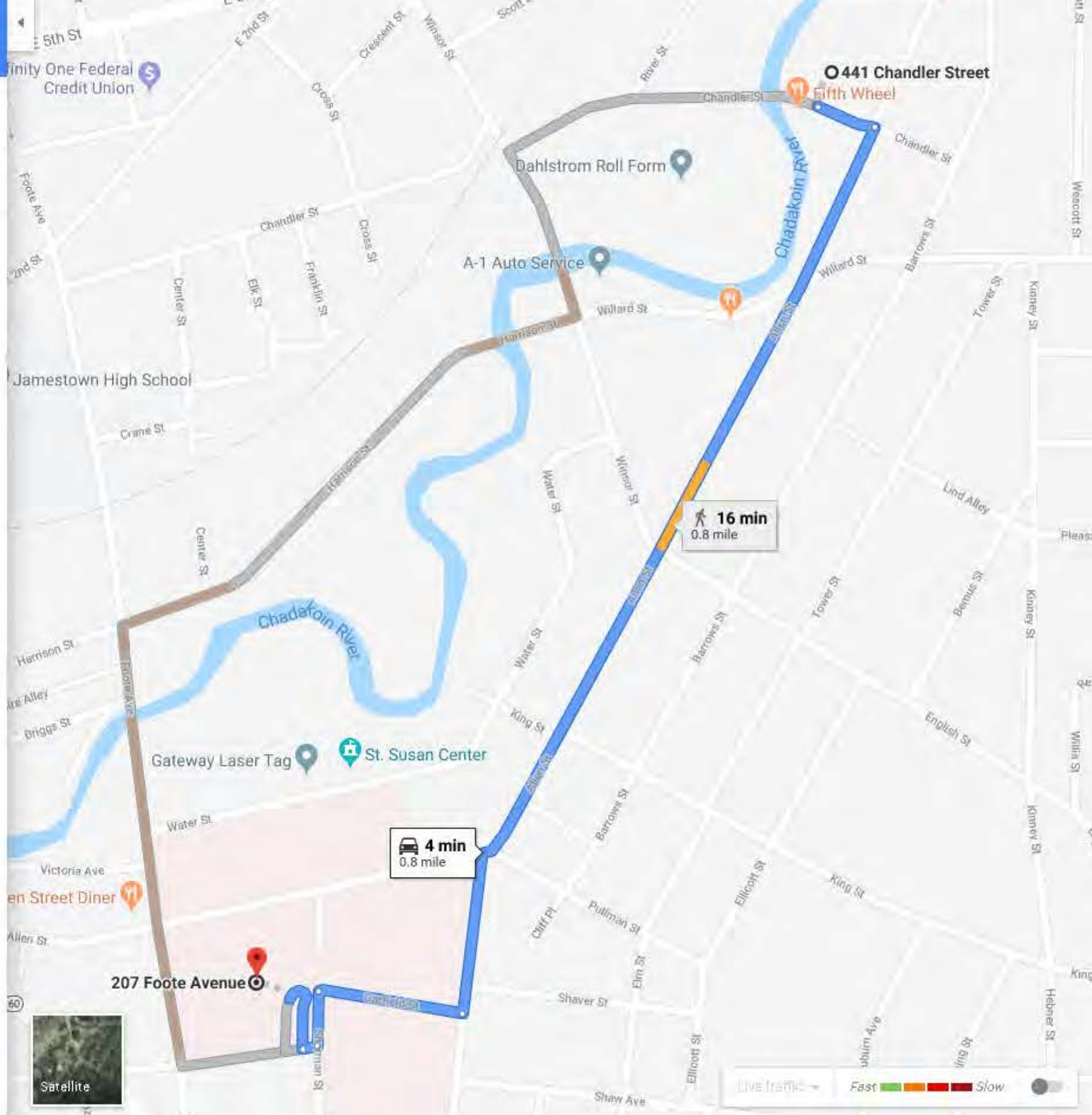
Fastest route

441 Chandler St
Jamestown, NY 14701

1. Head southeast on Chandler St toward Allen St
   190 ft
2. Turn right onto Allen St
   0.5 mi
3. Turn left onto Maple St
   0.1 mi
4. Turn right onto Garfield St
   459 ft
5. Garfield St turns left and becomes Sherman St
   171 ft
6. Turn right onto Prather Ave
   49 ft
7. Turn right
   Destination will be on the right
   240 ft

207 Foote Ave
Jamestown, NY 14701

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.



APPENDIX C

QUALITY ASSURANCE PROJECT PLAN

WEBER-KNAPP COMPANY
441 CHANDLER STREET
ROCHESTER, NEW YORK

NYSDEC SITE NUMBER: C907048

Prepared for: Weber-Knapp Company
441 Chandler Street
Jamestown, New York

Prepared by: Day Environmental, Inc.
1563 Lyell Avenue
Rochester, New York

Project No.: 5635S-19

Date: July 2022

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Attachment 1: Resumes

1.0 INTRODUCTION

This project-specific Quality Assurance Project Plan (QAPP) was prepared in accordance with Section 2.4 of the New York State Department of Environmental Conservation (NYSDEC) Technical Guidance, For Site Investigation and Remediation DER-10 dated May 2010. This QAPP provides quality assurance/quality control (QA/QC) protocols and guidance that are to be followed when implementing the Interim Remedial Measures (IRM) for 441 Chandler Street, Jamestown, New York (Site) to ensure that data of a known and acceptable precision and accuracy are generated. The QAPP also provides a summary of the project, identifies personnel responsibilities, and provides procedures to be used during sampling of environmental media, other field activities, and the analytical laboratory testing of samples. The components of the QAPP are provided herein.

1.1 PROJECT SCOPE AND PROJECT GOALS

The QAPP applies to the aspects of the project associated with the collection of field data, the collection and analytical laboratory testing of field samples and QA/QC samples, and the evaluation of the quality of the data that is generated.

2.0 PROJECT/TASK ORGANIZATION

Project organization and tentative personnel to implement the work are outlined in this section of the QAPP.

2.1 DAY ORGANIZATION

Information regarding key personnel for Day Environmental, Inc. (DAY) is provided below, and resumes of key personnel are included in Attachment 1.

DAY Principal in Charge

The Principal in Charge is responsible for such things as the review of project documents and ensuring that the project is completed in accordance with relative work plans. Mr. Raymond L. Kampff will serve as DAY's Principle-in-Charge on this project.

DAY Project Manager

The DAY Project Manager has the overall responsibility for implementing the project and ensuring that the project meets the objectives and quality standards as presented in this QAPP. Mr. Charles A. Hampton will serve as DAY's Project Manager on this project, and will serve as DAY's primary point of contact and control for the project.

DAY Quality Assurance Officer

The Quality Assurance Officer is responsible for QA/QC on this project. The Quality Assurance Officer's responsibilities on this project are not as a project manager or task manager involved with project productivity or profitability as job performance criteria. Jeffery A. Danzinger will serve as DAY's Quality Assurance Officer on this project. The Quality Assurance Officer may conduct audits of the operations at the Site to ensure that work is being performed in accordance with the QAPP.

DAY Technical Staff

DAY's technical staff for this project consists of experienced professionals (e.g., professional engineers, engineers-in-training, scientists, technicians, etc.) that possess the qualifications necessary to effectively and efficiently complete the project tasks. The technical staff will be used to gather and analyze data, prepare various project documentation, etc.

2.2 ANALYTICAL LABORATORIES

A New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory will be utilized to provideanalytical laboratory services assocaited with this project. The specific analytical laboratory has not yet been selected, but the laboratory utilized will meet the NYSDOH ELAP criteria. A copy of the Lab's Quality Assurance Plan (QAP) can be provied upon request.

3.0 QUALITY ASSURANCE/QUALITY CONTROL

As part of this QAPP, QA/QC protocol and procedures have been developed and are described below. The objective of the QA/QC protocol and procedures is to ensure that the information, data, and decisions associated with this project are technically sound and properly documented. The QA/QC protocol and procedures also pertain to the collection, evaluation, and review of activities and data that are part of this project. These QA/QC protocol and procedures will be modified in supplemental work plans when deemed appropriate.

3.1 OPERATION AND CALIBRATION OF ON-SITE MONITORING EQUIPMENT

On-site monitoring equipment will play a significant role in meeting the IRM objectives and to determine the appropriate personal protective equipment (PPE) as noted in the Health and Safety Plan (HASP). The on-site, monitoring equipment includes volatile organic compound (VOC) monitors, particulate monitors, oil/water interface probes, an electronic static water level indicator; water quality monitors, and a global position system (GPS) reciever. Operation and calibration of on-site monitoring equipment that are anticipated for use during the IRM are discussed below.

3.1.1 VOC Monitoring Equipment

Real-time monitoring for VOCs will be conducted to evaluate the nature and extent of petroleum- or solvent-type discharges at the Site and to determine the appropriate PPE as noted in the HASP. The primary field instrument for monitoring VOCs during the IRM will be a photoionization detector (PID). It is anticipated that a Minirae 3000 PID (or equivalent) equipped with a 10.6 eV lamp and/or a RAE ppbRAE 3000 PID will be used during this project. An accredited firm/testing laboratory will calibrate the equipment on a yearly basis. During fieldwork, the PID will be calibrated on a daily basis in accordance with the manufacturer's specifications. Isobutylene gas will be used to calibrate the PID prior to use and as necessary during fieldwork. Measurements will be collected before operations begin in an area to determine the amount of VOCs naturally occurring in the air (i.e., background concentrations).

3.1.2 Particulate Monitoring Equipment

Particulate monitoring will be conducted during saw-cutting of the concrete floor slab as noted in the Community Air Monitoring Plan (CAMP) portion of the HASP. It is anticipated that the particulate air monitoring will be conducted using a real-time aerosol monitor (RATM) particulate meter. An accredited firm/testing laboratory will calibrate the equipment on an as needed basis. During fieldwork, the particulate meter will be regularly calibrated in accordance with the manufacturer's specifications. Measurements will be collected along the upwind perimeter of the intrusive investigation activities to determine the amount of particulates naturally occurring in the air (i.e., background concentrations) as per the requirements of the CAMP.

3.1.3 Global Positioning System Equipment

A GPS unit will be used to obtain the precise locations of sampling points and significant site features. It is anticipated that a Trimble GeoXH will be used during this project. The GPS location accuracy of <1 horizontal foot is the data quality objective for this project.

The GPS unit will be calibrated as needed in accordance with the manufacturer's specifications. The GPS location data will conform to Jamestown's GIS coordinate system (NAD 1983 State Plane New York West) to match adjacent features that may affect contaminant migration such as underground utilities.

3.1.4 Miscellaneous Field Monitoring Equipment

Several other pieces of miscellaneous field monitoring equipment will be used as part of the project. It is anticipated that the other field monitoring equipment utilized during portions of the project include:

- A RAE ppbRAE 3000 PID ppb Level VOC Monitor equipped with a 10.6 eV lamp;
- An electronic static water level indicator;
- An oil/water interface meter; and
- A Horiba U-52 water quality meter (or equivelent) that measures pH, specific conductivity, temperature, dissolved oxygen, oxygen-reduction potential, and turbidity.

These meters will be calibrated, operated, and maintained in accordance with he manufacturer's instructions.

3.2 WELL DEVELOPMENT

If necessary during the IRM, monitoring wells will be developed by utilizing either a new dedicated disposable bailer with dedicated cord, and/or a pump and dedicated disposable tubing depending on the field conditions. No fluids will be added to the wells during development without prior approval of the NYSDEC, and well development equipment will be decontaminated prior to development of each well.

The well development procedure is listed below:

- Obtain pre-development static water level and oil/water interface reading for presence of LNAPL or DNAPL using a Heron Model HO1.L oil/water interface probe or similar instrument;
- Calculate water/sediment volume in the well;
- Obtain initial field water quality measurements (e.g., pH, specific conductivity, turbidity, temperature, and PID readings). The pH, specific conductivity, turbidity and temperature readings will be obtained using Horiba U-52 water quality meter (or similar equipment);
- Select development method and set up equipment depending on method used;
- Alternate water agitation methods (e.g., moving a bailer or pump tubing up and down inside the screened interval) and water removal methods (e.g., pumping or bailing) in order to suspend and remove solids from the well;
- Obtain field water quality measurements for every two to five gallons of water removed. Record water quantities and rates removed;
- Stop development when the following water quality criteria are met or at least 3 well volumes have been removed;

  - Water is clear and free of sediment and turbidity is less than 50 nephelometric turbidity units (NTUs);
  - pH is ±0.1 standard unit between readings;
  - Specific conductivity is ±3% between readings, and;
  - Temperature is ±10% between readings.
- Obtain post-development water level readings; and
- Document development procedures, measurements, quantities, etc.

Pertinent information for each well will be recorded on well development logs.

4.0 EQUIPMENT DECONTAMINATION PROCEDURES

In order to reduce the potential for cross-contamination of samples collected during this project, the following procedures will be implemented to ensure that the data collected (primarily the laboratory data) is acceptable.

It is anticipated that most of the materials used to assist in obtaining samples will be disposable one-time use materials (e.g., sampling containers, acetate macrocore liners, bailers, rope, pump tubing, latex gloves, etc.). However, when equipment must be re-used (e.g., static water level indicator, etc.), it will be decontaminated by rough wash in tap water; wash in mixture of tap water and Alconox-type soap; double rinse with deionized or distilled water; and air dry and/or dry with clean paper towel.

The effectiveness of the equipment decontamination of non-dedicated sampling equipment such as split-spoon samplers will be evaluated via analytical laboratory testing of field blanks (e.g., rinsate samples). Decontamination liquids, disposable equipment and PPE will be containerized and left on-site until a proper disposal method is determined. The location of a dedicated decontamination area at, or in the vicinity of the Site will be determined, with NYSDEC input, prior to the commencement of the IRM field activities.

5.0 SAMPLE HANDLING AND CUSTODY REQUIREMENTS

During sampling activities, personnel will wear disposable latex or nitrile gloves. Between collection of samples, personnel performing the sampling will discard used latex gloves and put on new gloves to preclude cross-contamination between samples. As few personnel as possible will handle samples or be in charge of their custody prior to shipment to the analytical laboratory.

New laboratory-grade sample containers will be used for each sample collected. Sufficient volume will be collected to ensure that the laboratory has adequate sample volume to perform the specified analyses. Soil samples will be collected in accrodance with United States Environmental Protection Agency (USEPA) Method 5035 when VOC analysis is going to be performed. Samples to be tested for emerging contaminantts will be collected and tested in accordance with NYSDEC guidance documents available at the time of the study.

Samples will be preserved as specified by the analytical laboratory for the type of parameters and matrices being tested. The required amount of preservatives will be added by the analytical laboratory to the sample containers prior to delivery to the Site.

Chain-Of-Custody

Samples that are collected for subsequent testing as part of this project will be handled using chain-of-custody control. Chain-of-custody documentation will accompany samples from their inception to their analysis, and copies of chain-of-custody documentation will be included with the laboratory's report. The chain-of-custody will include the date and time the sample was collected, the sample identity and sampling location, the requested analysis, and any request for accelerated turnaround time.

Sample Labels

Sample labels for field samples and QC samples with adhesive backing will be placed on sample containers in order to identify the sample. Sample information will be clearly written on the sample labels using waterproof ink. Sufficient sample information will be provided on the label to allow for cross-reference with the field sampling records or sample logbook.

The following information will be provided on each sample label:

Site identification/address;
Date and time of collection;
Sample identification;
Intended analyses; and
Preservation required.

Transportation of Samples

Samples will be handled, packaged and shipped in accordance with applicable regulations, and in a manner that does not diminish their quality or integrity. Samples will be delivered to the laboratory in a timely manner so that they may be processed/tested by the laboratory within the applicable method holding times.

6.0 ANALYTICAL QUALTIY ASSURANCE/QUALITY CONTROL

Analytical laboratory test results will be reported in NYSDEC Analytical Services Protocol (ASP) Category B deliverable reports. The analytical laboratory will make every effort to analyze the samples using the lowest practical quantitation limits (PQLs) possible for soil and groundwater samples. In addition, analytical laboratory results will be provided to the NYSDEC using the NYSDEC's Equis Format.

The analytical laboratory will provide internal QA/QC checks that are required by NYSDEC ASP and/or USEPA contract laboratory protocol (CLP) protocol, such as analyses performed, spike blanks, internal standards, surrogate samples, calibration standards, and reference standards. Laboratory reports will be reviewed as outlined in the laboratories QAP. Laboratory results will be compared to data quality indicators in accordance with the laboratory's QAP and the NYSDEC ASP.

Reporting

Analytical and QC data will be included in the Construction Completion Report.

7.0 RECORD KEEPING AND DATA MANAGEMENT

DAY will document project activities in a bound field book on a daily basis. Information that will be recorded in the field book (or on location-specific field logs) will include:

- Dates and time work is performed;
- Details on work being performed;
- Details on field equipment being used;
- Field evidence of contamination such as staining, odors, degree of saturation, etc.
- Field meter measurements collected during monitoring activities;
- Sampling locations;
- Personnel and equipment on-site;
- Weather conditions; and
- Other pertinent information as warranted.

8.0 ACRONYMS

ASP	Analytical Services Protocol
CAMP	Community Air Monitoring Plan
CLP	Contract Laboratory Protocol
DAY	Day Environmental, Inc.
DNAPL	Dense Non-Aqueous Phase Liquid
DUSR	Data Usability Summary Report
ELAP	Environmental Laboratory Approval Program
GPS	Global Positioning System
HASP	Health and Safety Plan
IDW	Investigation-Derived Waste
IRM	Interim Remeidial Measure
LNAPL	Light Non-Aqueous Phase Liquid
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NTU	Nephelometric Turbidity Units
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PID	Photoionization Detector
PPE	Personal Protective Equipment
PQL	Practical Quantitation Limit
QAP	Quality Assurance Plan
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
TCL	Target Compound List
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

ATTACHMENT 1

Resumes of Key Personnel

RAYMOND L. KAMPFF

EXPERIENCE

Day Environmental, Inc.: May 1994 to present
Years with Other Firms: 18 years

AREAS OF SPECIALIZATION

- Environmental Site Assessment
- Environmental Restoration
- Geology

EDUCATION

University of Rochester, B. A. Geology 1974
Monroe Community College, Civil Engineering Technology 1976
Various continuing education courses/seminars in environmental regulations, remediation techniques and other technical issues

REGISTRATION/AFFILIATIONS

- 40-Hour OSHA Hazardous Waste Site Worker Training
- 8-Hour OSHA Hazardous Waste Site Supervisor Training
- 8 Hour OSHA Hazardous Waste Site Worker Refresher Training

RESPONSIBILITIES AND PROJECT EXPERIENCE

Mr. Kampff has over 39 years of professional experience and is currently responsible for the overall technical and administrative direction of DAY's Site Evaluation/Environmental Restoration Group. Mr. Kampff's experience includes environmental studies and remediation at inactive hazardous waste sites, industrial facilities, petroleum spill sites, Brownfield sites and municipal properties. Some of his representative projects are described below.

Environmental Site Assessment

Environmental Site Assessment for a Manufacturing Facility: Olean, New York. Responsible for a Phase I Environmental Site Assessment (ESA) and a Limited Phase II ESA for this 14-acre site currently developed with a 280,000 square foot industrial facility. The site was originally developed in the 1890s, and historically it has been used for various purposes including the manufacture of chemicals, metal furniture and industrial coatings. These studies were done to characterize the site in sufficient detail to prepare an application to enter the New York State Brownfield Cleanup Program (BCP).

Site Evaluation and Assessment of PCB Impact: Innis-Arden Golf Course. Reviewed documents and evaluated analytical laboratory data presented as part of a claim that discharges from a nearby railroad line operated by Metro-North Railroad (MNR) caused PCB-impact identified within ponds and streams on the golf course. The evaluation completed determined that nearby industrial facilities, and not MNR, were the responsible for the PCB contamination on the golf course.

Environmental Evaluation, Precast Concrete Facility, Manchester, New York. Responsible for the environmental evaluation of this 105-acre former railroad yard that was re-developed with an approximate 70,500 square foot structure in the late 1980s for use as a pre-cast concrete manufacturing facility. The site assessment studies conducted included testing of soil, groundwater and soil vapors to evaluate areas of potential environmental concern pursuant to the sale of the property. These studies included the delineation of an area of

the site impacted with petroleum that resulted in the New York State Department of Environmental Conservation (NYSDEC) opening a spill file, and another area on the site where groundwater impacted with chlorinated solvents was identified.

Petroleum Spills

Petroleum Spill Remediation and Closure: Metro-North Railroad's Brewster Yard, North White Plains Yard and Harmon Yard in New York. Assisted MNR with the assessment and remediation of various petroleum spills at these railroad yards where petroleum impact from historic operations resulted in the accumulation of several feet of free product in some locations. The work included the design and construction of a combination of active and passive removal systems, design and operation of long-term monitoring networks to document the effectiveness of remedial efforts and, the preparation of status reports for submittal to the NYSDEC to document remedial efforts pursuant to spill closure.

Seneca-Cayuga ARC Spill Remediation: Waterloo, New York. Responsible for site characterization studies to assess the nature and extent of historic petroleum releases resulting from leaking tanks and discharges into septic systems. Subsequently, designed and implemented a remedial action plan to address petroleum impacts and to mitigate vapors in an adjacent building under construction. The remedial activities included the removal of underground storage tanks and petroleum-impacted soil/groundwater, the installation of a sub-slab depressurization system, and the preparation of a Site Management Plan (SMP) to address future impacts (if encountered).

Remedial Action Plan Development and Implementation: Mott Haven Yard, Bronx, New York. Completed site characterization studies to define the nature and extent of petroleum spills resulting from a combination of leaking tanks and discharges from railroad equipment. Based on the findings of the characterization studies, a removal of soil impacted with free product was conducted in accessible areas and systems were designed and implemented to preclude future discharges (e.g., installation of state-of the art fueling system, development of SPCC plans, construction of secondary containment systems). Subsequently, a Remedial Action Plan (RAP) describing methods to be implemented to collect residual free product from the groundwater was prepared for submittal to the NYSDEC.

York Oil Superfund Site RI/FS: Moira, New York. Managed several studies to evaluate on-site contamination and off-site pathways at this former waste oil recycling facility where large quantities of PCB and solvent-laden oils spilled onto the ground and migrated into adjacent wetlands.

Brownfield and RI/FS Projects

Interim Remedial Measure (IRM) Construction, Confidential Industrial Client: Akron, New York. Responsible for construction oversight during the implementation of IRM activities at an approximate 3-acre former waste disposal area used to dispose of hazardous and industrial wastes. Work included construction oversight during waste consolidation and capping activities, coordination with the NYSDEC, implementation of design modifications and preparation of various closure reports. Also, responsible for long term monitoring and the preparation of Periodic Review Reports.

Dry Cleaners: Jamestown, New York: Responsible for studies completed to evaluate the extent of chlorinated solvents in the soil and groundwater at this dry cleaning facility that has operated for the past 50 years. Also developed and implemented remediation system to actively remove more than 200 gallons of Dense Non-Aqueous Liquid (DNAPL), the design and construction of a permeable reactive barrier to preclude off-site migration, and the implementation of in-situ bioremediation to address residual impacts.

Harmon Railroad Yard Former Wastewater Lagoon: Croton-on-Hudson, New York. Responsible for the preparation of the Site Management Plan (SMP), long-term monitoring, preparation of status and Periodic Review Report reports, and implementation of corrective actions for Operation Units OU-I and OU II at this NYSDEC Inactive Hazardous Waste Site.

Manufacturing Facility: Rochester, New York. Responsible for the Remedial Investigation conducted at this facility where groundwater is impacted with elevated concentration of chlorinated solvents and heavy metals. Work includes studies designed to assess the nature and extent of impact with the soil, groundwater and soil vapor (including sub-slab studies within on-site structures and assessment of potential off-site impacts). Studies also included the design and implementation of pilot studies to evaluate bioaugmentation and phytoremediation as potential long-term remedial options.

Environmental Restoration Projects

Remediation of Petroleum Contaminated Soils, DePaul Community Facilities: Rochester, New York. Responsible for the design and construction of a combined active and passive soil vapor extraction system at this facility constructed on the site of a former gasoline station.

Track Platform Assessment and Encapsulation, Grand Central Terminal: New York, New York. Project Manager for a testing program designed to define the extent of PCB contamination and develop a comprehensive remedial program consisting of the initial cleaning of the impacted track area following by a double epoxy coating was required for this site. Due to the location of the site, care was taken to limit potential exposure to the public during remedial activities

Former Dry Cleaners: Canandaigua, New York. Responsible for site characterization studies to define subsurface conditions and the nature and extent of chlorinated solvent impact (tetrachloroethene and breakdown products), implementation of a soil removal interim remedial measure (IRM), installation of a sub-slab vapor mitigation system and implementation of biostimulation to address residual contamination.

Former Gasoline Station: Hornell, New York. Responsible for the completion of site investigations and the development and implementation of remedial options including source removal with the subsequent installation of an air sparging system augmented the injection of microbes designed to expedite the remediation process.

DAY ENVIRONMENTAL, INC.

CHARLES A. HAMPTON

EXPERIENCE

Day Environmental Inc.: June 2008 to present
Years with Other Firms: 3 years

AREAS OF SPECIALIZATION

- Environmental Site Assessment
- Environmental Restoration
- Geographical Information Systems (GIS)

EDUCATION

Trinity University; B.S. Geology; 2000
Various continuing education seminars in Environmental Site Assessments and GIS

REGISTRATIONS/AFFILIATIONS

24-Hour OSHA Hazardous Waste Site Worker Training
8-Hour OSHA Hazardous Waste Site Worker Refresher Training

RESPONSIBILITIES AND PROJECT EXPERIENCE

Mr. Hampton's current responsibilities include management of Phase II Environmental Site Assessments and ongoing environmental remediation projects. Mr. Hampton has over 10 years of professional experience working on environmental projects as a consultant. Mr. Hampton has also performed various geotechnical and hydrogeologic tasks while working on projects as a consultant with other firms.

Site Redevelopment, Rochester New York: Responsible for the management of tasks required by a site-specific Environmental Management Plan implemented during the redevelopment of an urban property into multi-family residences. Work included management of continuous air monitoring during excavation activities, removal and disposal of petroleum-contaminated fill material, and the preparation of reports documenting the various tasks implemented at the site.

Tank Removal, Rochester New York: Responsible for coordination, observation and documentation of the removal of multiple underground storage tanks at a former gas station site. Tasks included coordination of subcontractors, confirmatory sampling, and the preparation of tank removal documentation.

Fill Removal, Rochester, New York: Responsible for the oversight of removal of contaminated fill material at a former sewage treatment plant location. Work included intrusive investigations and sampling to quantify the extent of contamination, confirmatory sampling during soil removal, and the preparation of a report to document the removal.

Phase I Assessments, New York State: Conducted Phase I Environmental Site Assessments for the purpose of real estate transactions. These assessments were conducted on a variety of different types of facilities including agricultural, residential, commercial, and industrial properties.

Phase II Assessments, New York State: Conducted Phase II Environmental Site Assessments for the purpose of contaminant identification and categorization. These assessments were conducted on a variety of different types of facilities including agricultural, residential, and commercial properties.

Geotechnical and Hydrologic Investigations, New York State: Staff Geologist responsible for various investigations to determine geotechnical and hydrogeologic site properties for residential and commercial development.

DAY ENVIRONMENTAL, INC.

JEFFREY A. DANZINGER, P.G.

EXPERIENCE

Day Environmental, Inc.: October 1991 to present
Years with Other Firms: 5 years

AREAS OF SPECIALIZATION

- Environmental Site Assessment
- Environmental Restoration/Remediation
- Environmental Computer Modeling
- Risk Assessment/Geology/Hydrogeology

EDUCATION

University of Colorado at Boulder; B.A. Geology; 1986
Various continuing education courses/seminars in environmental studies and remediation

REGISTRATION/AFFILIATIONS

OSHA Hazardous Waste Site Worker and Supervisor Training, and Confined Space Training

RESPONSIBILITIES AND PROJECT EXPERIENCE

Mr. Danzinger has over 30 years of professional experience working on environmental projects as a consultant. Mr. Danzinger is responsible for development and completion of Phase II studies, hydrogeologic studies, environmental restoration, remediation and Brownfield projects and environmental compliance projects for independent clients and government agencies. He also serves as the company Assistant Health and Safety Officer. Mr. Danzinger has performed over 240 Phase I Environmental Site Assessments, over 200 Phase II Environmental Site Assessments and over 25 environmental restoration projects. Examples are provided below:

Niagara County Brownfield Projects: Mr. Danzinger has managed Phase I ESA and Phase II ESA projects under the Niagara County Department of Economic Development Brownfield program that is funded by USEPA brownfield grants. These included: a Phase I ESA with asbestos survey at the Palace Theater in Lockport, New York; a Phase II ESA on an approximate 20.9 acre portion of Tonawanda Island, North Tonawanda, NY that was formerly occupied by a wood and lumber industrial operation; and a Phase I ESA followed by a Phase II ESA at Site in North Tonawanda that was a former gas station that also included former/current automobile-related repair/service operations. Types of Phase II ESA work completed included: a drum and container inventory, advancement of test borings; excavation of test pits; collection and analysis of soil, air, sub-slab, and groundwater samples; asbestos and/or lead-based paint surveys; a radiological survey, evaluation of a former transformer building for polychlorinated biphenyls; a geophysical survey, and data validation. Mr. Danzinger prepared Quality Assurance Project Plans (QAPPs) and reports for the Phase II ESAs, as well as opinions of probable costs associated with addressing environmental conditions at the Sites.

Andrews Street Site, Rochester, New York: DAY was retained by the City of Rochester to perform Demolition-Phase environmental services, Remedial Investigation/Remedial Alternatives Analysis (RI/RAA) services, and Interim Remedial Measure (IRM) services at the Andrews Street Site. Mr. Danzinger managed extensive and specialized investigative studies, including: sampling and monitoring of soil, groundwater and building materials; and preparation of various work plans, safety plans, quality assurance project plans, and associated project reports. Studies completed included: a utility assessment including videotaping; a geophysical survey; test pits; borings; membrane interface probe (MIP) PID and halogen specific detector (XSD) and hydraulic profiling tool (HPT) data collection; installation and monitoring of overburden and bedrock groundwater monitoring wells. As part of DAY's

services, Mr. Danzinger also managed subcontractor procurement procedures, and interfaced with representatives of the Client and regulatory agencies. Mr. Danzinger played a critical role in the development of specialized innovative GIS interpolation modeling of soil and MIP XSD data that were successful in defining the extent of PCE IRMs, including source area soil removal and subsequent in-situ chemical oxidation using potassium permanganate. The project resulted in the City of Rochester receiving a Certificate of Completion from the New York State Department of Environmental Conservation (NYSDEC).

Slag and Fill Management Project, Greece and Rochester, New York: Project Manager to address fill material containing regulated solid waste (slag) that was generated during a City of Rochester redevelopment project and was inadvertently placed on a vacant residential subdivision parcel in the Town of Greece. Mr. Danzinger's responsibilities included: preparing for and attending meetings with municipalities, regulators, and the general public; development of work plans; coordination and management of field activities; and development of closure reports.

Former Air Force Plant No. 51, Greece, New York: This Site was used for the manufacture of ocean-going ships and cranes during and immediately following World War II, and for the manufacture of B-52 aircraft parts and Talos ground handling equipment during the 1950's. Mr. Danzinger was Project Manager for the investigation of this Site under the NYSDEC Voluntary Cleanup Program (VCP). Fifteen areas of concern (AOCs) were incorporated into seven operable units (OUs). Tasks Mr. Danzinger has managed include: development of environmental work plans and site-specific health and safety plans; inventory, characterization and disposal of abandoned wastes; sampling and dismantling of abandoned wet-type electrical equipment; investigation of, and development of a remedial work plan for a former wastewater treatment lagoon/pond area; investigation of an existing stormwater system and former septic system areas; investigation and remediation of a former underground storage tank area; and monitoring and recovery of dense non-aqueous phase liquid (DNAPL) as an interim remedial measure.

Former Photech Imaging Systems, 1000 Driving Park Avenue, Rochester, New York: Mr. Danzinger was responsible for managing the completion of a SI/RA report (NYSDEC Environmental Restoration Program Site ID B-00016-8) at this Brownfield Site that consisted of 12 vacant buildings of varying degrees of disrepair that were situated on an approximate 12.5-acre parcel. The buildings formerly housed various manufacturing, laboratory, office and warehouse operations. Various underground and aboveground storage tank systems and a wastewater silver recovery system were operated at the Site. Other features at the Site included a burn pit area, and a retention pond basin. The SI/RA identified the nature and extent of contamination and also identified options and associated estimated costs for cleanup.

Former Ford Garage, 2624 Main Street, Gorham, New York: On behalf of the Town of Gorham, New York, Mr. Danzinger managed environmental services at this Brownfield Site under the NYSDEC Environmental Restoration Program (Site ID#B-00153-8). These services included a Phase I ESA report, a Site Investigation/Remedial Alternatives (SI/RA) report, development of a Remedial Work Plan (RWP), Health and Safety Plan (HASP), and Citizen Participation Plan (CPP). The Site was formerly operated as an automobile sales and service facility, and also as a gasoline station. Remediation consisted of a source area soil removal, in-situ bioremediation, institutional controls and engineering controls. Mr. Danzinger managed the preparation of a Final Engineering Report (FER), a Site Management Plan (SMP), an Alta survey, and an Environmental Easement of the project, which resulted in the Town of Gorham receiving a Certificate of Completion from the NYSDEC.

JEFFREY A. DANZINGER, P.G.

(continued)

Former Vogt Manufacturing Facility, 100 Fernwood Ave., Rochester, New York: Under the NYSDEC Brownfield Cleanup Program (BCP Site #C828119), Mr. Danzinger managed remedial investigation and implementation of interim remedial measures at this Brownfield Site. This industrial-zoned Site consists of eleven contiguous parcels totaling approximately 8.14 acres that was originally occupied by Vogt Manufacturing Corporation, which manufactured auto trimmings (e.g., textile trimmings spinning and weaving). The main building was later converted for multi-tenant light industrial/commercial use, including plastic products manufacturer, tool and die makers, machine shops, painters, printers, graphics companies, and sheet metal contractors. Mr. Danzinger was responsible for the development of a Remedial Investigation/Remedial Alternatives Analysis (RI/RAA) report, a Remedial Work Plan (RWP), a Final Engineering Report, and a Site Management Plan (SMP). Mr. Danzinger also assisted in the preparation of an Alta Survey and Environmental Easement for the Sites. As a result of the work completed, the Client received a Certificate of Completion from the NYSDEC.

High-Rise Apartment Complex, 185 Mt. Hope Ave., Rochester, New York: Under the NYSDEC Brownfield Cleanup Program (BCP Site #C828124), Mr. Danzinger managed remedial investigation and implementation of remedial measures at this Brownfield Site. This Site consists of an apartment building with an associated paved parking lot located on approximately 1.106 acres of land. The apartment building houses 202 residential units, totals approximately 143,000 square feet, and consists of a multi-level eight to twelve-story brick and concrete-block, slab-on-grade building constructed in 1975. Prior to the residential development in 1975, former uses at the Site included: rail yards, former Erie Canal feeder, and possibly a portion of a gasoline station. The remedy included: a source area soil removal; in-situ remediation, and preparation of a Final Engineering Report (FER), Site Management Plan, and Environmental Easement. As a result of the work completed, DAY's client received a Certificate of Completion from the NYSDEC, the apartment building was renovated, and exterior Site improvements were constructed.

Low-Rise Apartment Complex, 225-405 Mt. Hope Ave., Rochester, New York: Under the NYSDEC Brownfield Cleanup Program (BCP Site #C828125), Mr. Danzinger managed the remedial investigation and remediation at this Brownfield Site. This Site consists of approximately 6.016 acres of land that was improved with five four-story apartment buildings. The brick and concrete-block, slab-on-grade apartment buildings were constructed in 1975, and these buildings housed 200 units totaling approximately 205,000 square feet. Prior to residential development in 1975, past uses/activities at the Site included commercial, warehouse, feeder canal, rail yards, a work shop, auto repair, car sales, a wagon shop, a junk-yard and iron cutting facility, a brick storage yard, a tannery, and a coal yard. The remedy included abatement of PCB transformers, source area soil removals, in-situ remediation, preparation of a site management plan and environmental easement, and removal of impacted topsoil across the site. As a result of the work completed, the five old apartment buildings were demolished, the Client received a Certificate of Completion from the NYSDEC, and nine new multi-story residential buildings and associated exterior improvements were constructed.

Former Manufactured Gas Plant (MGP), Canandaigua, New York: Mr. Danzinger was involved with the development and implementation of a work plan and health and safety plan to evaluate this Site. Mr. Danzinger managed the associated site studies consisting of test borings/monitoring well installation, soil gas studies, sampling and testing of impacted media (e.g. soil/fill, groundwater, surface waters/sediments) to characterize site conditions and delineate contaminant plumes. Based upon the assessment of site conditions, Mr. Danzinger assisted in the development of a report that summarized the findings of the environmental studies, identified various remedial options consisting of a combination of waste removal/isolation and in-situ treatment, and presented conceptual remedial design schemes with estimated implementation costs.

JEFFREY A. DANZINGER, P.G.
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80-100 Charlotte Street, Rochester, New York: DAY initially completed Phase I ESA, Phase II ESA and cost estimating services for this Site using City of Rochester funding mechanisms. Through a competitive request for proposal process, the City of Rochester subsequently awarded DAY the Brownfield Cleanup Project for this Site that was funded with a USEPA Brownfield Initiative Grant. DAY's services under the USEPA Brownfields Initiative Grant included: the development of an Analysis of Brownfields Cleanup Alternatives (ABCA) report; review of a Citizens Participation Plan (CPP) that was developed by the City of Rochester; the development of a corrective action plan (CAP) and a health and safety plan HASP); coordination, management, documentation and implementation of a source area soil removal enhanced by the placement of bioremediation stimulant product in a portion of the excavation; utilization of global positioning system (GPS) and geographical information system (GIS) on the project, installation and monitoring of groundwater wells on a long-term basis; and associated reporting of the work completed at the Site. No further action is required by the NYSDEC for this Site. Mr. Danzinger also managed EMP requirements at this Site during redevelopment that involved construction of a five new multi-story townhouse buildings.

Former Hallman's Auto Dealership, Rochester, New York: Site was formerly used as an automobile dealership and service center for over 50 years. Redevelopment of this Brownfield site included demolition of the service garage, construction of new residential apartments and townhouses, and conversion of a portion of the existing building (including former automobile showroom) into retail/restaurant commercial space. Mr. Danzinger completed an ASTM RBCA risk assessment using site-specific data generated during a Phase II environmental study and the proposed residential and commercial uses of portions of the site. As a result of performing the risk assessment, risk-based corrective measures that were completed in conjunction with redevelopment at this Site included: removal of over 20 underground storage tanks, removal and off-site disposal of petroleum-contaminated soils and fill material containing ash with elevated levels of heavy metals; design and installation of a free product recovery system; design and installation of passive venting systems with a vapor barrier; and design and installation of a soil vapor extraction system. Mr. Danzinger was responsible for developing and implementing an environmental project work plan, a health and safety plan, and an environmental management plan for this redevelopment project. In addition, DAY provided on-site environmental air monitoring services and site documentation services during construction activities that had the potential to disturb contaminated media. After the project was completed, Mr. Danzinger was involved with the development of a closure report for this Site.

Former Railroad Car Shops Site, East Rochester, New York: Mr. Danzinger was responsible for managing subsurface studies and an ASTM RBCA risk assessment on a portion of this former railroad car shop site. The Site was confirmed to be impacted with fill containing elevated heavy metals and weathered petroleum product. Mr. Danzinger was involved with the development and implementation of a health and safety plan and environmental management plan that included the design and monitoring of a passive vapor barrier vent system that was installed beneath a new industrial building that was constructed on this Site. In addition, DAY provided on-site environmental air monitoring services and site documentation services during construction activities that had the potential to disturb contaminated media. This project was successful in identifying pre-existing environmental conditions prior to transfer of ownership while obtaining regulatory agency approvals for the new owner to redevelop the vacant parcel with a new industrial facility.

Former Petroleum Bulk Storage Facility, Mt. Morris, New York: Mr. Danzinger managed an environmental site investigation at this former petroleum bulk storage facility under the New York State Environmental Restoration Bond Act Program. Mr. Danzinger was involved in the preparation and implementation of detailed work plans, implementation of fieldwork, and preparation of a Site Investigation/Remedial Alternatives Report (SI/RAR).

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Residential Care Facility, Rochester, New York: DAY's Client developed this approximate 3-acre property into a residential care facility on property that formerly contained several vehicle repair shops/gasoline stations, the City of Rochester Streets Department maintenance facility and the City of Rochester automobile pound. In addition, a portion of the Erie Canal, later converted to a trolley system, traversed the property. Subsequently, the canal/trolley line was backfilled with various construction-type debris and other assorted material (including petroleum-contaminated material). Mr. Danzinger was involved with development of a health and safety plan and an environmental management plan (EMP), which included the removal of localized areas of petroleum-contaminated soil for treatment via an on-site 4,500 cubic yard biopile, the installation of an active venting system installed beneath the building footprint, and long-term monitoring. DAY also provided on-site environmental air monitoring services and site documentation services during construction activities that had the potential to disturb contaminated media.

Multiple-Parcel Brownfield Site, Rochester, New York: Responsible for the completion of a Phase I ESA for the City of Rochester at a five-parcel Brownfield site. The Site is located within the Western Gateway Zone of the New York State Economic Development Zone (EDZ) Program, and the City of Rochester was evaluating the restoration of these parcels for incorporation into an adjoining industrial park. Site improvements encompassed over 610,000 square feet of floor space in multiple level industrial buildings of varying structural condition. Former uses of the Site included: appliance manufacturing, tool and die shops, printing/lithographing operations, shoe manufacturing, circuit board manufacturing, box manufacturing; cabinet manufacturing; possible foundry operations, chromium plating operations, basket manufacturing, automobile services, welding operations, and warehousing/distribution operations. Mr. Danzinger was also responsible for the management of Phase II Studies on a portion of this Site.

14-60 Charlotte Street, Rochester, New York: This Brownfield Site consisted of seven parcels of underutilized commercial land totaling approximately 1.3 acres. Mr. Danzinger was responsible for managing a Phase I ESA, Phase II studies, and remediation services at the Site. Contamination addressed at this Site was attributable to an on-site UST, on-site former automobile repair operations, on-site fill materials, and off-site dry-cleaning and automobile repair operations. Project deliverables included: a Phase I ESA report, Phase II reports, a Corrective Action Plan (CAP); a Health and Safety Plan (HASP) that included a Community Air Monitoring Plan (CAMP); an Environmental Management Plan (EMP); an exposure assessment with site-specific PSSI calculations; a closure report, and conceptual sub-slab depressurization system (engineering control) designs for use during redevelopment of the Site. Mr. Danzinger also managed EMP requirements at this Site during redevelopment that involved construction of a new multi-story apartment building.

Assessment of Transformer Maintenance Shop at Utility Company, Rochester, New York: A utility company's facility contained a transformer maintenance shop that had been operated since the 1950s. Mr. Danzinger managed the development and implementation of a characterization sampling plan; evaluated the characterization data and identified areas requiring remediation; and developed a report documenting the investigation and proposed remedial actions. This project was conducted in accordance with 40 CFR §§ 761. The USEPA documents titled "Verification of PCB Spill Cleanup by Sampling and Analysis" dated August 1985, "Field Manual for Grid sampling of PCB Spill Sites to Verify Cleanup" dated May 1986, "Wipe Sampling and Double Wash/Rinse Cleanup" dated April 18, 1991, and. Region 1 "Draft" document titled "Standard Operating Procedure For Sampling Concrete in the Field" dated December 1, 1997 were utilized in the sampling protocol.