From:	King, Justin
To:	Spellman, John (DEC)
Cc:	LaRock, Jeffrey; Dowd, Marie; Carlos Scheirer
Subject:	Former Chromalloy (344039) - OU1 RSO Work Plan
Date:	Monday, September 26, 2022 12:38:20 PM
Attachments:	image003.png Workplan.hw344039.2022-09-26.OU1RSOworkplan.pdf

John,

For your review, please find the attached OU-1 Remedial System Optimization Work Plan, which our proposed redesign/upgrade of the existing pump and treat remediation system. Feel free to give me a call if you have any comments, questions, or concerns.

Thanks,

Justin King
Project Manager

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REMEDIAL SYSTEM OPTIMIZATION WORK PLAN

FORMER CHROMALLOY FACILITY
OPERABLE UNIT 1
169 WESTERN HIGHWAY
WEST NYACK, ROCKLAND COUNTY, NEW YORK 12233

NYSDEC SITE NO. 344039

Submitted to:

NEW YORK STATE OF OPPORTUNITY. | Department of Environmental Conservation

Division of Environmental Remediation

625 Broadway, 12th Floor
Albany, New York 12233

Prepared for:

Sequa Corporation

4100 RCA Boulevard, Suite 100
Palm Beach Gardens, Florida, 33410

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TRC Project No. 190273.2021.0000

SEPTEMBER 26, 2022

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Acronyms and Abbreviations

bgs	Below Ground Surface
CA	Corrective Actions
Consent Order	Order of Consent
COCs	Contaminants of Concern
CVOC	Chlorinated Volatile Organic Compound
DPE	Dual-Phase Extraction
EQ	Equalization
FS	Feasibility Study
GAC	Granular Activated Carbon
gpm	Gallons Per Minute
HMI	Human Machine Interface
hp	Horsepower
NPT	National Pipe Thread
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
OU-1	Operable Unit 1
P&ID	Piping and Instrumentation Diagram
P&T	Pump and Treat
PLC	Programable Logic Controller
psi	Pounds per Square Inch
PVC	Poly-Vinyl Chloride
RAOs	Remedial Action Objectives
RI	Remedial Investigation
ROD	Record of Decision
RPM	Revolutions per Minute
RSO	Remedial System Optimization
Sequa	Sequa Corporation
SMP	Site Management Plan
TCE	Trichloroethylene
the Site	Former Chromalloy Facility located at 169 Western Highway, West Nyack, New York 10994
TRC	TRC Engineers, Inc.
ug/L	Micrograms per Liter
VFD	Variable Frequency Drive

Certification

I, Marie Dowd, certify that I am currently a NYS registered professional engineer and that this Remedial System Optimization Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site investigation and Remediation (DER-10).

080977	9/26/2022	Marie J. Dowd
NYS Professional Engineer #	Date	Signature

1.0 Introduction

1.1 Objectives

This Remedial System Optimization (RSO) Work Plan is for the Former Chromalloy Facility (Site No. 344039), located at 169 Western Highway, West Nyack, New York 10994 (the Site). TRC Engineers, Inc. (TRC) has prepared this RSO Work Plan on behalf of Sequa Corporation (Sequa), who is conducting remedial actions for the Site under the March 1999, New York State Department of Environmental Conservation (NYSDEC) Record of Decision (ROD) and March 2001, Order of Consent (Consent Order) between Chromalloy Gas Turbine Corporation (since acquired by Sequa Corporation (Sequa)) and the NYSDEC for Operable Unit 1 (OU-1). The NYSDEC-approved remedial actions for OU-1 include the operation of a pump and treat (P&T) system for treatment of volatile organic compound (VOC) impacts to bedrock aquifer groundwater at the Site. This RSO Work Plan proposes upgrades to the existing P&T system currently operating on-Site.

The objectives of the RSO Work Plan are to:

- Evaluate the existing P&T system performance with respect to achieving the Site Remedial Action Objectives (RAOs); and
- Recommend Corrective Actions (CA) to enhance P&T system performance and efficiency.

1.2 Report Organization

This RSO Work Plan has been organized into six sections as follows:

Section 1.0 – Introduction, objectives, and Work Plan organization
Section 2.0 – Description of site and remediation background
Section 3.0 – Regulatory requirements, remedial action, and cleanup objectives
Section 4.0 – Existing treatment system performance and status
Section 5.0 – Recommendations to meet objectives identified in **Section 3**
Section 6.0 – Proposed treatment system modifications

2.0 Site Description and History

2.1 Site and Remediation Background

Historically, the Site has been used for a variety of industrial purposes. The Site encompasses areas/properties near and adjacent to the intersection of Western Highway and Pineview Road in West Nyack, Rockland County, New York. The physical Site address is 169 Western Highway, West Nyack, New York. The Site is bordered to the north by residential properties, to the east by woodlands followed by the Clarkstown Landfill, to the south by commercial properties, and to the west by a CSX railroad line, commercial properties, and the Hackensack River. Site location and layout maps are presented on **Figures 1** and **2**, respectively. A Site layout plan, showing the Former Chromalloy facility building and its immediate surroundings, can be found on **Figure 3**.

In 1978, trichloroethylene (TCE) was detected in a private potable well located north of the Site. On-Site and off-Site groundwater was designated by the NYSDEC as OU-1. The primary contaminants of concern (COCs) in OU-1 are TCE and its breakdown products.

Following a field investigation and a remedial investigation/feasibility study (RI/FS), a Consent Order was issued in March 2001, in which the NYSDEC and Chromalloy Gas Turbine Corporation agreed to design and implement a remedial strategy.

Two remediation systems were installed in September and October 2002. The first utilized dual-phase extraction (DPE) to remediate the shallow overburden soil and groundwater located just south of the Site's main building. The second was a P&T system that utilized one submersible pump, installed in a deep bedrock well (RW-1), to extract groundwater and pump it through two air strippers for treatment prior to discharging at an outfall (Class A) leading to the Hackensack River. The NYSDEC Effluent Limitations and Monitoring Requirements are included in **Appendix A**. A cinderblock building with a steel roof was constructed between May and September 2002 to house the equipment for both systems. Process controls for both systems are all relay-based, the technology available and widely used at the time of installation. In addition, the P&T system has a limited fax-machine based telemetry system.

In 2014, operation of the DPE system was discontinued as asymptotic conditions were reached. Upon NYSDEC approval, the DPE system was dismantled and removed in May 2020. The remaining P&T system continued to operate until April 2021 when several system components failed, became damaged or otherwise required extensive repairs to operate. Compliance monitoring of the influent (INF), midfluent (MID), and effluent (EFF) are collected from the P&T system on a quarterly basis, when operating under normal conditions. Groundwater monitoring of the bedrock and overburden aquifers are completed on a biannual basis (twice a year). Monitoring wells selected for routine analysis are in accordance with the Site's *Interim Site Management Plan*

(SMP). The results of the most recent bedrock and overburden groundwater sampling event (August 2021) are illustrated on **Figures 4** and **5,** respectively. Additional information regarding the August 2021 groundwater sampling event can be found in TRC's February 24, 2022, *Groundwater Sampling Report*.

3.0 Regulatory Requirements and Cleanup Goals

3.1 Remedial Action Objectives

The RAOs for the Site were established in the March 1999 ROD for OU-1 and included the following:

- Reduce, control, or eliminate, to the extent practicable, the contamination present within the soils on site.
- Eliminate, to the extent practicable, ingestion of groundwater affected by the Site that does not attain NYSDEC Class GA Ambient Water Quality Criteria.
- Eliminate, to the extent practicable, off-site migration of groundwater that does not attain NYSDEC Class GA Ambient Water Quality Criteria.
- Eliminate, to the extent practicable, exposures to TCE.
- Eliminate, to the extent practicable, the migration of TCE into the Hackensack River and its tributaries.

The existing P&T system has been able to achieve these RAOs while operating since 2002; however, due to its age and wear and tear on key components, a major overhaul including equipment replacements are required to continue forward.

3.2 Remedial System Optimization Objectives

This RSO Work Plan has been developed to optimize the P&T system performance while continuing to achieve the RAOs, reduce waste, enhance reliability, and integrate modern day telemetry components to allow for remote monitoring.

The specific objectives of this RSO Work Plan are as follows:

- Improve electrical efficiency – The existing air strippers have significant energy consumption, due to the continuous blower operation.
- Decrease system down time – Identify and replace components subject to repeated failure or in need frequent repair.
- Decrease maintenance – Identify components with the highest maintenance requirements, determine if alternate technologies can achieve treatment objectives with reduced maintenance.
- Enhance accessibility and data – Upgrade P&T system data collection and storage.
- Obtain new SPDES permit or permit equivalency.

4.0 Existing Treatment System

4.1 Current System Description

The current P&T system has historically proven to be effective at removing groundwater impacts. The current system consists of three main components: recovery well RW-1 (and associated extraction pump), two bag filters, and two air strippers. Groundwater from RW-1 enters the treatment system from the influent pipe, passes through the two bag filter housings to remove particulates, is then conveyed through two air strippers (which operate in series), and finally discharges north of the Site at an outfall leading to the Hackensack River

Recovery well RW-1 is a 10-inch diameter bedrock well that extends to a total approximate depth of 300 feet below ground surface (bgs). This well is constructed with an outer steel casing to a depth of 59 feet bgs to prevent shallow groundwater infiltration into the deeper bedrock aquifer. Fracture zones exist at several intervals between 59 and 300 feet bgs. Due to borehole collapses during installation, construction details for RW-1 are considered atypical. Per well construction details provided by Environmental Alliance, RW-1 consists of 8-inch steel casing from ground surface to 84 feet bgs, slotted steel casing from 84 to 126 feet bgs, steel casing from 126 to 147 feet bgs, slotted steel casing again from 147 to 168 feet bgs, and finally an open borehole from 168 to 300 feet bgs.

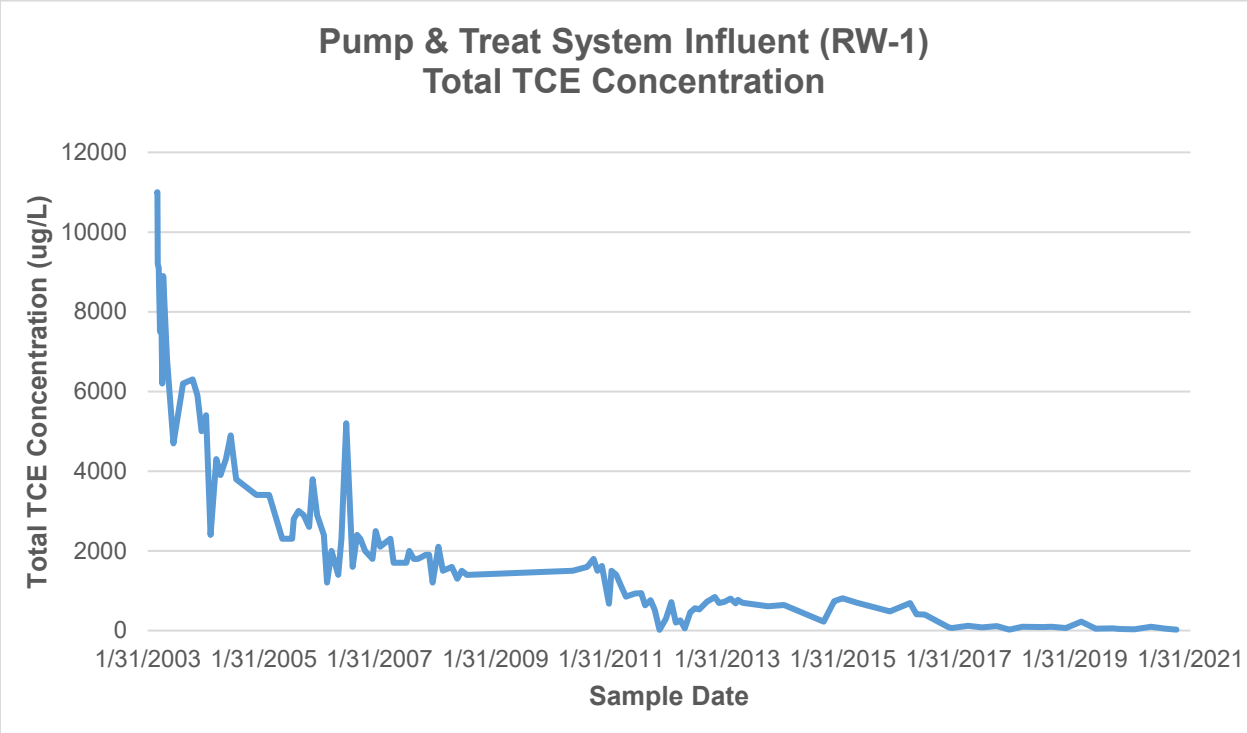
The existing RW-1 pump, a 7.5-hp Grundfos Model 85S75-6 installed in May 2012, is capable of flow rates of up to 85 gallons per minute (gpm). The original pump had approximately double the capacity of the existing RW-1 pump. The existing and original pump, installed in 2002, were suspended using 3-inch galvanized steel piping and placed at a depth of approximately 230 feet bgs. A water level transducer was also installed in the well to provide a water level signal to the P&T system control panel. The water level transducer was intended to control groundwater pumping by using a variable frequency drive (VFD) to reduce the pumping rate.

Copies of the original system as-builts from 2002 and the revised system as-builts from 2010 are included in **Appendix B**. A schematic illustrating the relative depths of the pump and the well components, as well as the original boring log for RW-1 are included in **Appendix C**. A process flow diagram of the current P&T system is also included in **Figure 6**.

4.2 Performance

The groundwater P&T system has been effective in removing VOCs over the past 18 years. The concentration of VOCs in the P&T system influent has decreased significantly over time, and concentrations have continued to decrease since operation of the DPE system was discontinued

in 2014. The chart below summarizes the total TCE concentration at the treatment system influent since the installation of the P&T system.



The reduction in influent VOC concentrations has been sustained for over 5 years, with an average TCE concentration of 76.5 micrograms per liter (ug/L) and an average total VOC concentration of 89.1 ug/L from 2017 to 2022. An assessment of total VOC concentrations at the P&T influent over time is provided in **Table 1**.

To maintain system performance, monthly Site visits are conducted. The bag filters are replaced monthly or on an as needed basis during these inspections. Periodic maintenance of the system is also required and includes annual to biennial cleaning of the two air strippers. Cleaning of the air strippers requires disconnecting the interconnecting piping and disassembling each unit to provide access to the bubbling trays. Each tray is thoroughly cleaned, then the units are reassembled and tested for proper operation. Additionally, each of the seals/gaskets between each set of trays is also inspected prior to reassembly. Minor repairs are typically required for the air strippers during the annual inspection and cleaning.

4.3 Current Status of Existing Remediation System

The interior footprint of the remediation system building are approximately 18.5 feet by 26.25 feet. The concrete block portion of the building is approximately 12.5 feet in height. Above that, the building is comprised of structural and corrugated steel, to a total height of approximately 20 feet.

There is a roll-top door on the north side of the building and a regular man-door on the west side of the building. The cooling fan, heater, and lights in the building are powered by the primary electrical panel, and the building has adequate space and available electrical service. Lights in the building require replacement, the heater is broken, and the fan is well worn. Most of the remaining remediation system equipment has been in operation for over 18 years. As a result, much of equipment is worn and approaching the end of its useful life, while other pieces remain in serviceable condition.

Damaged Equipment

The two air strippers, PRM Model 634 Low Profile Air Strippers each with a 7.5 horsepower (hp) continuously operating blower and water discharge pump, are near the end of their useful lifespan. Because the air strippers are no longer required to treat the effluent from the DPE system, they are overdesigned for the contaminant mass loading from RW-1. Further, the strippers use a significant amount of electricity, as the blowers operate regardless of whether water is being pumped through them or not. The air stripper operations represent a majority of the P&T system's electrical use. Water leaks from the air strippers have degraded some of the metal electrical conduits running along the floor, causing them to rust/corrode, break, and expose wiring in some places.

The existing control panel was installed 18 years ago, is relay-based, and requires a 250-amp, 3-phase service. Electricity is supplied to the control panel from a main electrical panel, which also supplies power to the lights, heaters, and cooling fan. The control panel has a telemetry output which attaches to a telephone land line. Originally, this line would send a fax whenever a system alarm was triggered. Over half of the components within the panel are no longer used, as they were designed for the previously decommissioned DPE system. Further, it is difficult to find replacement parts for the main control panel, as relay-based systems are considered antiquated.

The original P&T system included three inline flow meters and an inline pH meter. The data collected by those meters is unreliable, as they have gone well past their intended period of use. As flow data from the existing meters is unreliable, and because there is no hour meter on the existing recovery well pump, it is difficult to estimate the treated water volume. Additionally, many of the conduits that supply the signal wiring to those meters are corroded and require replacement.

Reusable Equipment

The existing system includes two Krystil Klear Multi-Bag Filters, Model 18 lined with 10-micron size #2 filter bags. Both filter housings are in reasonably good condition and can be reused.

The existing system uses a 6-inch diameter Grundfos submersible groundwater pump, model number 85E75-6, fitted with a 7.5 Hp (460V, 3 Phase) Franklin motor retrofitted with Viton

environmental seals. The pump is supplied power using a 300-foot #10/3 pump cord. All connections made at the well head are mechanically spliced and sealed using waterproof shrink wrap sealant. The pump was installed in May 2012 and can likely continue to operate for several more years before requiring replacement.

5.0 Recommendations

TRC recommends continuing P&T system operations. The decrease in P&T system influent concentrations demonstrates that contaminant mass continues to be removed at an effective rate. In addition, average total VOC influent concentrations of approximately 89.1 ug/L over the last 5 years shows that contaminant mass remains in place and requires remediation. To continue and optimize system operations, TRC recommends replacing portions of the above ground treatment units and upgrading the controls and communication capabilities.

As influent VOC concentrations decreased following DPE system operations, a less energy intensive treatment technology is proposed. TRC proposes using granular activated carbon (GAC) vessels as the primary treatment technology. The GAC vessels are passive and adsorb contaminant mass as the extracted water is pumped through them. The adsorption capacity of the vessels is limited, and periodic replacement and disposal of the GAC will be required to maintain treatment efficiency. A discussion of the GAC vessel sizing, and change-out frequencies is summarized below in **Section 6.0**.

To prevent the proposed GAC vessels from reducing the groundwater extraction rate (due to increased backpressure from the GAC vessels), the installation of a 2,000-gallon equalization (EQ) tank is also proposed. The EQ tank will be equipped with level sensors and a transfer pump that will automatically operate when water levels within it reach designated setpoints.

TRC also proposes the installation of a new level sensing transducer and VFD in RW-1 to control the groundwater extraction pump operations. The level transducer and VFD will allow the pump to maintain a constant water level and nearly constant flow rate. The new equipment will allow for monitoring the pumping level in extraction well RW-1. The VFD will operate by adjusting the frequency and revolutions per minute (RPM) of the pump motor, reducing the pump's power consumption.

Lastly, TRC proposes upgrading the treatment system instrumentation and controls, enhancing telemetry capabilities allowing for remote access and data acquisition. The proposed control system will include a programable logic controller (PLC) to replace the existing relay-based control panel, which when combined with the telemetry connection, will allow for remote system monitoring and automatic alarm notifications.

6.0 Remedial System Optimization Measures

A detailed description of the proposed RSO measures is provided below. These proposed RSO measures will achieve the objectives identified above in **Section 3.2**, while still achieving the RAOs identified in the ROD. These proposed corrective measures will be installed following NYSDEC approval and procurement of the necessary subcontractors and building permits. A process flow diagram depicting the treatment component layout is provided as **Figure 7**, and a proposed equipment layout as **Figure 8**. A piping and instrumentation diagram (P&ID) is provided as **Figure 9**.

6.1 Existing Equipment Removal

All treatment equipment and associated electrical wiring and conduits within the remediation building will be removed, except for the two Krystil Klear Multi-bag Filter housings, which will be detached and set aside for reinstallation. The air strippers and piping will be disconnected and decontaminated prior to removal from the Site. The cleaned air strippers will be removed as scrap. Most of the existing piping will be removed, potentially saving some long pieces for reuse. The existing control panel will be removed, as well as any related electrical conduits and wiring. All electrical wiring from the service disconnect switch forward will be removed and replaced. Electrical components will not be decontaminated prior to disposal. All instrumentation, including pressure gauges, valves, and totalizers will be removed and replaced with new equipment. The heater, fan and lighting within the building will also be removed and replaced.

6.2 Filter Housings

The two existing Krystil Klear Multi-bag Filters will be thoroughly cleaned, and the seals checked for leaks. The filters will be piped in parallel, with ball valves before and after each to isolate flow through one filter at any given time. Filter bags with 10 to 25-micron openings will be used for particulate filtration. The filter bag size and change out schedule will be determined based on system observations. Filter bags will be changed when the pre-filter and post-filter pressure readings show an excessive pressure drop across the bag filter vessels. A pressure drop of 10 to 15 pounds per square inch (psi) will be used as the trigger for filter bag replacement.

6.3 Equalization Tank

TRC proposes installing a new 2,000-gallon EQ tank to receive extraction water prior to the bag filter housing. The EQ tank will be equipped with three level switches/alarms that will send output signals to a transfer pump and RW-1 well pump. The level switches will be set to three different levels in the tank: Low, High, and High-High. The Low and High switches will be tied into the operation of the transfer pump while the high-level alarm will be set to shut down the RW-1 extraction pump upon triggering.

The EQ tank and transfer pump will separate the RW-1 well pump performance from the above ground equipment, by not making the well pump push water through the bag filters and the GAC vessels, thus increasing the pumping head on RW-1. The RW-1 extraction pump will discharge to the EQ tank and will not have a reduced flow rate when the bag filters or GAC vessels become clogged. When differential pressures exceed the setpoint an alarm will be triggered, shutting down operations and notifying TRC that the bag filters need to be changed.

The EQ tank will also serve to hold backwashed water from the GAC vessels, if backwashing is required. The backwashed water will be treated using the bag filters and the GAC vessels before being discharged.

6.4 GAC Vessels

Two new Liquid-phase GAC (LGAC) vessels will be installed after the bag filters. Each vessel will be filled with 2,000 pounds (lbs) of LGAC and will be capable of accommodating flowrates up to 100 gpm. The vessels will be plumbed to operate in series, acting as lead and lag vessels. The initial (lead) vessel will adsorb the majority of VOC mass with the second (lag) vessel serving as a polishing step. The lead LGAC vessel will eventually reach equilibrium with the influent water and become spent, meaning that it can no longer effectively adsorb VOCs. At this time, LGAC in the lead vessel will be removed and replaced with regenerated material. The valving, shown in **Figure 7**, will allow the lead and lag LGAC vessels to change positions. Following each LGAC change out, the vessel order will be adjusted to maintain the cleanest LGAC in the lag position.

Sample ports will be installed before (influent), between (midfluent), and after (effluent) the vessels. Sample collection frequency will be based on permit requirements. TRC received an estimated LGAC consumption estimate from Evoqua Water Technologies of Warrendale, Pennsylvania. The consumption estimate is based on an assumed flow rate of 50 gpm and a total VOC influent concentration of approximately 89.1 ug/L. Using proprietary isotherm software, Evoqua estimates that the LGAC consumption rate will be approximately 0.08 lbs/1,000 gallons of water. This results in an annual LGAC changeout schedule for the 2,000 lbs lead LGAC vessel.

The LGAC vessels may be backwashed as needed to prevent clogging and pressure buildup. The EQ tank will be incorporated into the backwash cycle and will be used to accumulate treated water prior to reversing flow through the vessels. The backwash cycle will liberate entrapped solids and route them towards the EQ tank for eventual removal using the bag filters.

6.5 RW-1 Pump and Equipment

The existing 7.5-hp Grundfos Model 85S75-6 extraction pump (EP-1) will remain in RW-1. The pump will be removed, cleaned, and serviced during the RSO upgrades. A new pressure transducer and VFD will be installed to control the pump operation. The pumping system will be set to maintain a constant water level in RW-1, with the pumping speed controlled by increasing or decreasing the VFD frequency. The PLC will control the VFD, transducer, and well pump. The desired pumping level will be determined during system operations, with a pumping rate ranging between 50 to 75 gpm.

6.6 Piping and Instrumentation

Treatment system piping will be constructed with 2-, 4-, and 6-inch diameter schedule 40 poly-vinyl chloride (PVC). Plumbing connections to individual process units will be made with appropriate diameter piping and connection methods as needed. Plumbing connections are expected to include a mixture of National Pipe Thread (NPT) connections, socket welds, flanges, cam and groove, and union fittings. The LGAC vessels will be plumbed with a series of 4-inch diameter ball valves used to determine the lead/lag position of the LGAC vessels. The piping will connect to the existing 6-inch diameter effluent discharge piping, and the existing discharge outfall will remain in use.

Pressure gauges will be installed before and after the bag filters, and before, between and after the LGAC vessels. The pressure gauges will be used to measure pressure drops across the treatment system components. Excessive pressure buildup will be used to determine the bag filter change frequency. If excessive pressure loss is observed across the LGAC vessels, backflushing may be conducted. A differential pressure switch will be installed inline immediately prior to the multi bag filters. This switch will provide a digital signal to the control panel if the pre-filter and post-filter pressure differential exceeds the setpoint on the switch. The output from this switch will communicate with the PLC and result in a complete system shut down, turning off the RW-1 and transfer pumps.

A totalizer with analog and digital capabilities will be installed prior to discharge as shown on **Figure 9**. The totalizer will transmit information to the PLC and will be readable on the telemetric monitoring system. If required by permit conditions, a pH monitor will be installed prior to the discharge. The pH monitor will record the effluent pH and will trigger an alarm condition if the pH exceeds the permit thresholds, shutting down treatment system operations.

6.7 Programable Logic Controller

The existing relay-based control panel will be replaced with PLC touch screen operation and cellular telemetry. The control screen access will be available on-Site and remotely via the

telemetry. The PLC controller will receive digital signals from the monitoring equipment, pressure transducer, sensors, and switches, and will provide output commands to the groundwater extraction pump, VFD, and the EQ tank transfer pump. The measurements associated with each of those signals will be logged and available in real time via the HMI. The PLC will accept a digital signal from the pressure transducer and will adjust the VFD setting to increase or decrease the pumping rate at RW-1. A summary of the inputs and outputs to the PLC is included in the table below.

SUMMARY OF CONTROL PANEL INPUTS AND OUTPUTS

Name	Description	Display / Log Values	Alarm	Associated Action
PH-1	pH Meter	X	X	Installed before the treated water discharge, will monitor effluent pH. If the meter reading is outside the acceptable range the PLC shuts down the RW-1 well pump.
TO-1	Totalizer 1	X		Installed before the treated water discharge, will track total volume of water discharged. Will be logged by the PLC.
FMT-1	Flow Meter	X		Installed before the treated water discharge, will track flowrate of water discharged.
T-1	Transducer in RW1	X		Installed in RW-1, will log groundwater levels. Digital output will be shown on control panel and will be used to control the VFD and pumping rate.
PS-1	Pressure Sensor / Switch		X	Installed prior to the bag filters, will monitor pumping pressure from the EQ tank. Will shut down the EQ transfer pump.
Low Level Switch	Level Sensor in EQ Tank	X		Located in the EQ tank, when water levels drop below the low level switch the EQ transfer pump will turn off.
High Level Switch	Level Sensor in EQ Tank	X		Located in the EQ tank, when water levels rise above the high level switch the EQ transfer pump will turn on.
High-High Level Switch	Level Sensor in EQ Tank	X	X	Located in the EQ tank, when water levels rise above the high-high level switch the RW-1 extraction pump is turned off.
FS	Float Switch	X	X	Installed next to the Sump pump when float switch triggers EP-1 will power off.

6.8 Equipment Installation

All proposed work will be conducted in compliance with applicable federal, state, and local codes and regulations. Municipal permits will be obtained for the work, as needed. All electrical work will be completed in compliance with the National Fire Protection Association Standard No. 70 (National Electric Code) and will be compatible with wet environments. Because the DPE system is no longer active, TRC does not believe the system should have hazardous location classification, and that explosion proof equipment and conduits are not needed. Appropriate measures will be made to install electrical wiring from the floor or locations that may consistently be exposed to moisture. TRC will be on-Site to document and observe the treatment system component installation.

6.9 System Startup, Sampling, Operation and Maintenance

Upon completion of the new system components, TRC will oversee the startup and shakedown of the new treatment system. This testing period will be conducted to ensure any leaks are promptly repaired and to document the proper performance of treatment system components and alarm interlocks. The treatment system telemetry will also be tested during the startup period.

System water samples will be collected before, between, and after the LGAC vessels. The first set will be collected at the end of the first day of system restart. After that, samples will continue to be collected quarterly or at frequency prescribed in the discharge permit. System operation and maintenance (O&M) visits will occur one week, two weeks, one month, and two months after system start up. Following this startup period, system O&M visits will occur monthly or within 48 hours to alarm conditions that cannot be cleared remotely.

Upon completion of the installation and startup activities, TRC will develop as-built drawings to document the final site conditions. Additionally, TRC will generate a new *Operation and Maintenance Manual* (O&M manual) that will provide specifications and routine maintenance requirements for the new system.

6.10 Waste Streams

There are three main waste streams associated with the upgraded system: water discharge, spent filter bags, and the spent LGAC. The water discharged from the upgraded system will continue to use the same outfall previously established to the Hackensack River tributary. This water discharge will be continuously monitored for pH and routinely sampled for the discharge criteria identified in **Appendix A**. Filter bags will have to be replaced once a pressure drop of 10 to 15 psi is achieved. Once the proper drop is reached, the bags will be removed from their housings, dried and placed in 55-gallon drums for disposal as non-hazardous solid waste. Once

breakthrough has occurred in the lead LGAC vessel, the LGAC will be removed and transferred to a facility for regeneration or properly disposed of off-site. Analytical samples will be collected from the first batch of spent LGAC to determine the appropriate waste classification. TRC assumes that the spent LGAC will be a non-hazardous waste based on the analytical results.

6.11 Building Upgrades and Repairs

The system building is in need of upgrades to further achieve more control and increase safety measures. There are three upgrades that will need to be incorporated into the proposed system. First, a new French drain will need to be installed at the garage door. This French drain will be connected to a float switch-controlled sump pump. Installing this will provide an additional barrier for any leaks that may occur inside the system building. Additionally, both a new heater and cooling fan will need to be installed. These will help provide temperature controls within the system building, preventing equipment from overheating or freezing.

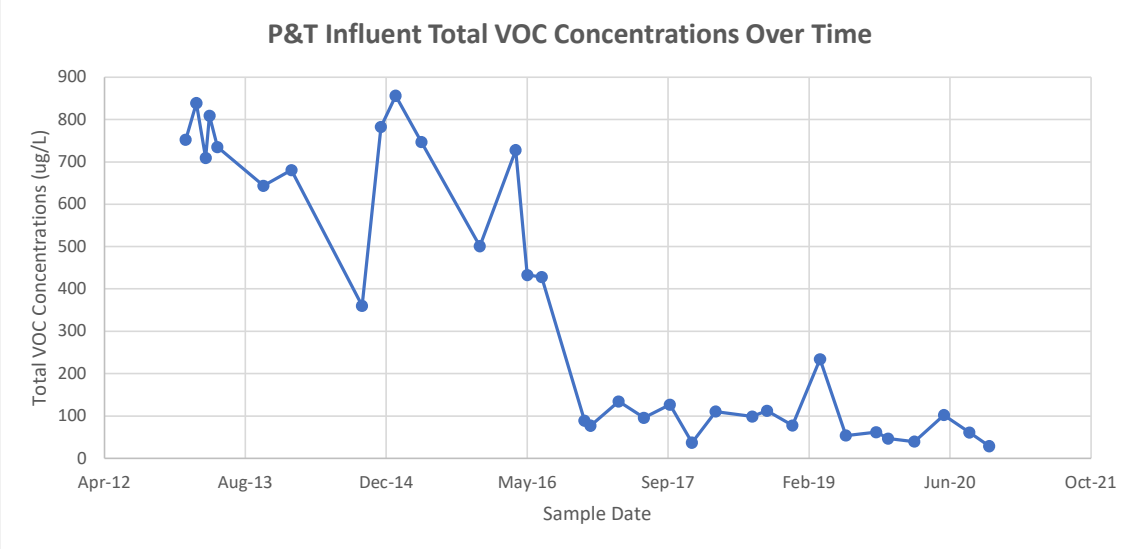
There are several building modifications that should be performed in order to keep the system operating and ensure a safe working environment. All building repairs will be inspected and performed by a proper licensed technician. Please see below for a list of items to be inspected and repaired:

- Building siding
- Concrete block repair
- Roofing
- Doorway

TABLES

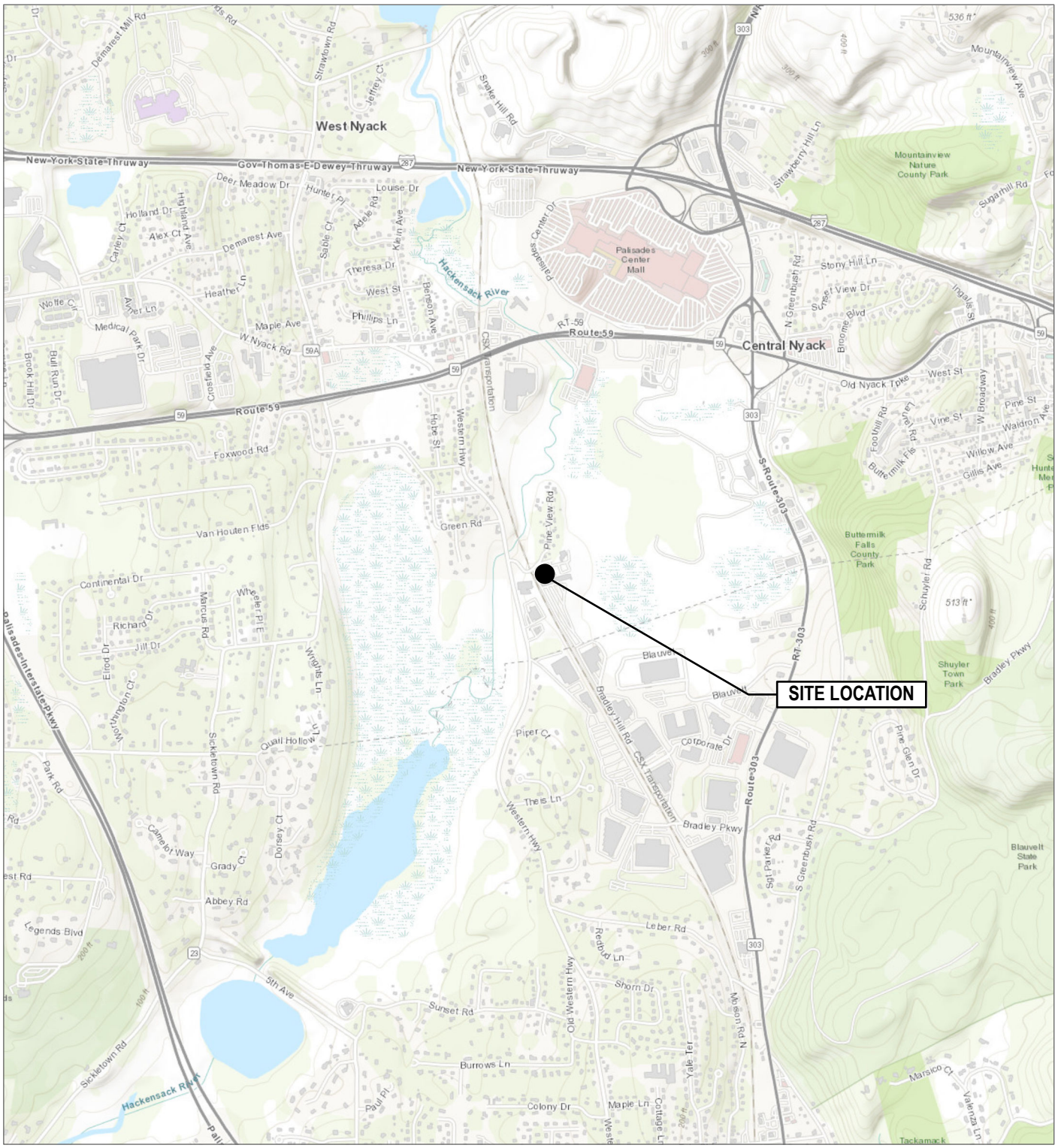
Table 1
P&T Influent Total VOC Concentrations Over Time
Former Chromalloy Facility
West Nyack, New York

Sample Date	Total VOC Concentrations µg/L	Sample Date	Total VOC Concentrations µg/L
1/14/2013	752.20	3/30/2017	134.74
2/21/2013	838.60	6/28/2017	95.79
3/26/2013	709.00	9/28/2017	126.90
4/9/2013	808.70	12/15/2017	37.38
5/7/2013	734.80	3/9/2018	110.92
10/17/2013	643.70	7/17/2018	98.71
1/24/2014	680.90	9/7/2018	112.64
10/2/2014	360.00	12/7/2018	77.69
12/8/2014	782.5	3/15/2019	234.48
1/29/2015	855.9	6/14/2019	54.34
4/30/2015	746.8	9/30/2019	61.53
11/24/2015	501.2	11/11/2019	46.89
3/30/2016	727.6	2/12/2020	40.01
5/10/2016	432.8	5/27/2020	102.65
6/30/2016	428.4	8/26/2020	61.49
11/29/2016	89.22	11/4/2020	29.15
12/20/2016	77.58	**Average Concentration**	351.37
		Average Concentration 2017-2022	89.08



Note:
" µg/L" = micrograms per liter

FIGURES



LEGEND

- SITE LOCATION

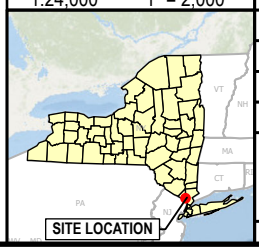
BASE MAP: USGS TOPOGRAPHIC IMAGERY
DATA SOURCES: TRC

N

0 1,000 2,000

FEET

1:24,000 1" = 2,000'



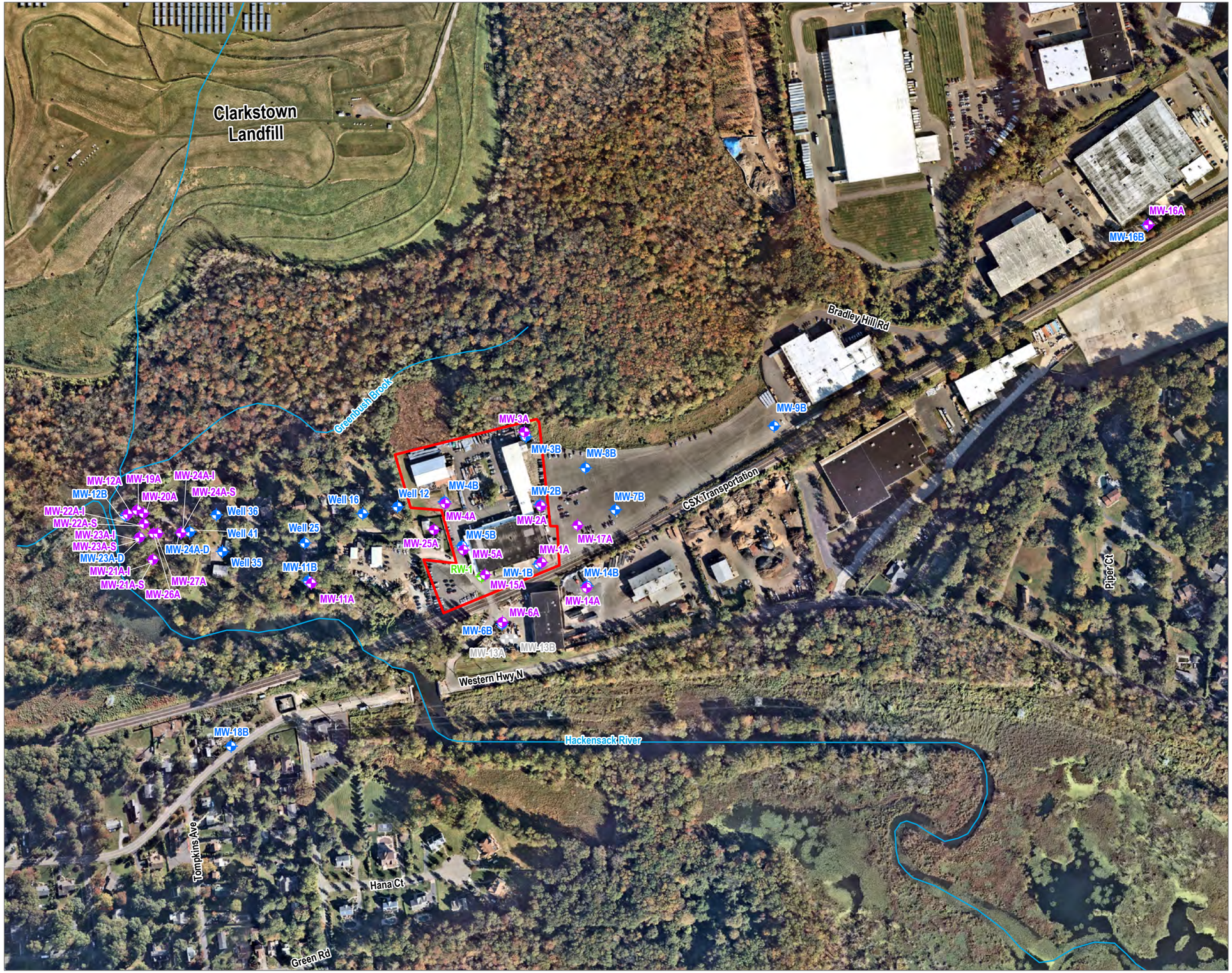
PROJECT: SEQUA CORPORATION
FORMER CHROMALLOY FACILITY
WEST NYACK, ROCKLAND COUNTY, NEW YORK
NYSDEC SITE NO. 344039

TITLE: SITE LOCATION MAP

DRAWN BY:	L. LILL	PROJ. NO.:	190273.2021.0000
CHECKED BY:	J. KING		
APPROVED BY:	J. LAROCK		FIGURE 1
DATE:	SEPTEMBER 2022		

TRC
10 Maxwell Drive
Clifton Park, NY 12065
Phone: 518-348-1190

FILE: SITELOCATION



LEGEND

- FORMER CHROMALLOY FACILITY PROPERTY
- NHD STREAM
- OVERBURDEN MONITORING WELL
- RECOVERY WELL
- ABANDONED WELL
- BEDROCK MONITORING WELL

NOTES:

1. FORMER CHROMALLOY FACILITY PROPERTY BOUNDARY IS APPROXIMATE.

1:4,200
1" = 350'

BASE MAP: NEARMAP IMAGERY
DATA SOURCES: TRC

0 350 700 FEET

PROJECT:	FORMER CHROMALLOY FACILITY NYSDEC SITE NO. 344039 169 WESTERN HIGHWAY WEST NYACK, NEW YORK
TITLE:	SITE LAYOUT MAP
DRAWN BY:	L. LILL
CHECKED BY:	J. KING
APPROVED BY:	J. LAROCK
DATE:	SEPTEMBER 2022
PROJ. NO.:	190273.2021.0000
	FIGURE 2

TRC
10 Maxwell Drive
Clifton Park, NY 12065
Phone: 518-348-1190

FILE: sitelayout.aprx

LEGEND

- FORMER CHROMALLOY FACILITY PROPERTY
- BEDROCK MONITORING WELL
- OVERBURDEN MONITORING WELL
- RECOVERY WELL
- ABANDONED MONITORING WELL

NOTES:

1. GROUNDWATER SAMPLES WERE COLLECTED ON AUGUST 3 TO 4, AND AUGUST 11, 2021.
2. ALL SAMPLES COLLECTED WERE SUBMITTED FOR LABORATORY ANALYSIS OF VOCS.
3. ONLY SAMPLES FROM MW-1A, MW-1B, MW-2A, MW-2B, MW-3A, MW-3B, MW-4A, MW-4B, MW-5A, AND MW-5B WERE SUBMITTED FOR THE ADDITIONAL ANALYSIS OF SVOCS, PCBS, PESTICIDES, HERBICIDES, METALS, AND CYANIDE.
4. BASE MAP IS FROM NEARMAP IMAGERY.
5. DATA SOURCES: TRC.

1:900
1" = 75'
0 75 150 FEET

PROJECT: SEQUA CORPORATION
FORMER CHROMALLOY FACILITY
WEST NYACK, ROCKLAND COUNTY, NEW YORK
NYSDEC SITE NO. 344039

TITLE: SITE LAYOUT PLAN

DRAWN BY:	L. LILL	PROJ. NO.:	190273.2021.0000
CHECKED BY:	J. KING		FIGURE 3
APPROVED BY:	J. LAROCK		
DATE:	SEPTEMBER 2022		

TRC
10 Maxwell Drive
Clifton Park, NY 12065
Phone: 518-348-1190

FILE: exceedingresults.aprx

Coordinate System: NAD 1983 StatePlane New York East FIPS 3101 Feet; Map Rotation: -90
Saved By LILL on 6/9/2022, 1:46:16 PM; File Path: T:\PROJECTS\Sequa Chromalloy\2-2.ARP\exceedingresults\exceedingresults.aprx; Layout Name: Figure 5 - Chromalloy Exceeding Results_r1

MW-12B	
VOCs	Result (ug/L)
Vinyl Chloride	430
cis-1,2-Dichloroethene	270

WELL-36	
VOCs	Result (ug/L)
Vinyl Chloride	2.6
Trichloroethene	120
cis-1,2-Dichloroethene	9.1

MW-4B	
VOCs	Result (ug/L)
Trichloroethene	39
SVOCs	**(ug/L)**
Benzo(a)anthracene	0.02
Benzo(b)fluoranthene	0.05
Benzo(k)fluoranthene	0.02
Chrysene	0.03
Indeno(1,2,3-cd)Pyrene	0.04
PCBs	**(ug/L)**
Total PCBs	0.114
Metals	**(ug/L)**
Iron	340
Sodium	25,900

MW-3B	
VOCs	Result (ug/L)
Trichloroethene	80
SVOCs	**(ug/L)**
Benzo(a)anthracene	0.23
Benzo(b)fluoranthene	0.35
Benzo(k)fluoranthene	0.12
Chrysene	0.23
Indeno(1,2,3-cd)Pyrene	0.25
Metals	**(ug/L)**
Iron	2,020

MW-2B	
VOCs	Result (ug/L)
Trichloroethene	3,500
cis-1,2-Dichloroethene	17

MW-7B	
VOCs	Result (ug/L)
Trichloroethene	6.2
cis-1,2-Dichloroethene	7.1

MW-5B	
SVOCs	Result (ug/L)
Benzo(b)fluoranthene	0.02
Benzo(k)fluoranthene	0.01
Indeno(1,2,3-cd)Pyrene	0.02
Metals	**(ug/L)**
Iron	396
Sodium	44,600

MW-1B	
VOCs	Result (ug/L)
Trichloroethene	8,200
cis-1,2-Dichloroethene	310
SVOCs	**(ug/L)**
Benzo(b)fluoranthene	0.06
Benzo(k)fluoranthene	0.06
Indeno(1,2,3-cd)Pyrene	0.07
PCBs	**(ug/L)**
Total PCBs	0.238
Metals	**(ug/L)**
Sodium	31,300

WELL-25	
VOCs	Result (ug/L)
Trichloroethene	140
cis-1,2-Dichloroethene	18

WELL-35	
VOCs	Result (ug/L)
Trichloroethene	6.6

ANALYTE	GWQS
VOCs	**ug/L**
cis-1,2-Dichloroethene	5
Trichloroethene	5
Vinyl Chloride	2
SVOCs	**ug/L**
Benzo(a)anthracene	0.002
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
Chrysene	0.002
Indeno(1,2,3-cd)Pyrene	0.002
PCBs	**ug/L**
Total PCBs	0.09
Chromium	50
Iron	300
Sodium	20,000

LEGEND

- FORMER CHROMALLOY FACILITY PROPERTY
- GROUNDWATER ELEVATION CONTOUR (5' INTERVALS)
- NHD STREAM
- GROUNDWATER FLOW DIRECTION
- BEDROCK MONITORING WELL
- OVERBURDEN MONITORING WELL
- RECOVERY WELL
- ABANDONED MONITORING WELL
- SAMPLED WELL

NOTES:

1. POTENTIOMETRIC SURFACE ELEVATIONS WERE COLLECTED ON AUGUST 2, 2021.
2. GROUNDWATER SAMPLES WERE COLLECTED ON AUGUST 3 TO 4, AND AUGUST 11, 2021.
3. SAMPLES COLLECTED FROM HIGHLIGHTED WELLS WERE SUBMITTED FOR LABORATORY ANALYSIS OF VOCS.
4. ONLY SAMPLES FROM MW-1B, MW-2B, MW-3B, MW-4B, AND MW-5B WERE SUBMITTED FOR THE ADDITIONAL ANALYSIS OF SVOCS, PCBS, PESTICIDES, HERBICIDES, METALS, AND CYANIDE.
5. BASE MAP IS FROM NEARMAP IMAGERY.
6. DATA SOURCES: TRC.

FOR FIGURE CLARITY:

1. CONSTITUENTS AND INDIVIDUAL COMPOUNDS NOT SHOWN WERE EITHER NOT DETECTED OR DID NOT EXCEED THEIR RESPECTIVE GWQS.
2. LABORATORY ANALYTICAL DATA QUALIFIERS HAVE BEEN OMITTED, REFER TO THE SUMMARY DATA TABLES FOR ANALYTICAL DETAILS REGARDING QUALIFIERS.

LIST OF ACRONYMS:
UG/L - MICROGRAMS PER LITER
GWQS - NYSDEC TOGS 1.1.1 AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES FOR CLASS GA WATER, JUNE 1998
PCBS - POLY CHLORINATED BIPHENYLS
SVOCS - SEMI-VOLATILE ORGANIC COMPOUNDS
UTL - UNABLE TO LOCATE
VOCS - VOLATILE ORGANIC COMPOUNDS

1:4,200
1" = 350'
0 350 700 FEET

PROJECT: SEQUA CORPORATION
FORMER CHROMALLOY FACILITY
WEST NYACK, ROCKLAND COUNTY, NEW YORK
NYSDEC SITE NO. 344039

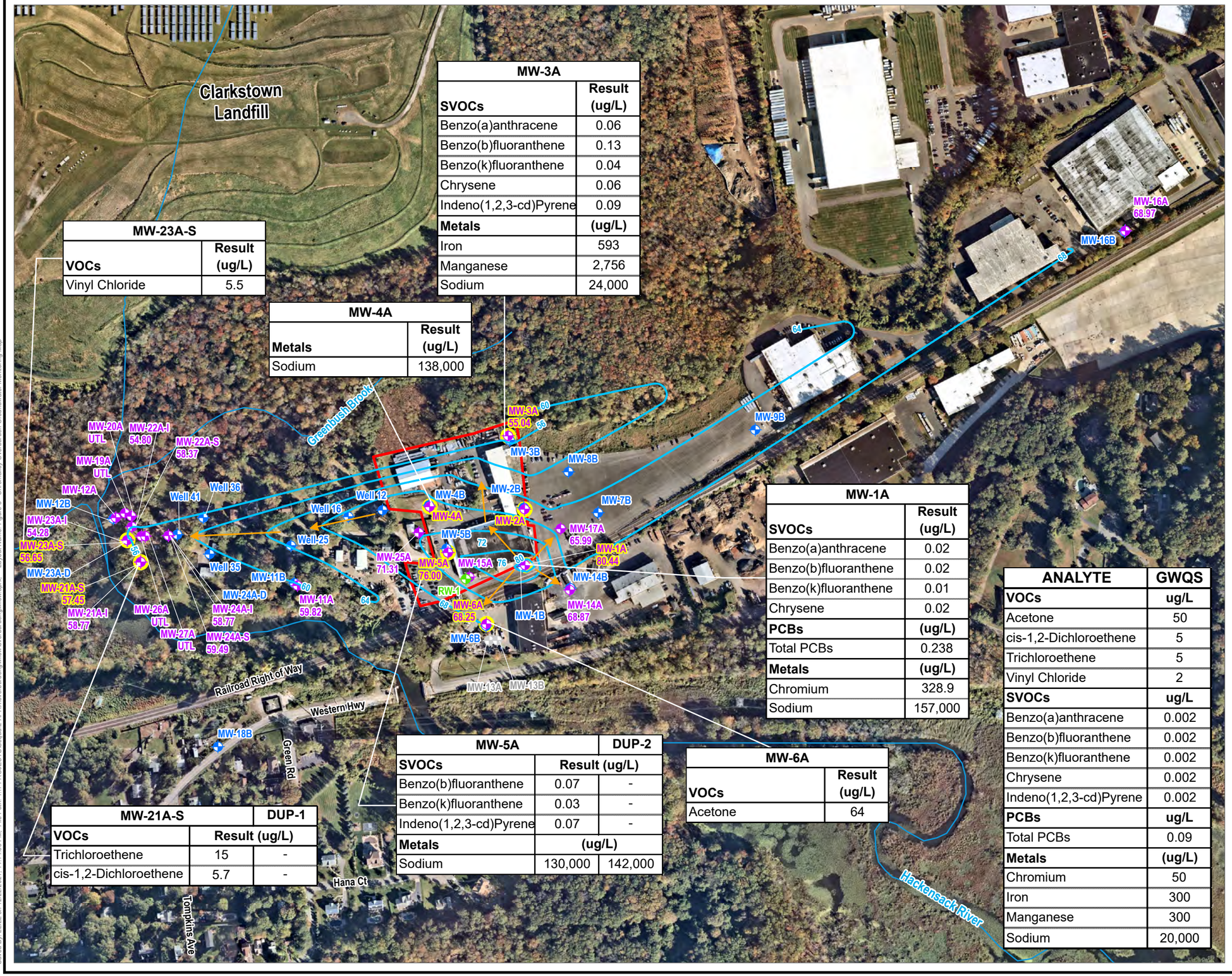
TITLE: BEDROCK GROUNDWATER MONITORING MAP - AUGUST 2021

DRAWN BY:	L. LILL	PROJ. NO.:	190273.2021.0000
CHECKED BY:	J. KING		FIGURE 4
APPROVED BY:	J. LAROCK		
DATE:	SEPTEMBER 2022		

TRC
10 Maxwell Drive
Clifton Park, NY 12065
Phone: 518-348-1190

FILE: bedrockgwflow.aprx

Coordinate System: NAD 1983 StatePlane New York East FIPS 3101 Feet: Map Rotation: -90
Saved By: LLILL on 12/22/2021 1:42:43 PM: File Path: T:\1-PROJECTS\Sequa\2-GIS\bedrock\gwflow\bedrockgwflow.aprx: Layout Name: Figure 4 - Chromalloy Bedrock Groundwater Monitoring Map



MW-3A	
SVOCs	**Result (ug/L)**
Benzo(a)anthracene	0.06
Benzo(b)fluoranthene	0.13
Benzo(k)fluoranthene	0.04
Chrysene	0.06
Indeno(1,2,3-cd)Pyrene	0.09
Metals	**(ug/L)**
Iron	593
Manganese	2,756
Sodium	24,000

MW-23A-S	
VOCs	**Result (ug/L)**
Vinyl Chloride	5.5

MW-4A	
Metals	**Result (ug/L)**
Sodium	138,000

MW-1A	
SVOCs	**Result (ug/L)**
Benzo(a)anthracene	0.02
Benzo(b)fluoranthene	0.02
Benzo(k)fluoranthene	0.01
Chrysene	0.02
PCBs	**(ug/L)**
Total PCBs	0.238
Metals	**(ug/L)**
Chromium	328.9
Sodium	157,000

MW-5A		DUP-2
SVOCs	**Result (ug/L)**	
Benzo(b)fluoranthene	0.07	-
Benzo(k)fluoranthene	0.03	-
Indeno(1,2,3-cd)Pyrene	0.07	-
Metals	**(ug/L)**	
Sodium	130,000	142,000

MW-6A	
VOCs	**Result (ug/L)**
Acetone	64

MW-21A-S		DUP-1
VOCs	**Result (ug/L)**	
Trichloroethene	15	-
cis-1,2-Dichloroethene	5.7	-

ANALYTE	GWQS
VOCs	**ug/L**
Acetone	50
cis-1,2-Dichloroethene	5
Trichloroethene	5
Vinyl Chloride	2
SVOCs	**ug/L**
Benzo(a)anthracene	0.002
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
Chrysene	0.002
Indeno(1,2,3-cd)Pyrene	0.002
PCBs	**ug/L**
Total PCBs	0.09
Metals	**(ug/L)**
Chromium	50
Iron	300
Manganese	300
Sodium	20,000

LEGEND

- FORMER CHROMALLOY FACILITY PROPERTY
- NHD STREAM
- GROUNDWATER ELEVATION CONTOUR (4' INTERVALS)
- GROUNDWATER FLOW DIRECTION
- BEDROCK MONITORING WELL
- OVERBURDEN MONITORING WELL
- RECOVERY WELL
- ABANDONED MONITORING WELL
- SAMPLED WELL

NOTES:

1. POTENTIOMETRIC SURFACE ELEVATIONS WERE COLLECTED ON AUGUST 2, 2021.
2. GROUNDWATER SAMPLES WERE COLLECTED ON AUGUST 3 TO 4, AND AUGUST 11, 2021.
3. SAMPLES COLLECTED FROM HIGHLIGHTED WELLS WERE SUBMITTED FOR LABORATORY ANALYSIS OF VOCS.
4. ONLY SAMPLES FROM MW-1A, MW-2A, MW-3A, MW-4A, AND MW-5A WERE SUBMITTED FOR THE ADDITIONAL ANALYSIS OF SVOCS, PCBS, PESTICIDES, HERBICIDES, METALS, AND CYANIDE.
5. BASE MAP IS FROM NEARMAP IMAGERY.
6. DATA SOURCES: TRC.

FOR FIGURE CLARITY:

1. CONSTITUENTS AND INDIVIDUAL COMPOUNDS NOT SHOWN WERE EITHER NOT DETECTED OR DID NOT EXCEED THEIR RESPECTIVE GWQS.
2. LABORATORY ANALYTICAL DATA QUALIFIERS HAVE BEEN OMITTED, REFER TO THE SUMMARY DATA TABLES FOR ANALYTICAL DETAILS REGARDING QUALIFIERS.

LIST OF ACRONYMS:
UG/L - MICROGRAMS PER LITER
GWQS - NYSDEC TOGS 1.1.1 AMBIENT WATER QUALIRT STANDARDS AND GUIDANCE VALUES FOR CLASS GA WATER, JUNE 1998
PCBS - POLY CHLORINATED BIPHENYLS
SVOCS - SEMI-VOLATILE ORGANIC COMPOUNDS
UTL - UNABLE TO LOCATE
VOCS - VOLATILE ORGANIC COMPOUNDS

1:4,200
1" = 350'
0 350 700 FEET

PROJECT: SEQUA CORPORATION
FORMER CHROMALLOY FACILITY
WEST NYACK, ROCKLAND COUNTY, NEW YORK
NYSDEC SITE NO. 344039

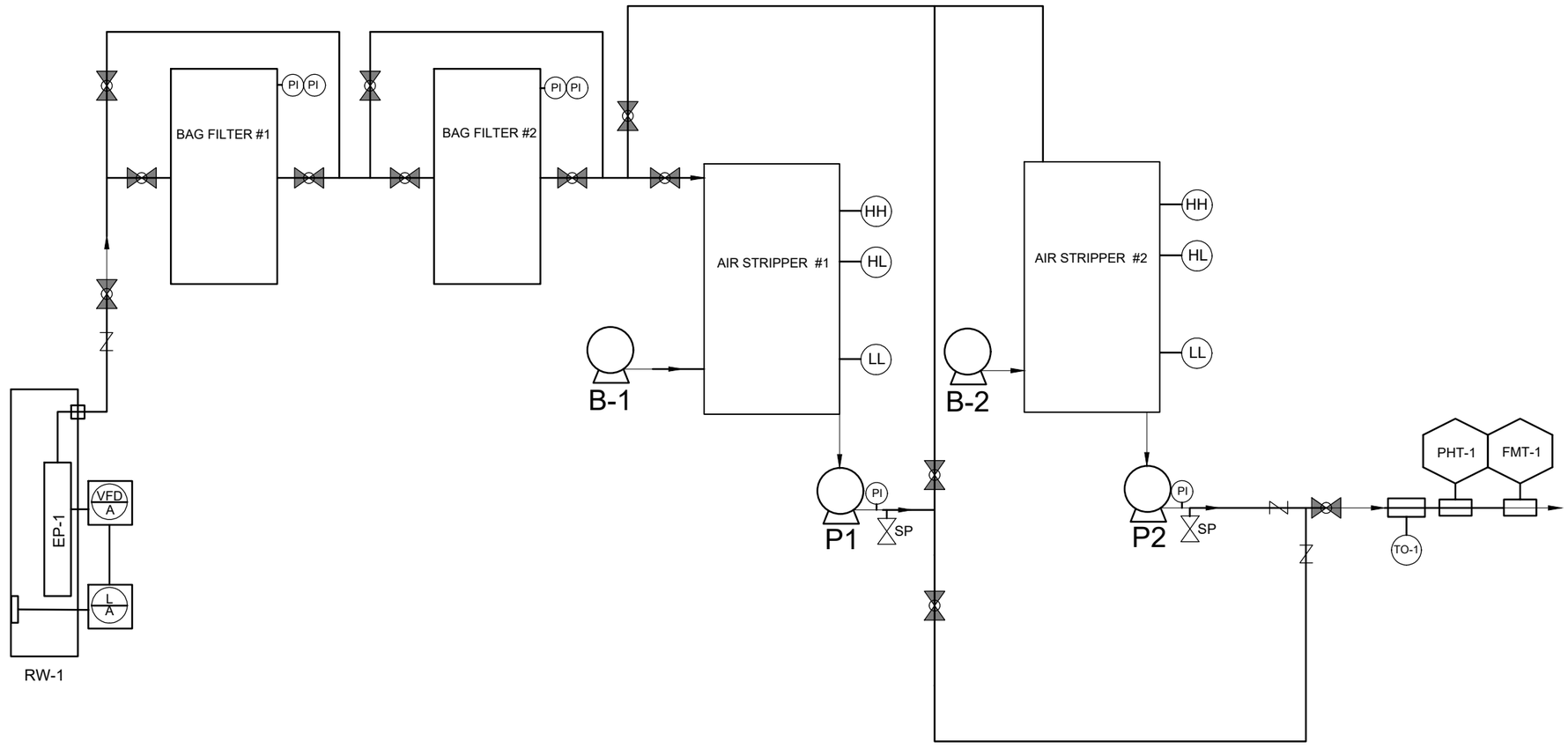
TITLE: OVERBURDEN GROUNDWATER MONITORING MAP - AUGUST 2021

DRAWN BY:	L. LILL	PROJ. NO.:	190273.2021.0000
CHECKED BY:	J. KING		FIGURE 5
APPROVED BY:	J. LAROCK		
DATE:	SEPTEMBER 2022		

TRC
10 Maxwell Drive
Clifton Park, NY 12065
Phone: 518-348-1190

FILE: overburdengwflow.aprx

Coordinate System: NAD 1983 StatePlane New York East FIPS 3101 Feet: Map Rotation: 90
Stored By: LLILL on 12/22/2021 - 14:14:38 PM - File Path: T:\PROJECTS\Sequa\2-GIS\overburdengwflow\overburdengwflow.aprx - Layout Name: Figure 3 - Chromalloy Overburden Groundwater Monitoring Map



Legend

- Ball Valve
- Check Valve
- Level Switches (HH, HL, LL)
- Sample Port (SP)
- Flow Meter Transmitter (FMT-1)
- pH Meter Transmitter (PHT-1)
- Pressure Indicator (PI)
- Totalizer (TO-1)
- Extraction Pump (EP-1)
- Variable Frequency Drive Sensor (VFD / A)
- Water Level Gauge (L / A)

Pump/Blower	Manufacturer	Size	HP	Volts	ø	Description
P1	AMT-4520-9X	200MM	10 TEFC	460	3	Centrifugal Pump
P2	AMT-4520-9X	200MM	10 TEFC	460	3	Centrifugal Pump
B1	American Fan	-	7.5 TEFC	450	3	Air Blower 900 CFM
B2	American Fan	-	7.5 TEFC	450	3	Air Blower 900 CFM

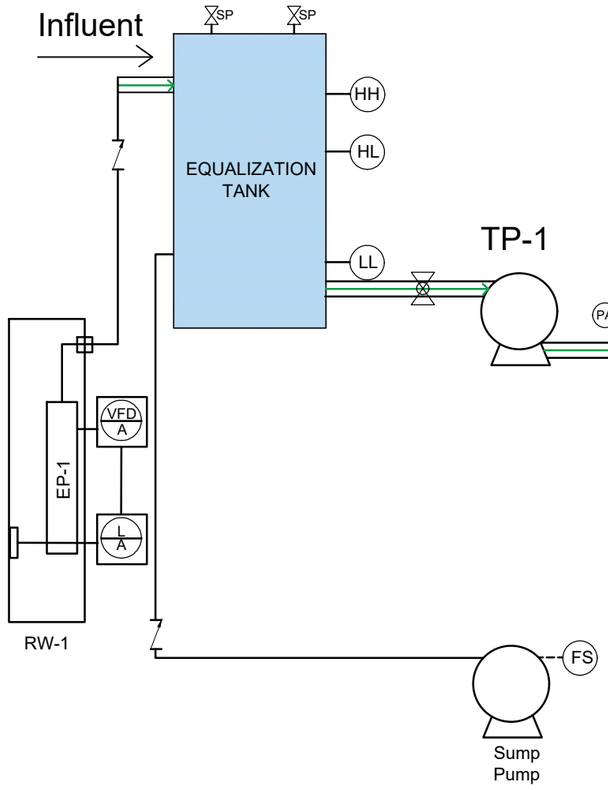
PROJECT:
FORMER CHROMALLOY FACILITY
WEST NYACK, NEW YORK

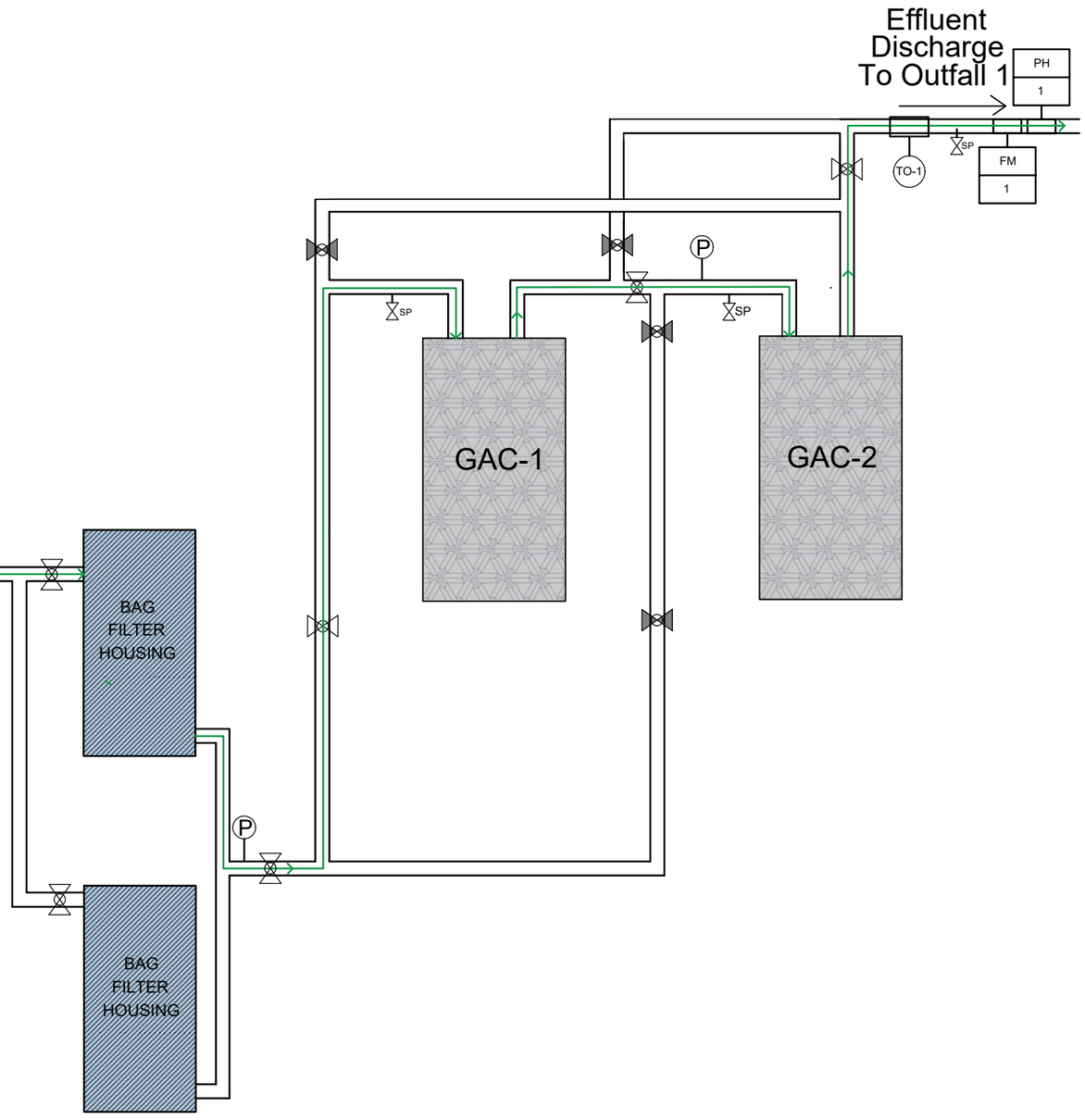
TITLE:
CURRENT PROCESS FLOW DIAGRAM

DRAWN BY:	P. WANFRIED	PROJ NO.:	190273.2021.0000
CHECKED BY:	H. NICHOLS		
APPROVED BY:	H. NICHOLS		**FIGURE 6**
DATE:	SEPTEMBER 2022		

TRC
10 Maxwell Drive
Clifton Park, NY 12065
Phone: 518.348.1190

FILE NO.: PFD Current System.dwg





Legend

- Direction Of Flow
- Ball Valve
- Pressure Gauge
- Level Switches (HH, HL, LL)
- Sample Port (SP)
- Flow Meter (FM 1)
- pH Meter (PH 1)
- Pressure Switch/Alarm (PA, PS)
- Totalizer (TO-1)
- Float Switch (FS)
- Check Valve
- Extraction Pump (EP-1)

PROJECT:

FORMER CHROMALLOY FACILITY
WEST NYACK, NEW YORK

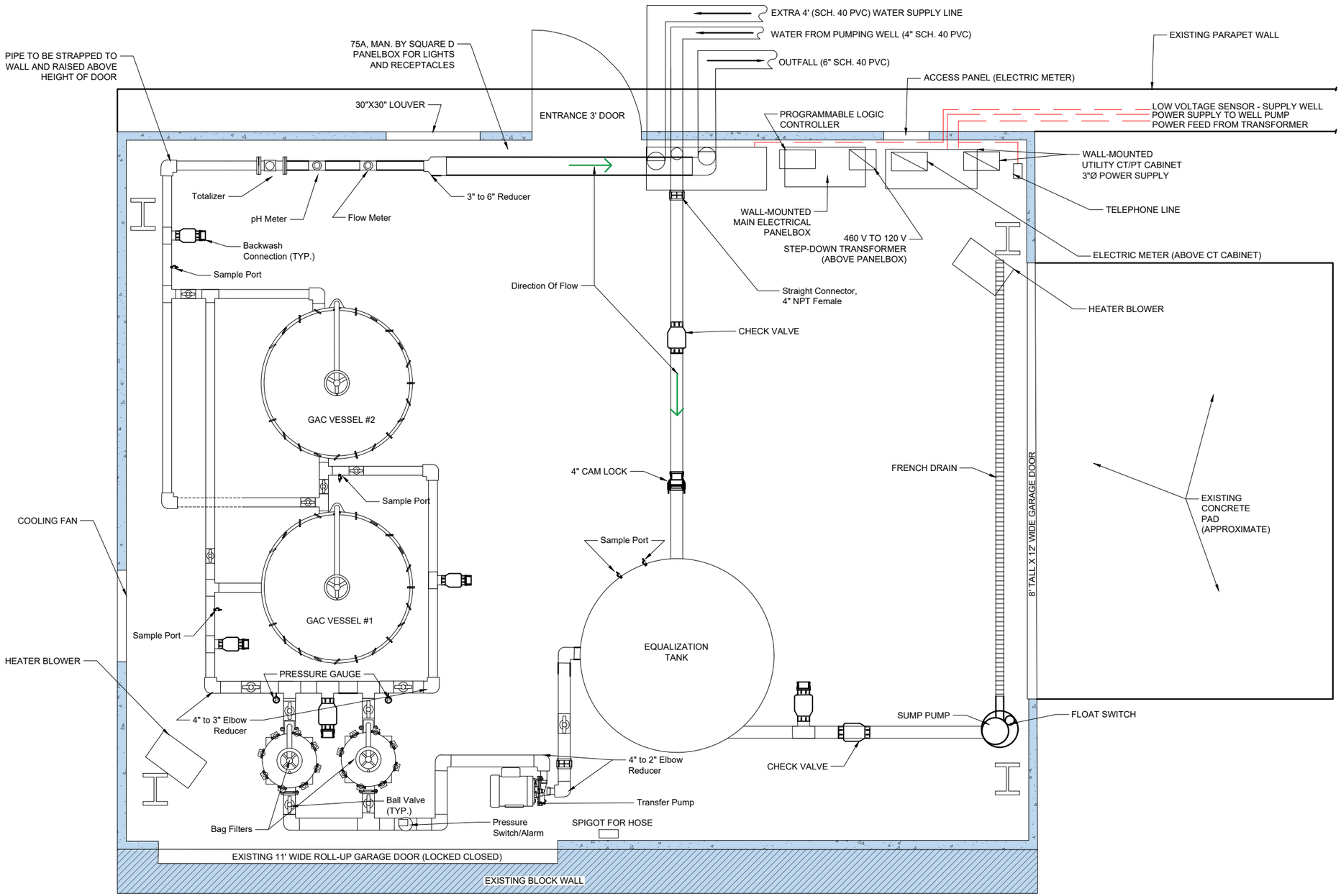
TITLE:

PROPOSED PROCESS FLOW DIAGRAM

DRAWN BY:	P. WANFRIED	PROJ NO.:	190273.2021.0000
CHECKED BY:	H. NICHOLS		
APPROVED BY:	H. NICHOLS		**FIGURE 7**
DATE:	SEPTEMBER 2022		

TRC
10 Maxwell Drive
Clifton Park, NY 12065
Phone: 518.348.1190

FILE NO.: GAV VESSEL PIPING_060622.dwg



0 3 6

APPROXIMATE SCALE IN FEET

PROJECT:

FORMER CHROMALLOY FACILITY
WEST NYACK, NEW YORK

TITLE:

PROPOSED PLAN VIEW

DRAWN BY:	P. WANFRIED	PROJ NO.:	190273.2021.0000
CHECKED BY:	H. NICHOLS		
APPROVED BY:	H. NICHOLS		**FIGURE 8**
DATE:	SEPTEMBER 2022		

TRC
10 Maxwell Drive
Clifton Park, NY 12065
Phone: 518.348.1190

FILE NO.: Physical Layout_rev1.dwg

480V FUSE BOX

HEATER

COOLING FAN

PROGRAMMABLE LOGIC CONTROL PANEL AND VARIABLE FREQUENCY DRIVE CONTROLLER

EQUALIZATION TANK

HH

HL

LL

SP

TP-1

PA

PS

P

BAG FILTER HOUSING

BAG FILTER HOUSING

EP-1

VFD A

L A

RW-1

Sump Pump

FS

PHT-1

FMT-1

TO-1

GAC-1

GAC-2

Legend

- PVC Piping
- Electrical line
- Temporary Back-Flush Hose (Used As Needed)
- Ball Valve
- Pressure Gauge
- Level Switches (HH, HL, LL)
- Sample Port (SP)
- Flow Meter Transmitter (FMT)
- pH Meter Transmitter (PHT)
- Pressure Switch/Alarm (PA/PS)
- Totalizer (TO-1)
- Extraction Pump (EP-1)
- Variable Frequency Drive Sensor (VFD A)
- Water Level Gauge (L A)
- Float Switch (FS)
- Check Valve

NOTES

1. GAC TANK LEAD/LAG CONFIGURATION TO BE CONTROLLED WITH VALVE ORIENTATION.
2. BACK-FLUSH HOSE CONNECTION LOCATIONS TO BE DETERMINED BY GAC VESSEL LEAD/LAG CONFIGURATION.
3. BACK-FLUSH HOSES TO BE STORED ON SITE WHEN NOT IN USE.

PROJECT:

FORMER CHROMALLOY FACILITY
WEST NYACK, NEW YORK

TITLE:

PROPOSED P&ID

DRAWN BY:	P. WANFRIED	PROJ NO.:	190273.2021.0000
CHECKED BY:	H. NICHOLS		
APPROVED BY:	H. NICHOLS		**FIGURE 9**
DATE:	SEPTEMBER 2022		

TRC
10 Maxwell Drive
Clifton Park, NY 12065
Phone: 518.348.1190

FILE NO.: P&ID.dwg

APPENDIX A

SYSTEM DISCHARGE REQUIREMENTS

1166/Corr

91-20-2a (1/89)

Site No.:3-44-039
Part 1, Page 1 of 2

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning June 2001
and lasting until June 2006

the discharges from the treatment facility to Hackensack River , water index number NJ-1-9 , Class A , RECEIVING WATER shall be limited and monitored by the operator as specified below:

Outfall Number and Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements	
	Daily Avg.	Daily Max		Measurement Frequency	Sample Type
Outfall 001 - Treated Groundwater Remediation Discharge:					
Flow	Monitor	435,000	GPD	Continuous	Meter
pH (range)	6.0 to 9.0		SU	Daily	Grab
Cadmium, Total	Monitor	42	µg/l	Weekly	Grab
Chromium, Total	Monitor	500	µg/l	Weekly	Grab
Copper, Total	Monitor	144	µg/l	Weekly	Grab
Lead, Total	Monitor	150	µg/l	Weekly	Grab
Nickel, Total	Monitor	1000	µg/l	Weekly	Grab
Zinc, Total	Monitor	1000	µg/l	Weekly	Grab
Arsenic	Monitor	100	µg/l	Weekly	Grab
1,1,1,2-Tetrachloroethane	Monitor	50	µg/l	Weekly	Grab
1,1,1 Trichloroethane	Monitor	10	µg/l	Weekly	Grab
1,1,2 Trichloroethane	Monitor	10	µg/l	Weekly	Grab
1,1 Dichloroethane	Monitor	10	µg/l	Weekly	Grab
1,1 Dichloroethene	Monitor	7	µg/l	Weekly	Grab
Benzene	Monitor	5	µg/l	Weekly	Grab
Carbon Tetrachloride	Monitor	4	µg/l	Weekly	Grab
Chloroform	Monitor	70	µg/l	Weekly	Grab
cis-1,2 Dichloroethene	Monitor	10	µg/l	Weekly	Grab
trans-1,2 Dichloroethene	Monitor	10	µg/l	Weekly	Grab
Methylene Chloride	Monitor	10	µg/l	Weekly	Grab
sec- Butylbenzene	Monitor	50	µg/l	Weekly	Grab
Tetrachloroethene	Monitor	7	µg/l	Weekly	Grab
Trichloroethene	Monitor	10	µg/l	Weekly	Grab
Vinyl Chloride	Monitor	3	µg/l	Weekly	Grab

Note: The treatment facility consists of the dual phase extraction system and the pump-and- treat system installed in compliance with the NYSDEC Record of Decision for the cleanup of the groundwater contamination.

Additional Conditions:

(1) Discharge is not authorized until such time as an engineering submission showing the method of treatment is approved by the Department. The discharge rate may not exceed the effective or design treatment system capacity. All monitoring data, engineering submissions and modification requests must be submitted to:

Chief - Operation Maintenance and Support Section
Bureau of Hazardous Site Control
Division of Environmental Remediation
NYSDEC
50 Wolf Road
Albany, N.Y. 12233-7010

With a copy sent to:
Joe Marcogliese, RWE - 3
NYS Dept. of Env. Con.
200 White Plains Rd., 5th Fl
Tarrytown, NY 10591-5805

(2) Only site generated wastewater is authorized for treatment and discharge.

(3) Authorization to discharge is valid only for the period noted above but may be renewed if appropriate. A request for renewal must be received 6 months prior to the expiration date to allow for a review of monitoring data and reassessment of monitoring requirements.

(4) Both concentration (mg/l or µg/l) and mass loadings (lbs/day) must be reported to the Department for all parameters except flow and pH.

(5) Any use of corrosion/scale inhibitors or biocidal-type compounds used in the treatment process must be approved by the department prior to use.

(6) This discharge and adminstration of this discharge must comply with the attached General Conditions.

(7) ***This condition is applicable only when the max. flow rate of outfall 001 is 7200 GPD and outfall 001 consists of discharge only from the Dual Phase extraction system.***
The measurement frequency for all parameters of outfall 001except flow and pH shall be **Monthly** following a period of **eight** consecutive weekly sampling events that show no exceedance of discharge limits. If the discharge limit for any parameter is exceeded, the measurement frequency for **all** parameters shall again be **weekly**, until a period of eight consecutive sampling events that show no exceedance at which point Monthly monitoring may resume.

APPENDIX B

2002 AND 2010 AS-BUILT DRAWINGS

J:\EA\1166\DWG\REMEDIAL DESIGN\AS-BUILT\FIG 2-6 AS-BUILT LAYOUT

EXISTING PARAPIT WALL
(REMOVED AT DOORWAY)

75A, MAN. BY SQUARE D
PANELBOX FOR LIGHTS AND RECEPTICALS

30"x30" LOUVER

ENTRANCE
3' DOOR

EXTRA 4" (SCH. 40 PVC) WATER SUPPLY LINE

WATER FROM PUMPING WELL (4" SCH. 40 PVC)

TO RIVER (6" SCH. 40 PVC)

ACCESS PANEL (ELECTRIC METER)

EXISTING PARAPIT WALL

PSW LVS PF

SYSTEM MASTER
CONTROL PANEL

WALL-MOUNTED
UTILITY CT/PT CABINET
3"ø POWER SUPPLY

TELEPHONE LINE

WALL-MOUNTED
MAIN ELCTRICAL
PANELBOX

460 V. TO 120 V.
STEP-DOWN TRANSFORMER
(ABOVE PANELBOX)

ELECTRIC METER (ABOVE CT CABINET)

EXISTING CONCRETE PAD

HEATER BLOWER
(MOUNTED ABOVE AIR STRIPPER)

LRP

AIR FLOW

EXTERIOR AIR VENT

PARTICULATE FILTER

FINE SEPARATOR

BAG FILTER
SET #1

AS WATER INLETS
③ ② ①

634 AST

7.5HP
BLOWER
#1

TRANSFER PUMP
#1

AIR STRIPPER #1

DPE MANIFOLD

MS-200
AIR / WATER
SEPARATOR TANK

MOYNO
367 PUMP

8' TALL X 12' WIDE GARAGE DOOR

BYPASS AS#2

AS WATER INLETS
③ ② ①

634 AST

7.5HP
BLOWER
#2

TRANSFER PUMP
#2

AIR STRIPPER #2

HEATER BLOWER (ABOVE LPAC)

BAG FILTER
SET #2

LPAC
VESSEL #2

LPAC
VESSEL #1

SPIGOT FOR HOSE
(TRAY/EQUIPMENT
CLEANING)

EXISTING 11' WIDE ROLL-UP GARAGE DOOR (LOCKED CLOSED)

EXISTING BLOCK WALL

KEY:

LVS	LOW VOLTAGE SENSOR – SUPPLY WELL
PSW	POWER SUPPLY TO WELL PUMP
PF	POWER FEED FROM TRANSFORMER
	BAG FILTERS

0 2.5'
APPROXIMATE SCALE

NOTE: REFER TO FIGURES 2-7 AND 2-8 FOR THE PIPING AND VALVING ARRANGEMENT FOR THE SYSTEM.

12/14/02
Paul C. Miller – NY Lic. No. 078181

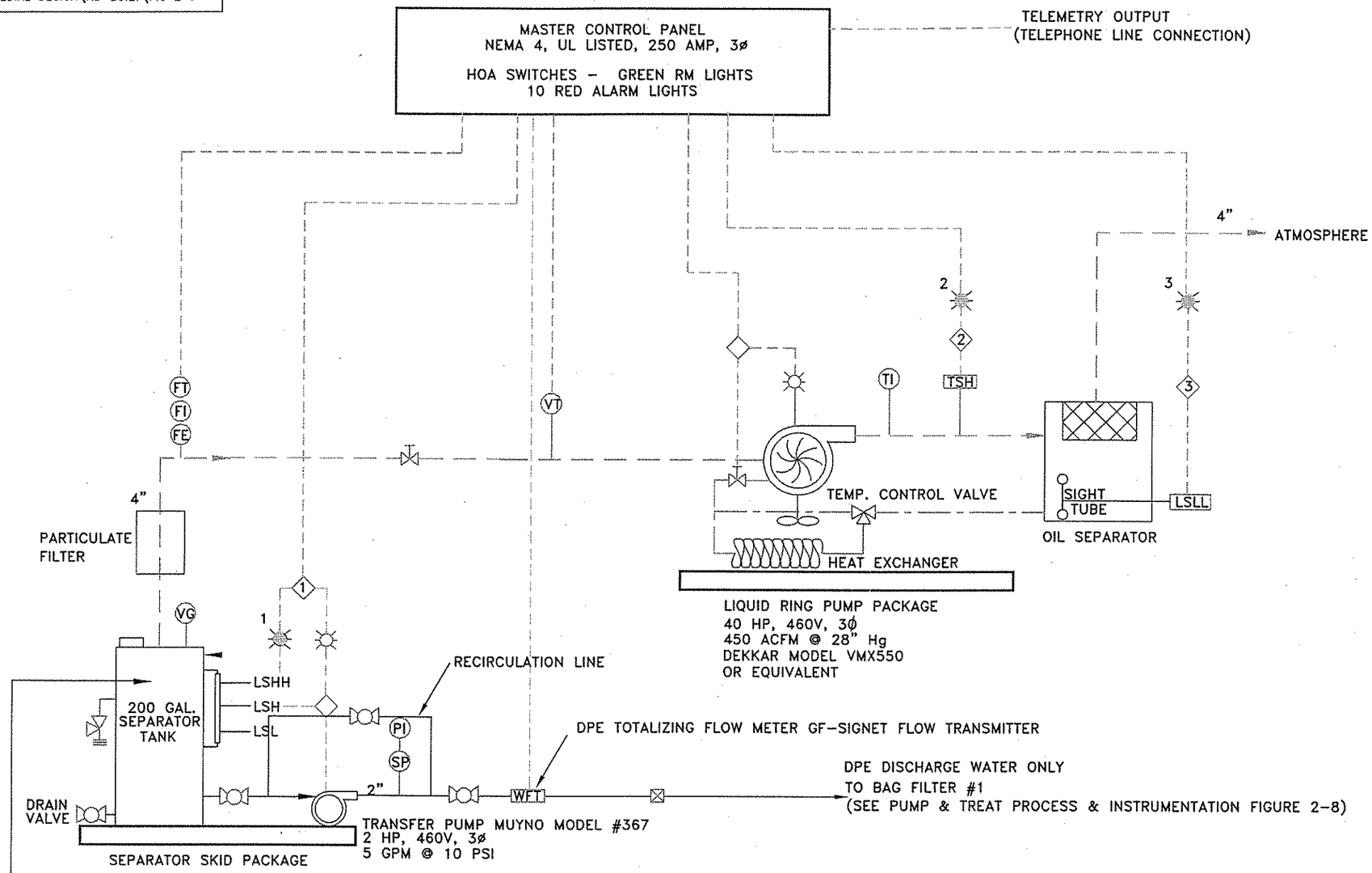
REVISION:	DATE:
REMEDIAL DESIGN SUBMISSION	05/04/01
REVISED BUILDING DESIGN	10/17/01
BUILDING PERMIT APPLICATION	11/09/01
AS-BUILT REPORT	12/10/02

Environmental Alliance, Inc.
1812 Newport Gap Pike
Wilmington, DE 19808
Phone (302) 995-7565
Fax (302) 995-0843

DESIGNED BY: ALM
DRAFTED BY: AGG
CHECKED BY:

FIGURE 2-6
EQUIPMENT LAYOUT
TREATMENT BUILDING
FORMER CHROMALLOY FACILITY
WEST NYACK, NEW YORK

J:\EAI\1166\DWG\REMEDIAL DESIGN\AS-BUILT\FIG 2-7



ALARMS:	ACTIVATION:
1. PHASE SEPARATOR HIGH HIGH LEVEL	WILL SHUT DOWN DPE SYSTEM
2. LRP HIGH TEMPERATURE	WILL SHUT DOWN DPE SYSYEM
3. LRP LOW OIL	WILL SHUT DOWN DPE SYSTEM

NOTES:
1. ALL PIPING PRIOR TO SEPARATOR TANK IS SCHEDULE 40 PVC, PRESSURE RATED. ALL PIPING AFTER SEARATOR TANK IS SCHEDULE 80 PVC PRESSURE RATED.
2. MASTER CONTROL PANEL IS INTERGRATED WITH THE P&T PROCESS (SEE FIGURE 2-8)
3. TELEMETRY OUTPUT WILL IMMEDIATELY CONTACT ENVIRONMENTAL ALLIANCE VIA CELL PHONE AND NOTIFICATION FAX INDICATING PROBLEMS\SYSTEM ALARMS

LEGEND:

FE	AIR FLOW ELEMENT
FI	AIR FLOW INDICATOR
FT	AIR FLOW TOTALIZER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
M	MOTOR
MCP	MASTER CONTROL PANEL
PI	PRESSURE INDICATOR
SP	SAMPLE PORT
TI	TEMPERATURE INDICATOR
TSH	TEMPERATURE SWITCH HIGH
VG	VACUUM GAUGE
VT	VACUUM TRANSMITTER
WFT	WATER FLOW TRANSMITTER
⊠	2" KENT TURBINE FLOW/TOTALIZER METER
◇	INTERLOCK/ALARM
⋈	GATE VALVE
⟋	CHECK VALVE
⋈	VACUUM RELIEF VALVE
⋈	BALL VALVE
✳	ALARM LIGHT
☼	RUN LIGHT
- - - - -	CONTROL LINE
———	WATER LINE
- - - - -	AIR LINE
—— - ——	OIL FLOW LINE

Paul C. Miller - NY Lic. No. 078181
12/19/02

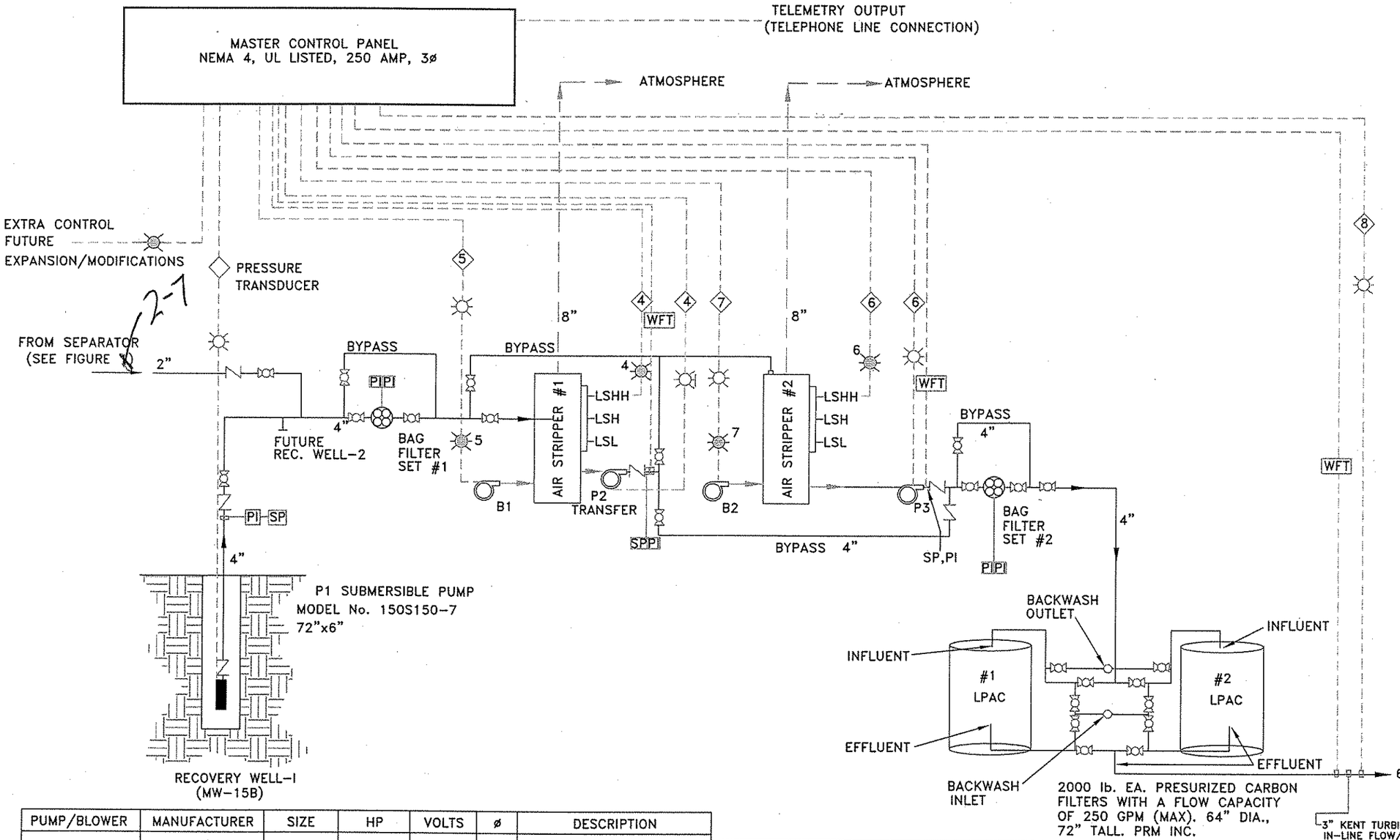
REVISION:	DATE:
CARBON REVISIONS	5/12/00
DRAFT REPORT DESIGN	10/31/00
DPE REMEDIAL DESIGN	4/11/01
AS-BUILT REPORT	12/17/02

DESIGNED BY: ALM
DRAFTED BY: RNH
CHECKED BY:

Environmental Alliance, Inc.
1812 Newport Gap Pike
Wilmington, DE 19808
Phone: (302) 995-7544
Fax: (302) 995-0941

FIGURE 2-7
PROCESS & INSTRUMENTATION DIAGRAM
DPE REMEDIAL AS-BUILT
FORMER CHROMALLOY FACILITY
WEST NYACK, NEW YORK

J:\EAI\1166\DWG\REMEDIAL DESIGN\AS-BUILT\FIG 2-8



LEGEND:

FE	AIR FLOW ELEMENT
FI	AIR FLOW INDICATOR
FT	AIR FLOW TOTALIZER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
M	MOTOR
MCP	MASTER CONTROL PANEL
PI	PRESSURE INDICATOR
SP	SAMPLE PORT
TI	TEMPERATURE INDICATOR
TSH	TEMPERATURE SWITCH HIGH
VI	VACUUM INDICATOR
VT	VACUUM TRANSMITTER
WFT	WATER FLOW TRANSMITTER (GF-SIGNET)
◇	INTERLOCK
⋈	GATE VALVE
⟋	CHECK VALVE
	VACUUM RELIEF VALVE
⋈	BALL VALVE
	ALARM LIGHT
	RUN LIGHT
- - - - -	CONTROL LINE
———	WATER LINE
— — —	AIR LINE

PUMP/BLOWER	MANUFACTURER	SIZE	HP	VOLTS	ø	DESCRIPTION
P1	GRUNDFOS	6 INCH	15	460	3	STAINLESS STEEL, SUBMERSIBLE PUMP, 150 GPM, 280' TDH
P2	AMT-4250-9X	200 MM	10 TEFC	460	3	CENTRIFUGAL PUMP
P3	AMT-4250-9X	200 MM	10 TEFC	460	3	CENTRIFUGAL PUMP
B1	AMERICAN FAN	-	7.5 TEFC	460	3	AIR BLOWER 900 cfm
B2	AMERICAN FAN	-	7.5 TEFC	460	3	AIR BLOWER 900 cfm

ALARMS:	ACTIVATION:
4. AS #1 WATER LEVEL SWITCH HIGH HIGH	WILL SHUT DOWN ENTIRE DPE & PUMP AND TREAT SYSTEM
5. AS #1 LOW AIR FLOW	WILL SHUT DOWN ENTIRE DPE & PUMP AND TREAT SYSTEM
6. AS #2 WATER LEVEL SWITCH HIGH HIGH	WILL SHUT DOWN ENTIRE DPE & PUMP AND TREAT SYSTEM
7. AS #2 LOW AIR FLOW	WILL SHUT DOWN ENTIRE DPE & PUMP AND TREAT SYSTEM
8. GF-SIGNET PH METER	WILL SHUT DOWN ENTIRE DPE & PUMP AND TREAT SYSTEM
9. LOW WATER LEVEL	WILL SHUT DOWN PUMPING WELL

NOTES:
1. ALL WATER LINES IN BUILDING SCHEDULE 80 PVC, PRESSURE RATED
2. BAG FILTER SETS: ROSEDALE WATER FILTER: EXTRA HIGH CAPACITY MULTI-BAG FILTERS, 18" DIA., 300 GPM (MAX)
3. AIR STRIPPERS (AS) MANUFACTURED BY PRODUCT RESOURCES MANAGEMENT, MODEL 634 DUAL, 13.5' X 4' WITH 4 TRAYS (EA.), SUMP TANKS, HI/LOW ALARMS
4. WATER SAMPLE PORTS ARE INSTALLED AFTER EACH TREATMENT PROCESS
5. MASTER CONTROL PANEL IS INTERGRATED WITH THE DPE PROCESS (SEE DPE REMEDIAL DESIGN, FIGURE 2-7)
6. TELEMETRY OUTPUT WILL IMMEDIATELY CONTACT ENVIRONMENTAL ALLIANCE CELL PHONE AND FAX NOTIFICATION INDICATING PROBLEMS/SYSTEM ALARMS

12/19/02
Paul C. Miller - NY Lic. No. 078181

REVISION:	DATE:
DRAFT REPORT DESIGN	10/30/00
PUMP AND TREAT REMEDIAL DESIGN	4/12/01
P&T REMEDIAL DESIGN SUBMISSION	5/4/01
AS-BUILT REPORT	12/10/02

Environmental Alliance, Inc.
1812 Newport Gap Pike
Wilmington, DE 19808
Phone: (302) 995-7544
Fax: (302) 995-0941

DESIGNED BY: AM
DRAFTED BY: AG
CHECKED BY:

FIGURE 2-8
PROCESS & INSTRUMENTATION DIAGRAM
PUMP & TREAT CONCEPTUAL DESIGN
P&T AS-BUILT
FORMER CHROMALLOY FACILITY
WEST NYACK, NEW YORK

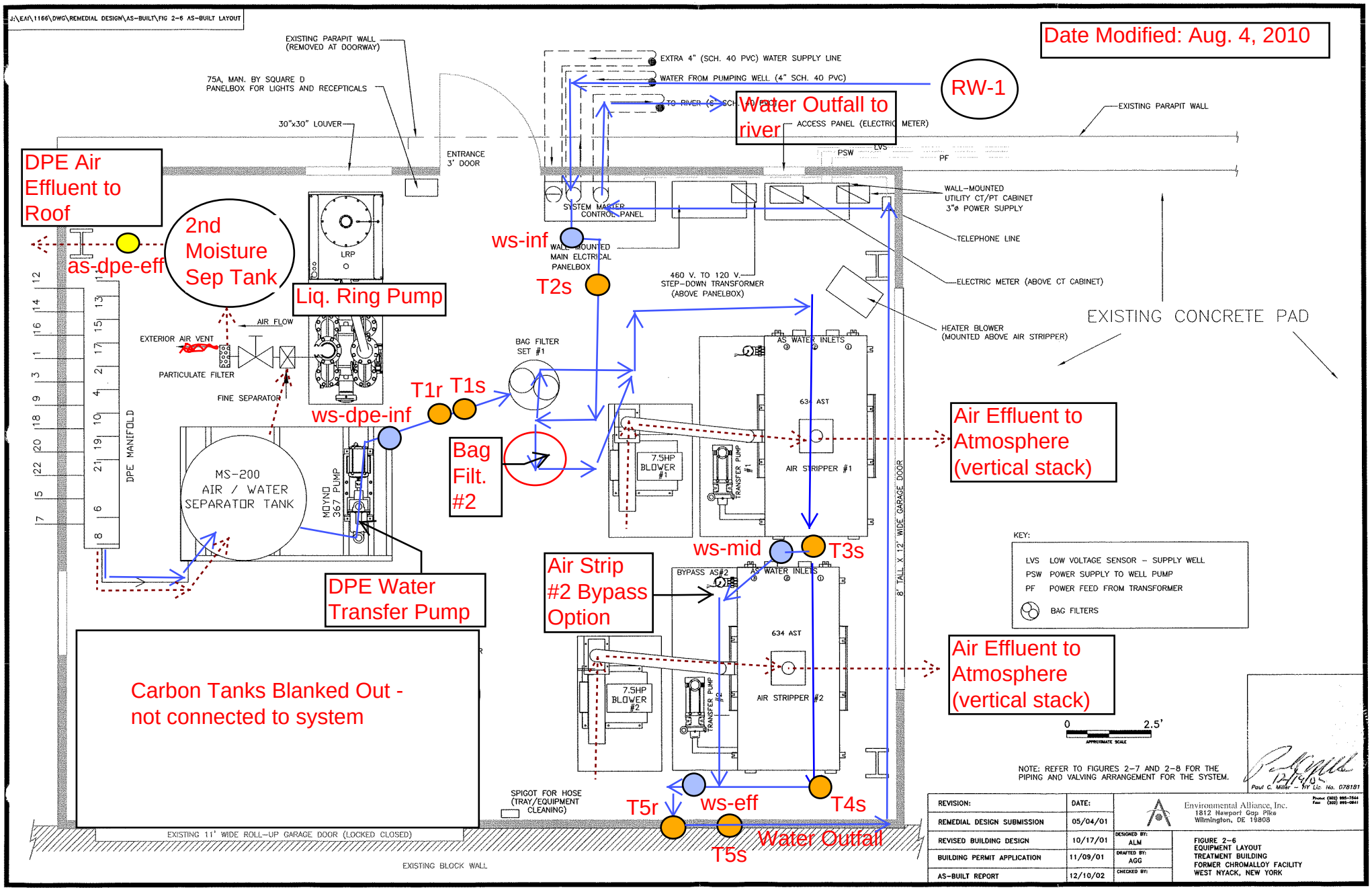
= Totalizer (s=signet, r = Rockwell)

as = Air sample point

Water flow direction

ws = Water sample point (inf = influent, mid = midpoint, eff = effluent)

Air flow direction



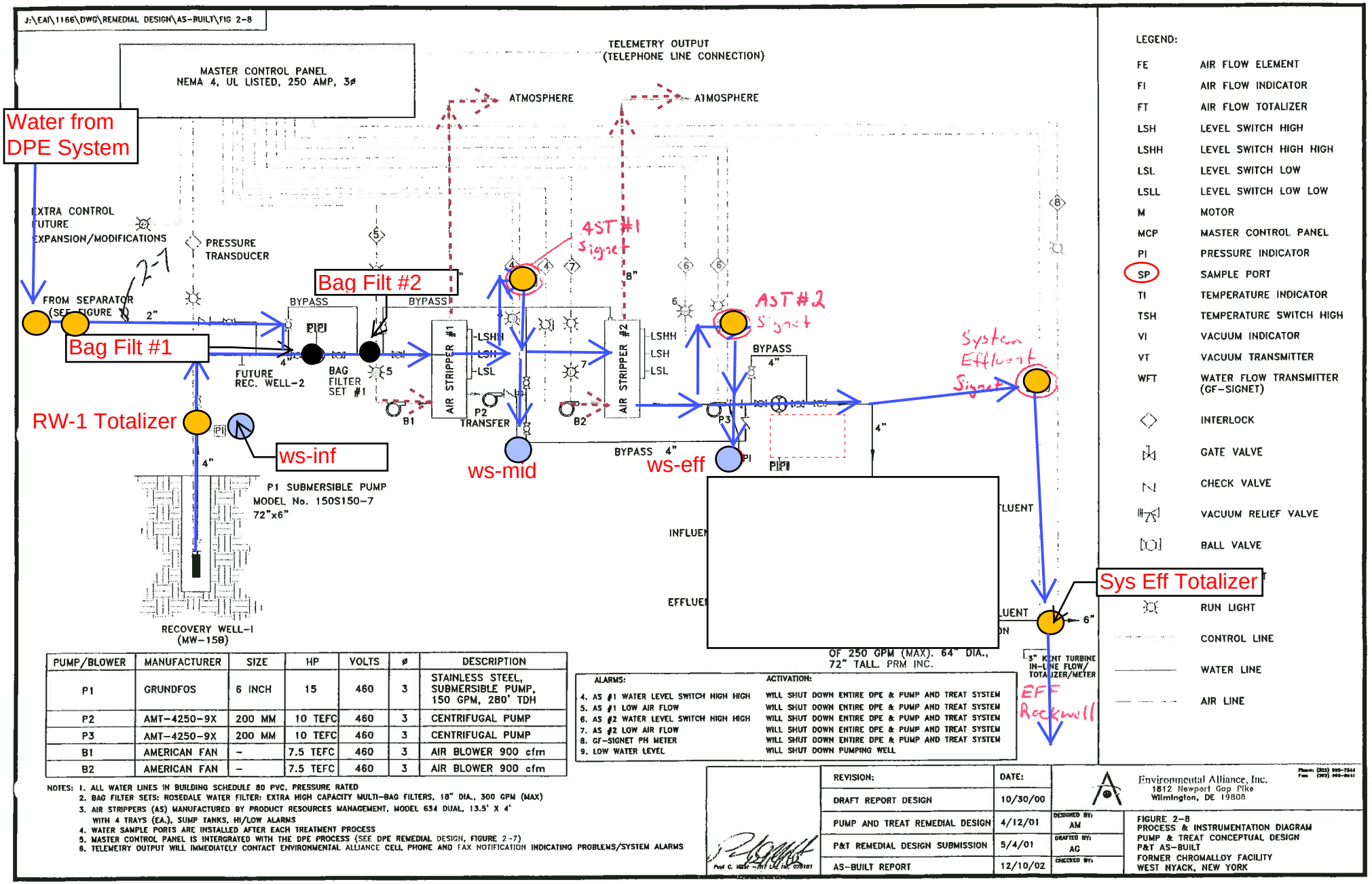
P&T System Flow Diagram

Air flow direction

Water flow direction

Totalizer

Water sample point



PUMP/BLOWER	MANUFACTURER	SIZE	HP	VOLTS	ø	DESCRIPTION
P1	GRUNDFOS	6 INCH	15	460	3	STAINLESS STEEL, SUBMERSIBLE PUMP, 150 GPM, 280' TDH
P2	AMT-4250-9X	200 MM	10 TEFC	460	3	CENTRIFUGAL PUMP
P3	AMT-4250-9X	200 MM	10 TEFC	460	3	CENTRIFUGAL PUMP
B1	AMERICAN FAN	–	7.5 TEFC	460	3	AIR BLOWER 900 cfm
B2	AMERICAN FAN	–	7.5 TEFC	460	3	AIR BLOWER 900 cfm

ALARMS:	ACTIVATION:
4. AS #1 WATER LEVEL SWITCH HIGH HIGH	WILL SHUT DOWN ENTIRE DPE & PUMP AND TREAT SYSTEM
5. AS #1 LOW AIR FLOW	WILL SHUT DOWN ENTIRE DPE & PUMP AND TREAT SYSTEM
6. AS #2 WATER LEVEL SWITCH HIGH HIGH	WILL SHUT DOWN ENTIRE DPE & PUMP AND TREAT SYSTEM
7. AS #2 LOW AIR FLOW	WILL SHUT DOWN ENTIRE DPE & PUMP AND TREAT SYSTEM
8. GF-SIGNET PH METER	WILL SHUT DOWN ENTIRE DPE & PUMP AND TREAT SYSTEM
9. LOW WATER LEVEL	WILL SHUT DOWN PUMPING WELL

NOTES:
1. ALL WATER LINES IN BUILDING SCHEDULE 80 PVC, PRESSURE RATED
2. BAG FILTER SETS: ROSEDALE WATER FILTER: EXTRA HIGH CAPACITY MULTI-BAG FILTERS, 18" DIA., 300 GPM (MAX)
3. AIR STRIPPERS (AS) MANUFACTURED BY PRODUCT RESOURCES MANAGEMENT, MODEL 634 DUAL, 13.5' X 4' WITH 4 TRAYS (EA.), SUMP TANKS, HI/LOW ALARMS
4. WATER SAMPLE PORTS ARE INSTALLED AFTER EACH TREATMENT PROCESS
5. MASTER CONTROL PANEL IS INTERGRATED WITH THE DPE PROCESS (SEE DPE REMEDIAL DESIGN, FIGURE 2-7)
6. TELEMETRY OUTPUT WILL IMMEDIATELY CONTACT ENVIRONMENTAL ALLIANCE CELL PHONE AND FAX NOTIFICATION INDICATING PROBLEMS/SYSTEM ALARMS

REVISION:	DATE:
DRAFT REPORT DESIGN	10/30/00
PUMP AND TREAT REMEDIAL DESIGN	4/12/01
P&T REMEDIAL DESIGN SUBMISSION	5/4/01
AS-BUILT REPORT	12/10/02

Environmental Alliance, Inc.
1812 Newport Gap Pike
Wilmington, DE 19808

DESIGNED BY: AM
DRAFTED BY: AG
CHECKED BY:

FIGURE 2-8
PROCESS & INSTRUMENTATION DIAGRAM
PUMP & TREAT CONCEPTUAL DESIGN
P&T AS-BUILT
FORMER CHROMALLOY FACILITY
WEST NYACK, NEW YORK

DPE System Flow Diagram

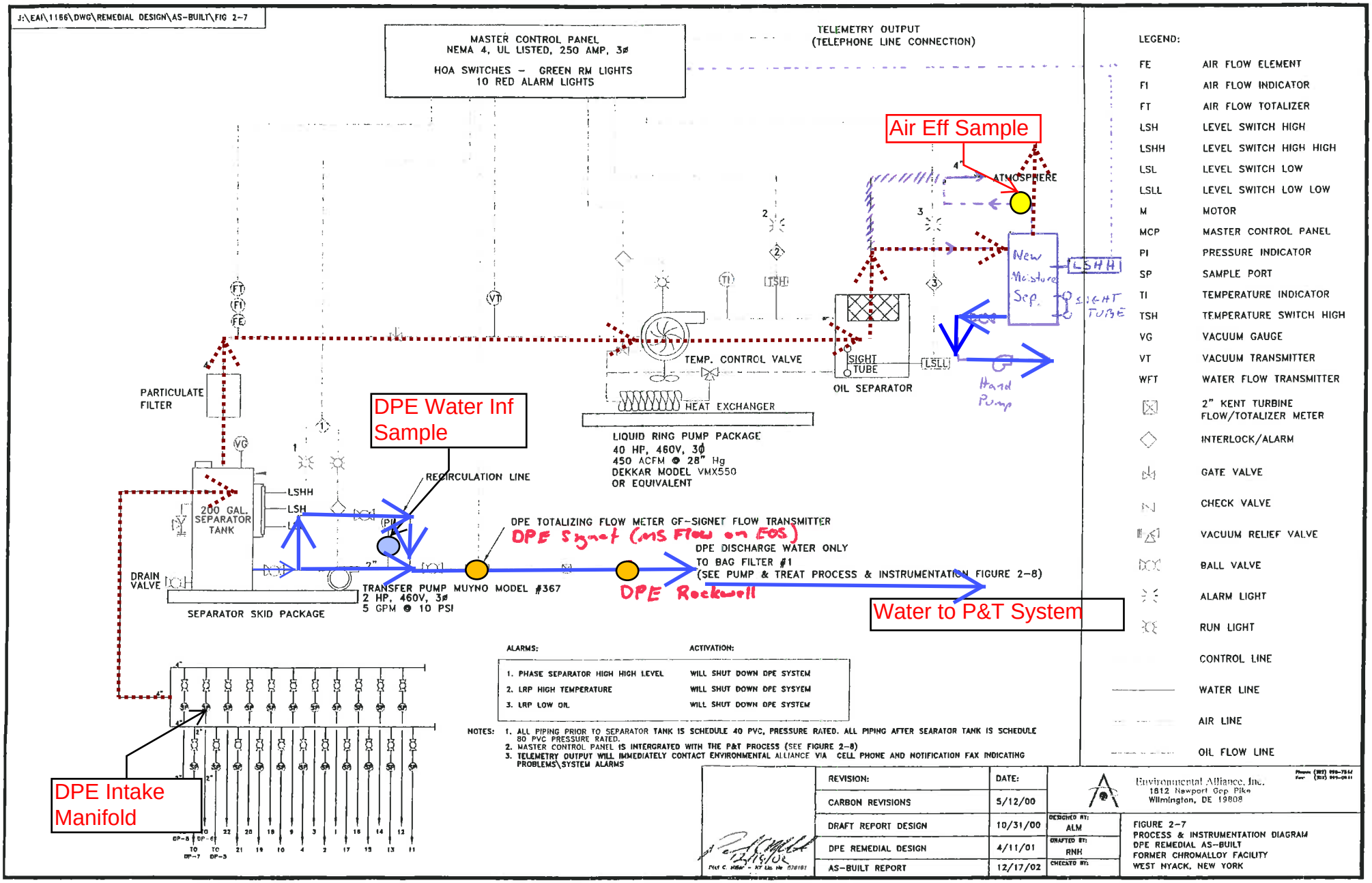
Air flow direction

Water flow direction

Totalizer

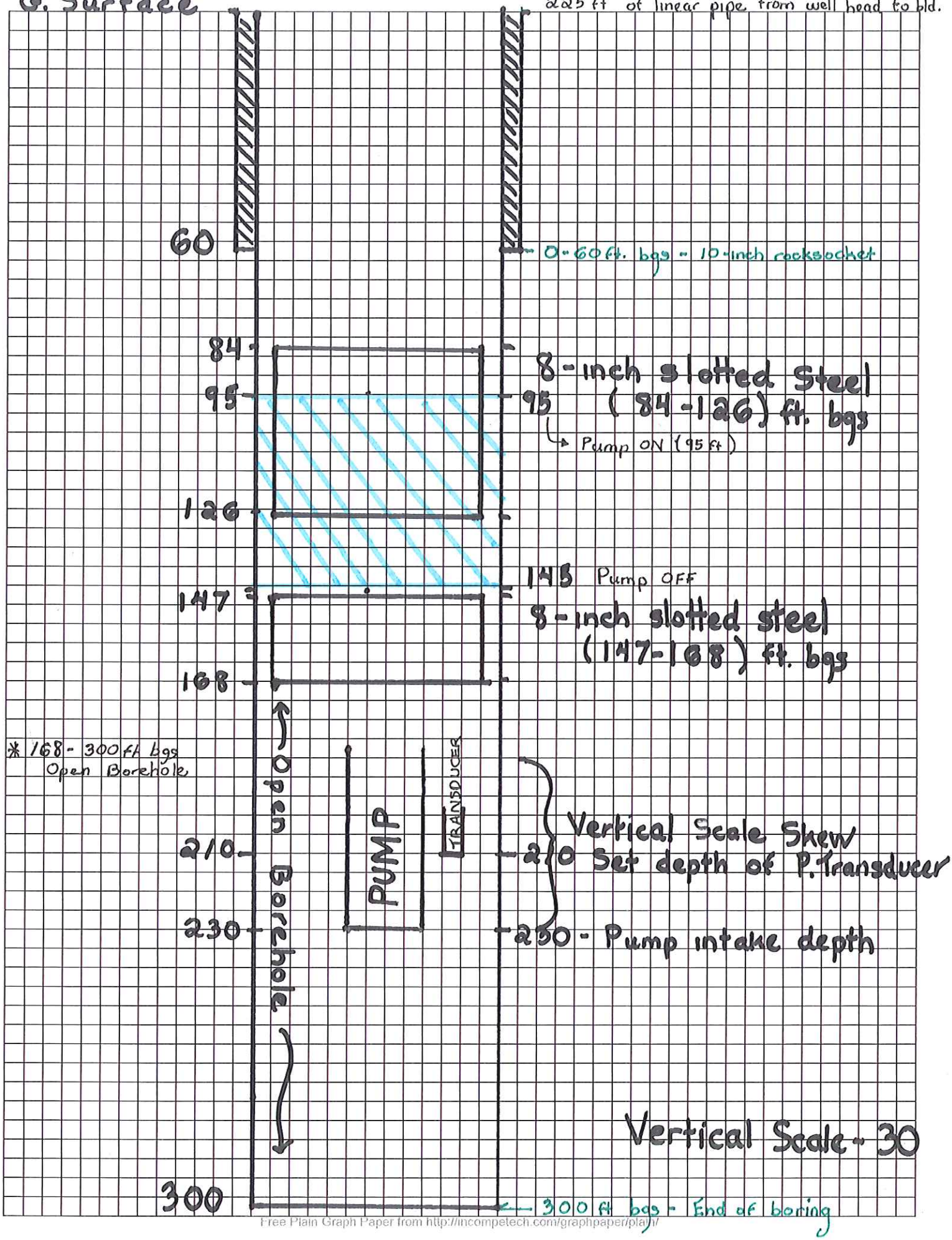
Air sample point

Water sample point



APPENDIX C

RECOVERY WELL RW-1 CONSTRUCTION DETAILS



Log of Boring: MW-15B (RW-1)
Date: 01/26/01
Date(s) Drilled: 10/26,11/11,11/12,12/18,12/19/00
Boring Depth: 300'
Boring Diameter: 14"/10"
First Water Depth: 28'/60'
Bedrock Depth: 40'
Elevation: NA
Number of Samples: None collected
Logged By: AJA

Client: Sequa Corporation
Project Name: Former Chromalloy Facility
Project Number: 1166
Location: West Nyack, NY

Driller: Samuel Stothoff Co., Inc.
Drill Rig: Ingersoll-Rand T4W
Drill Method: Wet rotary air hammer
Sampling Method: None
Page: 1 of 4

Depth (feet bgs)	Sample Number	Sample Interval	Recovery	Blow Counts	Time	PID Units	Lithological Description	Symbol	Well/Point Construction	Comments
0							Ground Surface			
2							0'-0.25' Grass, roots and topsoil.			
4							0.25'-8' Red brown medium to coarse sand and gravel, some silty clay, damp.			Note: borehole cave-in at 38'. Drive temporary steel casing (14" diam.) to 40'.
6										
8										
10										
12							8'-16' Red brown silty clay, some fine to coarse sand, moist.			
14										
16										
18										
20							16'-27' Red brown silty fine sand, rock fragments, firm, dry.			Set permanent steel casing (10" diam.) to 59', cement/ bentonite grout annulus via tremie pipe.
22										
24										
26										
28							27'-33' Red brown coarse sand and gravel, interbedded silt/clay, moist to wet, hard.			
30										
32										
34							33'-36' As above, less silt and clay, wet, softer.			Note: open borehole obstructed by cave-in at various depths. Drive 8" diam. steel casing and slotted casing to 168' to keep borehole open.
36										
38										
40							36'-40' Dark red brown weathered rock, some large gravel and coarse sand, wet, very hard.			
42										
44										
46							40'-50' Red brown weathered bedrock, sandy.			
48										
50										
52							50'-59' Red brown sandstone, soft to firm.			Slotted casing is at 84'-126' and 147'-168'. 8" casing is welded at top of 10" casing.
54										
56										
58										
60							59'-63' Red brown fine sandstone and large fracture zone.			
62										
64										
66							63'-70' As above, some fracturing, coarse grained.			
68										
70										
72							70'-75' Interbedded sandstone/shale.			
74										
76										

Log of Boring: MW-15B (RW-1)

Date: 01/26/01
Date(s) Drilled: 10/26,11/11,11/12,12/18,12/19/00
Boring Depth: 300'
Boring Diameter: 14"/10"
First Water Depth: 28'/60'
Bedrock Depth: 40'
Elevation: NA
Number of Samples: None collected
Logged By: AJA

Client: Sequa Corporation
Project Name: Former Chromalloy Facility
Project Number: 1166
Location: West Nyack, NY

Driller: Samuel Stothoff Co., Inc.
Drill Rig: Ingersoll-Rand T4W
Drill Method: Wet rotary air hammer
Sampling Method: None

Depth (feet bgs)	Sample Number	Sample Interval	Recovery	Blow Counts	Time	PID Units	Lithological Description	Symbol	Well/Point Construction	Comments
77							75'-81' As above, sandstone medium to coarse grained.			
79										
81							81'-84' As above, harder.			
83										
85							84'-90' As above, softer.			
87										
89										
91							90'-93' Red brown sandstone.			
93										
95							93'-102' As above, fracture zone.			
97										
99										
101										
103										
105										
107										
109										
111										
113							102'-127' Red brown sandstone.			
115										
117										
119										
121										
123										
125										
127										
129							127'-133' As above, fracture zone.			
131										
133										
135							133'-146' Red brown sandstone, soft.			
137										
139										
141										
143										
145										
147							146'-148' As above, fracture zone.			
149										
151										

Log of Boring: MW-15B (RW-1)

Date: 01/26/01
Date(s) Drilled: 10/26,11/11,11/12,12/18,12/19/00
Boring Depth: 300'
Boring Diameter: 14"/10"
First Water Depth: 28'/60'
Bedrock Depth: 40'
Elevation: NA
Number of Samples: None collected
Logged By: AJA

Client: Sequa Corporation
Project Name: Former Chromalloy Facility
Project Number: 1166
Location: West Nyack, NY

Driller: Samuel Stothoff Co., Inc.
Drill Rig: Ingersoll-Rand T4W
Drill Method: Wet rotary air hammer
Sampling Method: None

Depth (feet bgs)	Sample Number	Sample Interval	Recovery	Blow Counts	Time	PID Units	Lithological Description	Symbol	Well/Point Construction	Comments
153 155 157 159 161 163 165 167 169							148'-170' Red brown sandstone.			
171 173 175 177 179							170'-179' As above, fracture zone.			
181 183 185 187 189							179'-190' Red brown sandstone.			
191 193 195 197 199 201 203 205 207 209 211 213 215 217 219 221 223 225 227							190'-235' Gray sandstone with siltstone interbeds.			

Log of Boring: MW-15B (RW-1)

Date: 01/26/01
Date(s) Drilled: 10/26,11/11,11/12,12/18,12/19/00
Boring Depth: 300'
Boring Diameter: 14"/10"
First Water Depth: 28'/60'
Bedrock Depth: 40'
Elevation: NA
Number of Samples: None collected
Logged By: AJA

Client: Sequa Corporation
Project Name: Former Chromalloy Facility
Project Number: 1166
Location: West Nyack, NY

Driller: Samuel Stothoff Co., Inc.
Drill Rig: Ingersoll-Rand T4W
Drill Method: Wet rotary air hammer
Sampling Method: None

Depth (feet bgs)	Sample Number	Sample Interval	Recovery	Blow Counts	Time	PID Units	Lithological Description	Symbol	Well/Point Construction	Comments
228										
230										
232										
234										
236							235'-240' As above, fracture zone.			
238										
240										
242										
244										
246										
248										
250										
252										
254										
256										
258										
260										
262										
264							240'-290' Gray sandstone, some shale/siltstone interbeds.			
266										
268										
270										
272										
274										
276										
278										
280										
282										
284										
286										
288										
290										
292							290'-300' Gray shale/siltstone.			
294										
296										
298										
300										
302							End of Boring			

Log of Boring: MW-15B (RW-1)

Date: 01/26/01
Date(s) Drilled: 10/26,11/11,11/12,12/18,12/19/00
Boring Depth: 300'
Boring Diameter: 14"/10"
First Water Depth: 28'/60'
Bedrock Depth: 40'
Elevation: NA
Number of Samples: None collected
Logged By: AJA

Client: Sequa Corporation
Project Name: Former Chromalloy Facility
Project Number: 1166
Location: West Nyack, NY

Driller: Samuel Stothoff Co., Inc.
Drill Rig: Ingersoll-Rand T4W
Drill Method: Wet rotary air hammer
Sampling Method: None
Page: 1 of 4

Depth (feet bgs)	Sample Number	Sample Interval	Recovery	Blow Counts	Time	PID Units	Lithological Description	Symbol	Well/Point Construction	Comments
0							Ground Surface			
2							0'-0.25' Grass, roots and topsoil.			
4							0.25'-8' Red brown medium to coarse sand and gravel, some silty clay, damp.			Note: borehole cave-in at 38'. Drive temporary steel casing (14" diam.) to 40'.
6										
8										
10										
12							8'-16' Red brown silty clay, some fine to coarse sand, moist.			
14										
16										
18										
20							16'-27' Red brown silty fine sand, rock fragments, firm, dry.			Set permanent steel casing (10" diam.) to 59', cement/ bentonite grout annulus via tremie pipe.
22										
24										
26										
28							27'-33' Red brown coarse sand and gravel, interbedded silt/clay, moist to wet, hard.			
30										
32										
34							33'-36' As above, less silt and clay, wet, softer.			Note: open borehole obstructed by cave-in at various depths. Drive 8" diam. steel casing and slotted casing to 168' to keep borehole open.
36										
38							36'-40' Dark red brown weathered rock, some large gravel and coarse sand, wet, very hard.			
40										
42										
44										
46							40'-50' Red brown weathered bedrock, sandy.			
48										
50										
52							50'-59' Red brown sandstone, soft to firm.			Slotted casing is at 84'-126' and 147'-168'. 8" casing is welded at top of 10" casing.
54										
56										
58										
60							59'-63' Red brown fine sandstone and large fracture zone.			
62										
64							63'-70' As above, some fracturing, coarse grained.			
66										
68										
70										
72							70'-75' Interbedded sandstone/shale.			
74										
76										

Log of Boring: MW-15B (RW-1)

Date: 01/26/01
Date(s) Drilled: 10/26,11/11,11/12,12/18,12/19/00
Boring Depth: 300'
Boring Diameter: 14"/10"
First Water Depth: 28'/60'
Bedrock Depth: 40'
Elevation: NA
Number of Samples: None collected
Logged By: AJA

Client: Sequa Corporation
Project Name: Former Chromalloy Facility
Project Number: 1166
Location: West Nyack, NY

Driller: Samuel Stothoff Co., Inc.
Drill Rig: Ingersoll-Rand T4W
Drill Method: Wet rotary air hammer
Sampling Method: None
Page: 2 of 4

Depth (feet bgs)	Sample Number	Sample Interval	Recovery	Blow Counts	Time	PID Units	Lithological Description	Symbol	Well/Point Construction	Comments
77							75'-81' As above, sandstone medium to coarse grained.			
79										
81										
83							81'-84' As above, harder.			
85										
87							84'-90' As above, softer.			
89										
91							90'-93' Red brown sandstone.			
93										
95							93'-102' As above, fracture zone.			
97										
99										
101										
103							102'-127' Red brown sandstone.			
105										
107										
109										
111										
113										
115										
117										
119										
121										
123										
125										
127							127'-133' As above, fracture zone.			
129										
131										
133							133'-146' Red brown sandstone, soft.			
135										
137										
139										
141										
143										
145										
147							146'-148' As above, fracture zone.			
149										
151										

Log of Boring: MW-15B (RW-1)

Date: 01/26/01
Date(s) Drilled: 10/26,11/11,11/12,12/18,12/19/00
Boring Depth: 300'
Boring Diameter: 14"/10"
First Water Depth: 28'/60'
Bedrock Depth: 40'
Elevation: NA
Number of Samples: None collected
Logged By: AJA

Client: Sequa Corporation
Project Name: Former Chromalloy Facility
Project Number: 1166
Location: West Nyack, NY

Driller: Samuel Stothoff Co., Inc.
Drill Rig: Ingersoll-Rand T4W
Drill Method: Wet rotary air hammer
Sampling Method: None

Depth (feet bgs)	Sample Number	Sample Interval	Recovery	Blow Counts	Time	PID Units	Lithological Description	Symbol	Well/Point Construction	Comments
153							148'-170' Red brown sandstone.			
155										
157										
159										
161										
163										
165										
167										
169										
171							170'-179' As above, fracture zone.			
173										
175										
177										
179							179'-190' Red brown sandstone.			
181										
183										
185										
187										
189										
191							190'-235' Gray sandstone with siltstone interbeds.			
193										
195										
197										
199										
201										
203										
205										
207										
209										
211										
213										
215										
217										
219										
221										
223										
225										
227										

Log of Boring: MW-15B (RW-1)

Date: 01/26/01
Date(s) Drilled: 10/26,11/11,11/12,12/18,12/19/00
Boring Depth: 300'
Boring Diameter: 14"/10"
First Water Depth: 28'/60'
Bedrock Depth: 40'
Elevation: NA
Number of Samples: None collected
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Client: Sequa Corporation
Project Name: Former Chromalloy Facility
Project Number: 1166
Location: West Nyack, NY

Driller: Samuel Stothoff Co., Inc.
Drill Rig: Ingersoll-Rand T4W
Drill Method: Wet rotary air hammer
Sampling Method: None
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Depth (feet bgs)	Sample Number	Sample Interval	Recovery	Blow Counts	Time	PID Units	Lithological Description	Symbol	Well/Point Construction	Comments
228										
230										
232										
234										
236							235'-240' As above, fracture zone.			
238										
240										
242										
244										
246										
248										
250										
252										
254										
256										
258										
260										
262							240'-290' Gray sandstone, some shale/siltstone interbeds.			
264										
266										
268										
270										
272										
274										
276										
278										
280										
282										
284										
286										
288										
290										
292							290'-300' Gray shale/siltstone.			
294										
296										
298										
300										
302							End of Boring			