2014 Annual Groundwater Collection and Treatment System Operation, Maintenance, and Monitoring Report

Former Lockheed Martin
French Road Facility
Utica, New York



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Abbreviations

CB	catch basin
cfm	cubic feet per minute
CVOCs	chlorinated volatile organic compounds
DAR	Division of Air Resources
ft	feet
GCTS	groundwater collection and treatment system
gpm	gallons per minute
HDPE	high-density polyethylene
HOA	hand-off-auto
hp	horsepower
in	inch
lb	pound
MH	manhole
mL	milliliters
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	operations and maintenance
OM&M	operation, maintenance, and monitoring
PLC	programmable logic controller
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RCP	Reinforced-concrete pipe
RL	reporting limits
SCFM	standard cubic feet per minute
SCH	schedule
SOP	standard operating procedure
SPDES	State Pollutant Discharge Elimination System
USEPA	United States Environmental Protection Agency
VOA	volatile organic analysis
VOCs	volatile organic compounds
WTC	water treatment chemical

1.0 INTRODUCTION

This *Groundwater Collection and Treatment System Operation, Maintenance, and Monitoring Report* was prepared by Stantec Consulting Services Inc. (Stantec) for Lockheed Martin Corporation (Lockheed Martin), in accordance with the DRAFT *Site Management Plan for the Solvent Dock Area* (Arcadis 2011) at the Former Lockheed Martin French Road Facility (herein referred to as the "Site") in Utica, New York (Figure 1). Work was performed in accordance with the October 3, 2008 "Order on Consent" (CO 6-20080321-5) issued by the New York State Department of Environmental Conservation (NYSDEC). This report summarizes the operation, maintenance, and monitoring (OM&M) of the groundwater collection and treatment system (GCTS) from January 1 through December 31, 2014. The data summary includes a review of influent and effluent system sampling, analysis of key operating parameters (e.g., flow rates, pressures, system run-time, and maintenance activities), and any modifications and recommendations related to continued system operation and monitoring.

2.0 GROUNDWATER COLLECTION AND TREATMENT SYSTEM

The GCTS is designed to collect groundwater contaminated with chlorinated volatile organic compounds (CVOCs) from the former Solvent Dock Area and former northern-perimeter ditch area and transport it to a treatment building where the CVOCs are removed by a low-profile air stripper. Following treatment, groundwater is discharged via gravity to the local municipal storm drain under a NYSDEC "State Pollutant Discharge Elimination System" (SPDES) permit (permit No. NY-0121894). The system operates automatically but requires periodic inspections and maintenance. An automated system operation log is sent daily via e-mail to project team members to verify operation. A more detailed explanation of the GCTS appears below.

Groundwater in the former Solvent Dock Area (MH-2 and MH-3) and former northern-perimeter ditch area (MH-1) is captured by separate buried, perforated pipelines and flows via gravity to collection manholes. Groundwater is then pumped (batch mode) from each manhole through subsurface double-walled pipelines to the GCTS building for treatment before being discharged to the local municipal stormwater collection system. The groundwater is treated with a low-profile air stripper, which removes the dissolved-phase CVOCs.

During air stripping, contaminated water enters the air stripper at the top and ambient air enters from the bottom. The groundwater flows over four trays in series where CVOCs are transferred from the aqueous phase (i.e., water) to the vapor phase (i.e., counter-current air stream). The VOC-containing air stream is treated using granular activated carbon before discharge to the atmosphere. A GCTS system layout Site plan is shown on Figure 2, and the GCTS process and instrumentation diagram record drawing showing sampling locations is provided in Appendix A.

2.1 MAJOR SYSTEM COMPONENTS

Major components of the system are as follows:

- MH-1: 6-ft diameter and 13-ft deep pre-cast concrete pumping-manhole equipped with the following components:
  - Two ¾ horsepower (hp) submersible pumps;
  - Five associated float-switches;
  - 2-in/4-in diameter, double-walled, high-density polyethylene (HDPE) discharge-piping; and
  - Gravity Collection Drain - 670 feet (ft) of 8-inch (in) diameter perforated HDPE pipe installed in a 4 to 6-ft deep, stone-filled collection trench located parallel to the former northern-perimeter ditch.
- MH-2: 6-ft diameter and 18-ft deep pre-cast concrete pumping-manhole equipped with the following components:
  - Two ¾ hp submersible pumps;

  - Five associated float-switches;
  - 2-in/4-in diameter, double-wall HDPE discharge piping; and
  - Gravity Collection Drain - 70 ft of 6-in diameter perforated HDPE-pipe installed in a 16-ft deep, stone-filled collection trench located adjacent to the former Solvent Dock area.

- MH-3: 6-ft diameter and 17-ft deep pre-cast concrete pumping-manhole equipped with the following components:
  - Two ¾ hp submersible pumps;
  - Five associated float-switches;
  - 2-in/4-in diameter, double-wall HDPE discharge piping; and
  - Gravity Collection Drain - 173 ft of 6-in diameter perforated HDPE-pipe installed in a 9 to 11-ft deep, stone-filled collection trench located adjacent to the facility stormwater drainage line within the former Solvent Dock area.

- Pre-Engineered Metal Building: A 24-ft 8-in by 20-ft pre-engineered metal treatment-building set on a concrete foundation and slab equipped with a secondary-containment dike and floor sump;
- Programmable Logic Controller (PLC) and motor control panels for the air stripper, duct heater, and manhole pumps;
- Air Stripper: Low-profile, stainless steel air stripper rated for a maximum flowrate of 120 gallons per minute (gpm);
- Liquid Phase Discharge: 60-ft of 4-in diameter schedule (SCH)-40 polyvinyl chloride (PVC) gravity-discharge pipe from the air stripper effluent to the local municipal stormwater collection and drainage system (30-in diameter reinforced-concrete pipe [RCP]);
- Duct Heater: Inline duct heater rated at 600 standard cubic feet per minute (SCFM);
- Vapor Phase Treatment Vessels: Two 1000-pound (lb) activated-carbon vessels operated in series that discharge the treated air stripper off-gas through an exhaust-duct made of PVC (interior) and stainless steel (exterior) that extends approximately 28-ft above the ground surface; and
- Chemical Feed System: Aries Chemical sequestering agent 2908 is injected into the influent groundwater stream for mineral deposit (scale) control using a LMI chemical feed pump model AA941-353 BI, equipped with a LMI Digi-Pulse Meter model FM-200 rated for 0.05-5.0 milliliter (ml) per stroke. Approval for the water treatment chemical [WTC] was received from NYSDEC on April 13, 2011. Usage of the WTC began on April 20, 2011.

Record drawings for the GCTS are included in Appendix A. System components are described in more detail in the *Operational, Maintenance, and Monitoring Manual* (OM&M Manual; Stantec 2014).

3.0 REMEDIAL OPERATIONAL OBJECTIVES

The overall remedial goal of GCTS operation is to reduce the potential for groundwater contaminated with CVOCs to infiltrate the facility's storm drainage system (Figure 2), which ultimately discharges to Nail Creek. The GCTS operational objectives are to:

- Maintain and operate the system continuously without significant downtime;
- Demonstrate the system's effectiveness in preventing infiltration of CVOC-contaminated groundwater into the facility storm drain;
- Demonstrate that the air stripper is removing CVOCs from the influent groundwater streams before being discharged into the local county storm drain system, in compliance with the Site SPDES permit;
- Demonstrate that vapor-phase discharge from the air stripper complies with NYSDEC Division of Air Resources (DAR-1); and
- Achieve the site-specific goal of 95 % mass removal of target CVOCs, which include Tetrachloroethene (PCE), Trichloroethene (TCE), 1,1-Dichloroethane (1,1-DCA), cis-1,2-Dichloroethene (cis-1,2-DCE), and trans-1,2,-Dichloroethene (trans-1,2-DCE), in the system vapor effluent.

The operational goals, as recommended in the 2013 OM&M annual report, were successfully achieved during the 2014 reporting period by performing the following activities:

- Monitored the GCTS operation remotely on a daily basis to review operating parameters and maximize runtime;
- Performed monthly physical system inspections to verify proper operation, and to perform required maintenance;
- Performed monthly system compliance sampling to demonstrate that the related CVOCs were being removed from the groundwater prior to discharge through the system effluent;
- Performed quarterly system OM&M, which included the following:
    - Collected stormwater samples from the onsite catch basins (CBs) to monitor for the presence of CVOCs.
    - Collected system pre-carbon (influent), mid-carbon, and post-carbon (effluent) vapor samples during each quarter to calculate mass removal efficiencies and to monitor the effluent discharge concentrations of site-related CVOCs.

4.0 OPERATION AND MAINTENANCE ACTIVITIES

The GCTS operational run time was approximately 98% (358 out of 365) days, with minor scheduled routine maintenance and/or operational interruptions due to system alarm conditions.

The system was inspected either by physical Site inspections, remote computer monitoring, and/or via review of the daily system operation e-mails during the reporting period. System operating parameters were recorded during monthly Site inspections and compliance sampling events. The GCTS operational summary is provided in Table 1.

4.1 DAILY ROUTINE SYSTEM INSPECTIONS

Daily remote system monitoring of the system was performed throughout the year. Monitoring included review of the daily system operational e-mails to confirm that the system was operational, that all system variables were within their allowable ranges, and that no alarm conditions were present.

4.2 MONTHLY ROUTINE SYSTEM INSPECTIONS

This section summarizes the activities completed during the operations and maintenance (O&M) monthly Site visits. These activities were recorded on the "Monthly O&M Checklists." The checklist forms were updated in April 2014. An updated electronic copy of the *OM&M Manual* was distributed to the project team, and the hard copy kept onsite was also updated. Copies of the updated blank forms are included herein in Appendix B, along with completed field forms.

Air Stripper:

- Observe the air stripper for visible leaks;
- Clean air stripper aeration trays and sump (as required);
- Observe the blower for proper operation;
- Inspect the air stripper trays via the glass door and record and note deposits; and
- Record the gauge pressure and level readings for the following:
  - Air stripper sump; and
  - Air stripper-sump water level.

Flow Meters:

- Observe the flow meters to ensure they are operating properly and clean them, as necessary; and
- Record the monthly and permanent totalizer readings.

Vapor Phase Equipment:

- Inspect the duct heater for proper operation;
- Record pre-duct heater and carbon vessel temperatures;
- Inspect the carbon vessels for signs of leaks; and
- Record pressures before the lead vessel, and between the lead and lag vessels.

Control Panels:

- Test hand-off-auto (HOA) switches for proper operation; and
- Test power and pump-run lights.

Water Treatment Chemical:

- Inspect chemical feed pump and associated tubing for any signs of leaks;
- Record and date remaining chemical level in drum; and
- Track chemical consumption and dosing rates.

Pumping Manhole Inspections:

- Check the HDPE double-walled pipe for flow entering the manhole from the outer containment pipe, which could indicate a discharge pipe leak;
- Check the floats to ensure they are hanging properly and unobstructed;
- Observe groundwater in the manhole for any unusual odors, water clarity, etc.; and
- If the pump(s) are running, listen for unusual sounds and inspect the discharge piping in the manhole for leaks.

Miscellaneous O&M:

- Observe all treatment-building piping for signs of leaks;
- Exercise MH-1, MH-2, and MH-3 influent ball valves to clean any mineral deposits in order to maintain full operational range of the valve;
- Check the building unit heaters and thermostats, adjust as necessary; and
- Inspect health and safety-related equipment and replace as necessary.

4.3 QUARTERLY SYSTEM O&M AND INSPECTIONS

This section describes activities completed during the O&M quarterly critical device testing. These activities were recorded on the "Monthly/Quarterly O&M Checklists" (attached in Appendix B). The system was temporarily turned on and off for several hours during each event in February, April, July, and October 2014 to perform critical-device testing. These devices were tested for proper operation as described in the *OM&M Manual* standard operating procedures

(SOPs). The results of each event are summarized below. Note that the First Quarter event, normally performed in January, was postponed until February to accommodate the transition from Arcadis to Stantec as Lockheed Martin's new Performing Contractor.

- February 5-6, 2014 – All critical devices passed.
- April 1-2, 2014 – All critical devices passed.
- July 8, 2014 – All critical devices passed.
- October 9, 2014 – All critical devices passed.

4.4 NON-ROUTINE OPERATION AND MAINTENANCE ACTIVITIES

The following non-routine system O&M activities were performed between January 1 and December 31, 2014:

- The MH-1 Pump 1 run light bulb/contact block and HOA switch, MH-1 panel light, and new fuse for discrete output #33 were repaired (by Arcadis) on February 11;
- The flow meter for manhole MH-2 was replaced on August 7 with an existing spare meter. A replacement spare meter was purchased in October.
- ConMed performed an excavation on an emergency basis to repair their fire protection system post indicator valve PIV-3. Stantec managed the groundwater pumped from the excavation. An estimated 1,850 gallons of water were pumped into a frac tank for temporary storage, and permission was obtained from NYSDEC (Region 6 Division of Water) to discharge the water to the GCTS treatment under the existing SPDES permit. An estimated 1,500 gallons of water were discharged to collection system manhole MH-1 on November17, 2014. The water was passed through a filtration unit prior to discharge to remove suspended solids. Water containing residual sediment was left in the tank and ultimately placed in drums for disposal.

4.5 ALARM CONDITIONS AND SYSTEM MODIFICATIONS

Several "fatal" alarm conditions occurred during 2014. A fatal alarm is one that causes system shutdown. The cause of each system alarm and corresponding corrective action are summarized in Table 1. Alarm logs and response sheets are provided in Appendix C. Below is a summary of fatal alarms and corrective actions including any system modifications that were made during 2014:

- January 15: Daily operation status email not received. System found offline. Site visit, restarted system and rebooted PLC.
- March 5: Process 44 (GCTS Bldg. Low Temperature); GCTS building door left open during cold weather (alarm trips at 45°F). Door closed and system restarted.
- May 7: System found in Manual Mode. Site visit, system restarted on May 12.

- June 28: Process 36 (Manhole MH-1 Low Level); Process 38 (Manhole MH-2 Low Level). Cause unknown but possibly related to ConMed electrical shutdown. Site visit, system restarted June 29.
- July 1: Process 41 (High Stripper Sump Pressure). Cause unknown – possibly related to manifold valve position adjustment made to regulate sump liquid level. System restarted remotely on July 1.

Several non-fatal alarms or system communication deficiencies were observed during the reporting period. Alarm Logs generated for each of these alarm situations are included in Appendix C. The following types of non-fatal alarms occurred:

- Lack of daily operational update email
- Lack of daily operational update email attachments
- Process 32 – Stripper sump low level
- Process 29/55 – Manhole and Aggregate low flow
- Process 30/31 – Manhole pump low flow
- Process 36/38 – Manhole Low Level
- Process 53 – Sequestering agent pump low flow

The lack of daily operational emails or missing daily operational email data attachments occurred several times in the first half of 2014. Stantec worked with EOS Research, the vendor/service provider for the PLC system during this time period in an attempt to resolve the problem. EOS made changes to the firmware used in operation of the PLC, but was not able to completely fix the problem. EOS contacted Verizon Communications who made additional changes to the communication system. Although missing attachments have been noted in the second half of 2014, the frequency of these occurrences has been significantly reduced, and overall communications with the PLC have remained relatively problem-free.

5.0 ANALYTICAL MONITORING ACTIVITIES

This section summarizes the monthly GCTS compliance sampling and monitoring activities completed during the reporting period.

5.1 SYSTEM EFFLUENT MONITORING

The treatment system discharges to an Oneida County storm drain under the terms of an SPDES permit (permit No. NY-0121894). As required by the SPDES permit, effluent grab-water samples were collected monthly from the treatment system. One effluent grab-sample was collected monthly from the treatment-system-effluent sampling-port SP-100 (designated by NYSDEC as "Outfall #2"), located on the 4-in diameter air stripper liquid phase effluent line. The location of sampling port SP-100 is shown on drawing M-1 in Appendix A.

Samples were collected in 40-ml volatile organic analysis (VOA) vials supplied by a New York State Department of Health (NYSDOH)-certified laboratory. The sampling protocol for the effluent sample is included in the *Site-Specific Quality Assurance Project Plan* (QAPP; Arcadis 2009b). The samples were shipped on the day of collection via overnight delivery to TestAmerica Laboratories, Inc. in Amherst, New York. One laboratory trip-blank accompanied each water sample, with the exception of the December sample when a trip blank was inadvertently omitted. All samples were analyzed for volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method 8260. The SPDES permit also requires monthly collection and analysis of a grab sample for pH. The pH is measured locally using a site-dedicated pH meter. The pH meter was replaced in October to ensure reliability of measurement.

The system-effluent samples contained no detectable concentrations of VOCs above their respective laboratory reporting limits (RL) (as shown in Table 2) during the reporting period.

The SPDES permit limits the system's effluent average daily discharge flow (over the course of a monthly reporting period) to 45 gpm. Effluent flow did not exceed this average during the reporting period. In addition, the pH recorded during the reporting period ranged from 8.1 to 8.4 standard units, and remained within the SPDES effluent limits of 6.5 to 8.5 standard units.

5.2 SYSTEM INFLUENT MONITORING

Influent-water samples were collected as part of quarterly monitoring activities in February, April, July, and October. Influent samples were collected from each influent-line (MH-1, MH-2, and MH-3) sampling-tap on the 2-in diameter influent lines before the influent water entered the air stripper. The sampling protocol and delivery method followed were identical to those for the SPDES compliance sampling. Complete system influent analytical sampling results are summarized in Table 3. The following is a summary of the primary contaminant concentrations for each manhole influent sample for each quarterly sampling event:

	2014 Manhole Influent Sample Results			
	February	**March**	**July**	**October**
Manhole MH-1				
1,1-DCA	5.8	3.3	3.3	6.5
cis-1,2-DCE	33.0	18.0	20.0	38.0
PCE	22.0	14.0	12.0	27.0
TCE	44.0	21.0	20.0	39.0
Manhole MH-2				
1,1-DCA	1.3	0.97J	2.1	2.6
cis-1,2-DCE	6.5	9.1	11	17
PCE	1.1	2.7	2.1	0.98
TCE	4.3	4.9	5.1	5.1
VC	<1.0	<1.0	<1.0	2.4
Manhole MH-3				
1,1-DCA	< 0.38	< 1.0	< 0.38	< 0.38
cis-1,2-DCE	2.6	2.0	2.6	2.5
PCE	37.0	30.0	41.0	33.0
TCE	15.0	10.0	17.0	17.0

Notes:

1. All results are expressed in micrograms per liter, or µg/L
2. "J" indicates estimated value.

5.3 STORMWATER MONITORING

As outlined in the *OM&M Manual*, quarterly stormwater samples were collected from three CB locations at the Site (identified as CB-1, CB-2, and CB-3; as shown on Figure 2). Note that because of a lack of water in the sewer line due to freezing conditions, the Quarter 1 catch basin samples could not be collected in February. Accordingly, collection of these samples was delayed until March 19, 2014 when warmer conditions prevailed and water was flowing through the basins. All samples were analyzed for volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method 8260.

The quarterly stormwater samples collected from the CBs contained no detectable concentrations of VOCs above their respective laboratory RLs (as shown in Table 4), with the exception of the April 3, 2014 sample from stormwater sampling location CB-3. This sample exhibited detectable concentrations of 1,1-DCA (0.42(J) µg/L) and PCE (0.83 µg/L). These detections were below the allowable SPDES permit effluent limits.

6.0 SYSTEM PERFORMANCE RESULTS

Operational data collected during monthly system-operation inspections are summarized in the following sections.

6.1 GROUNDWATER RECOVERY/EXTRACTED LIQUID FLOWRATE

The groundwater recovery/extraction-liquid flowrates for the reporting period are summarized in Table 5. These data include the average and cumulative recovered-groundwater and manhole-pump run-times. Total extracted-groundwater flow readings were collected from the flow-meters FT 101 (MH-1), FT 102 (MH-2) and FT 103 (MH-3). Total flow and recovery rates for the three system manholes are as follows:

Manhole #	Total Flow (gal)	Avg. Recovery Rate (gpm)
MH-1	3,157,678	6.0
MH-2	476,542	0.9
MH-3	1,364,307	2.6

The resulting total annual flow for the GCTS was approximately 4,998,527 gallons of groundwater. The total flows recorded correspond to an average recovery rate of approximately 9.5 gpm over the reporting period. This average recovery rate corresponds to an approximate 4 % decrease when compared to the 2013 rate of 9.9 gpm. The change in flow is within the expected variation of the system, due potentially to variations in precipitation and groundwater conditions over time.

6.2 AIR STRIPPER PERFORMANCE

Monthly air stripper performance data are summarized in Table 5. The air stripper effluent vapor flowrate was recorded during each monthly sampling event. This flowrate is calculated by converting the differential pressure measurement recorded by flow transmitter FT-106 (located post carbon vessels VPGAC-401 and 402) into a volumetric flow. The vapor flowrate ranged from 563 to 848 standard cubic feet per minute (scfm) during the reporting period; the average flow rate was approximately 695 scfm. The air stripper sump pressures ranged from 25.5 to 32.4 inches of water column (in. W.C.) during the reporting period.

6.3 AIR STRIPPER EMISSIONS

GCTS pre-carbon, mid-carbon and effluent vapor samples were collected quarterly. All samples were analyzed by TestAmerica's Burlington, Vermont facility. Samples were collected in Summa® canisters and analyzed per USEPA "Method TO-15" for VOCs.

Quarterly estimated mass removal rate data are summarized in Table 6. The GCTS removed an estimated 4.3 lbs. of total VOCs from groundwater during the reporting period. This value was calculated using the quarterly pre-carbon vapor analytical data, the average monthly air stripper effluent vapor flowrate, and an average blower runtime of 36%. This runtime reflects the percentage of the time the blower was actually operating and stripping VOCs from influent water. The overall system uptime for the reporting period was 98%. The estimated total VOC mass removal is most likely overestimated due to the fact that manhole MH-1, which has the highest influent concentration of VOCs, is always online during the time of the quarterly sample collection. VOC removal efficiency of the carbon vessels was tracked throughout the reporting period. Both cumulative and target VOC percent removal was calculated by comparing the quarterly vapor influent, mid-carbon, and post-carbon analytical results. As noted in Section 3.0, the site-specific goal for vapor phase treatment is a 95% mass removal of target VOCs. Percent removals calculated based on effluent results ranged from 99% to 76% during 2014. Carbon change-out was not performed in 2014. Due to the decreased removal efficiency observed in Q4, a carbon change-out will be conducted if the 2015 Q1 sampling results confirm the removal efficiency remains below 95% for target VOCs.

The VOC concentrations emitted in the air stripper (pre-carbon, mid-carbon, and post-carbon) were below the allowable annual-guideline concentration (AGC) values (as provided in NYSDEC DAR 1 tables) for each detectable compound. Short-term guideline concentration (SGC) values are not applicable as performance samples are only collected quarterly. Individual VOCs emitted and their estimated maximum allowable-mass flow-concentrations, as per NYSDEC DAR 1 guidance, are shown in Table 7.

6.4 WATER TREATMENT CHEMICAL MONITORING

The terms of the SPDES permit (permit no. NY0121894) for the system discharge require that the total volume of any WTC discharged during a permit year be reported to NYSDEC in the December Monthly Discharge Monitoring Report. Monthly WTC usage, dosing rates, and date of recording are summarized in Table 8.

The total amount of WTC (i.e., Sequestering Agent - Aries 2908) discharged through Outfall 002 during 2014 was approximately 631.6 lbs. The total amount of WTC discharged corresponds to an average dosing rate of 13.1 parts per million (ppm) over the reporting period.

6.5 STORMWATER MONITORING

As presented in Section 5.3, the quarterly stormwater samples contained no detectable concentrations of VOCs above their respective laboratory RLs (as shown in Table 4), with the exception of CB-3 during the April 2014 sample event. As noted above in Section 5.3, the detections were below the allowable SPDES permit effluent limits.

The general absence of constituents detected in the stormwater samples collected at the Site continues to indicate that the GCTS is operating as designed and preventing the migration of impacted groundwater into the stormwater system.

6.6 GROUNDWATER ELEVATION MEASUREMENTS

Groundwater elevation measurements are collected from Site monitoring wells and piezometers as part of the quarterly OM&M program. Groundwater data summaries were generated for Quarters 1 through 3; these were provided to NYSDEC. Quarter 4 data will be provided in the Annual Groundwater Report being generated concurrently with this report. Groundwater contour maps for Quarter1 through 4 are provided on Figures 3 through 6.

Groundwater elevations are generally consistent with historical measurements at the Site and identify the influence of the GCTS at the three collection trenches. Localized fluctuations exist, attributable to variations in subsurface conditions, including building construction, utility corridors, and operation of the GCTS. Measurements indicate general flow toward the south-southeast.

7.0 2014 GOALS AND RECOMMENDATIONS

The information presented in this report indicates that the systems will continue to operate as designed and outlined within the NYSDEC approved *Groundwater Collection and Treatment System 100% Design Work Plan* (Arcadis 2010), and *OM&M Manual*. The recommendations and action items planned for during the 2014 reporting period are described in the sections below.

7.1 GOALS

The GCTS 2015 remedial and operational goals will be unchanged from those noted in section 3.0. The operational data to be collected includes:

- GCTS influent-water samples will be collected quarterly during a routine monthly SPDES sampling event;
- Quarterly groundwater-elevation measurements will be collected at all accessible Site monitoring-wells and piezometers;
- Quarterly storm-water samples will be collected from the pipe running beneath the manufacturing building and traversing east towards the public storm-drain pipe. These samples will be collected at catch-basin locations CB-1, CB-2, and CB-3. Samples will be analyzed for VOCs by USEPA Method 8260 and collected and submitted to the laboratory in accordance with procedures outlined in the QAPP;
- Monthly effluent SPDES compliance samples, including tracking the WTC dosing rates;
- Continued demonstration that VOCs concentrations in the GCTS air stripper exhaust (i.e., post-carbon) remain below the NYSDEC DAR 1 guidance values before being discharged to the atmosphere;
- Continued tracking of the carbon performance in order to maintain the minimum 95% removal goal for target VOCs in the vapor effluent; and
- Daily review of GCTS operation email logs and prompt response to system alarms.

7.2 RECOMMENDATIONS

The following recommendations and action items are planned for implementation during the next reporting period (January through December 2015):

- Continued operation of the GCTS;
- Continued system compliance sampling, including monitoring the pH of the system effluent;
- Continued preventive maintenance and failure-mode-effects analyses to maintain system reliability;
- Modification of the *OM&M Manual* as needed if new system enhancements or modifications are made.

8.0 REFERENCES

Arcadis, 2014. 2013 Annual Groundwater Collection and Treatment System Operations, Maintenance, and Monitoring Report, Solvent Dock Area. March 2014.

Arcadis, 2012. Revised Tables of the Groundwater Collection and Treatment System Operations, Maintenance, and Monitoring Manual, Solvent Dock Area. January.

Arcadis, 2011. Remediation System Startup Checklist – Operational Readiness Review. April.

Arcadis, 2010. Groundwater Collection and Treatment System 100% Design Work Plan, Solvent Dock Area. February.

Arcadis, 2009a. Corrective Measures Study Report. March.

Arcadis, 2009b. Quality Assurance Project Plan. August.

Arcadis, 2011 DRAFT Site Management Plan. October.

Arcadis, 2008. Solvent Dock Area and West Lot Site Health and Safety Plan. November.

NYSDEC, 1998. Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June.

NYSDEC, 2008. Order on Consent Index Number CO 6-20080321-5. October 3.

NYSDEC 2014. Letter to Stantec approving discharge of water to GCTS. November 14.

Stantec, 2014. Health and Safety Plan, Site Activities for Remediation OM&M and Groundwater Monitoring, Former Lockheed Martin Facility, 525 French Road, Utica, New York. March 2014.

Stantec 2014 Groundwater Collection and Treatment System Operations, Maintenance, and Monitoring Manual, Solvent Dock Area. May.

Tables

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
June 1996	Historical data (pre- 2009) has not been included in this table.						
1/17/2009	1/17/09 8:25	1/17/09 9:34	0.05	45	High/low air temperature.	Low ambient air temperature.	Adjusted low temperature alarm setting from 40 to 32 F to account for low ambient temperature.
8/3/2009	7/31/09 9:58	8/3/09 14:38	3.2	40	Wall louver fault.	Power outage due to inclement weather.	Restart system and observe proper operation following storm event.
9/4/2009	9/1/09 15:09	9/4/09 12:47	2.9	NA	Power outage	Power outage due to inclement weather.	Restart system and observe proper operation following storm event.
2009 % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		6.1	357.86	98%			
1/25/2010	1/25/10 17:53	1/27/10 7:57	1.6	46/Other	Low Air Flow/System PLC left in manual mode accidentally	Blower influent damper/tray and/or demister pad fouled	Adjust blower damper/Restart system remotely
3/2/2010	3/2/10 17:55	3/3/10 11:31	0.7	42	High level air stripper sump.	Blower influent damper in need of adjustment following air stripper tray cleaning.	Damper adjusted to allow more air flow.
4/7/2010	4/7/10 12:00	4/7/10 18:00	0.3	NA	Quarterly System Testing	NA	NA
4/15/2010	4/15/10 8:00	4/15/10 19:30	0.5	NA	Annual Stripper Cleaning	NA	NA
4/22/2010	4/22/10 6:20	4/22/10 11:08	0.2	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
4/25/2010	4/25/10 19:08	4/26/10 9:39	0.6	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
4/27/2010	4/27/10 8:53	4/27/10 14:58	0.3	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
4/29/2010	4/29/10 16:35	4/30/10 7:41	0.6	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
5/28/2010	5/28/10 16:35	5/31/10 9:40	2.7	NA	Power outage	Power outage due to inclement weather. Electric meter damaged as a result.	Inspect system, temporarily bypass faulty E-meter, perform critical device inspection, restart system and monitor for proper operation.
6/1/2010	6/1/10 14:42	6/2/10 8:55	0.8	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
7/12/2010	7/12/10 16:00	7/16/10 14:31	3.9	0	MH-1 offline for testing phase, air stripper left in auto with MH-2 online.	NA	NA
11/2/2010	11/2/10 22:22	11/3/10 13:45	0.6	41	High Pressure in Air Stripper Sump.	Blower damper adjustment.	Adjust air stripper blower damper.
11/10/2010	11/10/10 11:42	11/10/10 20:23	0.4	48	Manual system shutdown/LOTO	Implementing GCTS system upgrades.	Restart system after completing work.
11/11/2010	11/11/10 9:52	11/11/10 16:21	0.3	48	Manual system shutdown/LOTO	Implementing GCTS system upgrades.	Restart system after completing work.
11/11/2010	11/11/10 16:37	11/11/10 18:49	0.1	41	High Pressure in Air Stripper Sump.	Blower damper adjustment.	Adjust air stripper blower damper.
11/11/2010	11/11/10 19:18	11/12/10 9:08	0.6	41	High Pressure in Air Stripper Sump.	Blower damper adjustment.	Adjust air stripper blower damper.
11/12/2010	11/12/10 9:18	11/12/10 12:43	0.1	41	High Pressure in Air Stripper Sump.	Blower damper adjustment.	Adjust air stripper blower damper.
11/12/2010	11/12/10 12:55	11/12/10 13:04	0.0	41	High Pressure in Air Stripper Sump.	Fouled air stripper trays.	Clean air stripper trays and adjust air stripper blower damper.
11/18/2010	11/18/10 10:23	11/18/10 19:22	0.4	48	Manual system shutdown/LOTO	Implementing GCTS system upgrades.	Restart system after completing work.
11/19/2010	11/19/10 9:44	11/19/10 17:06	0.3	40	Wall louver damper motor fault.	Power failure due to a system shutdown for system inspection during construction phase.	Restart system after inspection.

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
11/29/2010[3]	11/29/10 12:53	12/31/10 23:59	23.5	NA	Air Stripper taken permanently offline.	Implementing GCTS system upgrades.	Install temporary air stripper.
2010 % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		38.4	326.6	89%			
1/1/2011[4]	1/1/11 0:00	1/24/11 23:59	22.7	NA	Air Stripper taken permanently offline.	Implementing GCTS system upgrades.	Periodically operated system.
1/31/2011	1/31/11 4:30	1/31/11 16:02	0.5	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Restarted system remotely.
2/2/2011	2/2/11 7:09	2/2/11 11:21	0.2	42	High Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/8/2011	2/8/11 2:53	2/8/11 8:52	0.2	42	High Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/8/2011	2/8/11 13:59	2/8/11 19:11	0.2	46	High Pre-Carbon Temperature	Residual heat in duct heater raising pre-carbon temperature following blower/duct heater shutdown.	Modified programming so that duct heater shuts off 2 minutes prior to blower.
2/8/2011	2/8/11 19:51	2/9/11 8:17	0.5	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/11/2011	2/11/11 5:06	2/11/11 11:46	0.3	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/13/2011	2/13/11 18:01	2/17/11 16:03	3.9	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/19/2011	2/19/11 10:31	2/21/11 9:42	2.0	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/24/2011	2/24/11 0:08	2/24/11 8:47	0.4	47	Low Pre-Carbon Temperature	Following end-cycle of manhole pump down and 10 minute continuation of blower operation, air stream generated by blower with duct heater off causing pre-carbon temperature to drop.	Restart system.
2/26/2011	2/26/11 3:23	2/26/11 10:58	0.3	47	Low Pre-Carbon Temperature	Following end-cycle of manhole pump down and 10 minute continuation of blower operation, air stream generated by blower with duct heater off causing pre-carbon temperature to drop.	Restart system.
2/26/2011	2/26/11 13:46	2/28/11 10:22	1.9	47	Low Pre-Carbon Temperature	Following end-cycle of manhole pump down and 10 minute continuation of blower operation, air stream generated by blower with duct heater off causing pre-carbon temperature to drop.	Modified programming so that duct heater shuts off in parallel with blower and pre-carbon temperature alarms are ignored when blower is not operating.
3/14/2011	3/14/11 0:33	3/14/11 10:31	0.4	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/14/2011	3/14/11 23:53	3/15/11 9:14	0.4	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/20/2011	3/20/11 7:16	3/20/11 12:35	0.2	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/23/2011	3/23/11 6:47	3/23/11 11:42	0.2	42	High Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/26/2011	3/26/11 3:21	3/26/11 9:37	0.3	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/26/2011	3/26/11 21:38	3/29/11 9:52	2.5	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation. Will replace existing high level sensor with tethered float to allow wider operating range in sump.
6/11/2011	6/11/11 16:53	6/12/11 11:40	0.8	NA	Power outage	Power outage due to inclement weather.	Restart system after inspection.
6/12/2011	6/12/11 23:00	6/13/11 7:15	0.3	47	Low Pre-Carbon Temperature	Duct heater requires local reset following power outage therefore not operating.	Low temperature setpoint temporarily lowered until local restart could be initiated on 6/13/11.
7/9/2011	7/9/11 6:58	7/11/11 8:56	2.1	NA	Power outage	Power outage.	Restart system.
7/12/2011	7/12/11 22:13	7/13/11 12:53	0.6	47	Low Pre-Carbon Temperature	Duct heater requires local reset following power outage therefore not operating.	Duct heater locally reset.
11/21/2011	11/21/11 16:23	11/23/11 12:00	1.8	NA	PLC Reset to "Manual" for unknown reason, identified during remote login following no daily fax receipt.	System reset automatically, exact cause unknown. Suspect cause due to bad remote system reconfiguration due to faulty/interrupted remote connection.	Log into the system remotely and reconfigures the PLC with the latest GCTS File #17.
12/8/2011	12/8/11 10:06	12/9/11 21:00	1.5	46	High Pre-Carbon Temperature	Unknown	Monitor system and temperatures remotely.
12/11/2011	12/11/11 20:06	12/11/11 20:13	0.0	46	High Pre-Carbon Temperature	Unknown	Review datalogger file/site inspection to verify transmitter readings versus field gauge.
12/14/2011	12/12/11 1:17	12/12/11 9:49	0.4	45	High Air Flowrate	Potential drifting associated with transmitter calibration.	Adjust high flow alarm setpoint

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
12/13/2011	12/13/11 3:50	12/13/11 8:06	0.2	46	High Pre-Carbon Temperature	Potential drifting associated with transmitter calibration.	Adjust high temperature alarm setpoint
2011 % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		47	**348**	**88%**			
1/14/2012	1/14/12 19:46	1/15/12 8:10	0.5	32	Low water level in air stripper sump	Increased back pressure from air stripper trays	Temporarily adjust air stripper damper on 1/16/12. Clean air stripper on 1/26/12.
1/26/2012	1/25/12 11:06	1/26/12 13:54	1.1	NA	Annual Stripper Cleaning and float replacement	NA - Scheduled maintenance	NA
1/30/2012	1/30/12 20:03	1/31/12 8:59	0.5	32	Low water level in air stripper sump	Increased back pressure due to air stripper damper being left open too much.	Re-adjust air stripper blower damper on 2/2/12
2/6/2012	2/6/12 16:45	2/7/12 11:00	0.8	42	High water level in air stripper sump	The LSH-100 was tripped during a automated startup when MH-1 was called to pumped. The data logger indicated that the LSH-100 went into alarm several seconds after one of the pumps turned on. The high level alarm is most likely a result of the new level float being set with too short of tether during the initial install.	Manually drained enough water from the air stripper sump in order to clear (un-latch) the high level alarm. The length of the high level float tether was increased 3-inches.
3/7/2012	3/7/12 9:06	3/7/12 16:55	0.3	NA	System temporarily taken offline to complete the arc flash study field reconnaissance	NA	NA
4/16/2012	4/16/12 9:18	4/17/12 12:45	1.1	NA	System PLC/building power outage.	Power outage due to inclement weather.	Manually reset PLC UPS/battery backup and restart system. Will test alarm dial-out sequence in the event of a power outage.
4/23/2012	4/23/12 12:27	4/23/12 16:39	0.2	NA	Chris Davern onsite making modification to GCTS cfg file and to test UPS battery	GCTS cfg file was modified to make LSH-100 in the up position be a fatal alarm condition regardless of blower status. UPS battery backup tested successfully, UPS provided power to PLC for approx. 60 minutes.	NA
7/16/2012	7/16/12 5:57	7/16/12 12:12	0.3	47	Low temperature alarm for pre-VPGAC air stream.	Critical device testing activities conducted 7/13/12 resulted in occurrence of internal high temperature alarm for duct heater. Alarm requires local resetting of duct heater, which was not done on 7/13/12.	Mobilize field staff to site and manually reset duct heater high temperature alarm. Restart system.
7/17/2012	7/17/12 18:06	7/18/12 12:16	0.8	42	High water level in air stripper sump	The LSH-100 was tripped following an automated ending of a manhole pumping cycle (i.e., batch). No system adjustments (e.g., damper adjustment) made or observed drift in operational parameters (e.g., air stripper sump pressure).	Mobilize field staff and manually drop liquid level of air stripper sump so that tethered high float LSH-100 will drop into off position. Done by manually partially closing pre-VPGAC butterfly valve to raise air stripper sump pressure and lower air stripper sump elevation. Restart system. Opened damper slightly.
10/11/2012	10/11/12 6:15	10/11/12 13:49	0.3	45	Low/High Air Flowrate	Potential drifting associated with transmitter calibration.	Restart system.
10/12/2012	10/12/12 12:10	10/12/12 14:51	0.1	45	Low/High Air Flowrate	Potential drifting associated with transmitter calibration.	Inspect transmitter and pitot tube, restart system.
10/13/2012	10/13/12 5:37	10/14/12 18:01	1.5	45	Low/High Air Flowrate	Potential drifting associated with transmitter calibration.	Inspect transmitter and pitot tube, restart system.
10/16/2012	10/16/12 8:40	10/17/12 8:35	1.0	NA	Replacement of air stripper gaskets	NA	NA
10/30/2012	10/30/12 12:28	10/30/12 18:50	0.3	NA	Critical Device Testing	NA	NA

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
11/4/2012	11/4/12 3:37	11/5/12 20:44	1.7	45	Low and High air stripper air flow rates, FT-106.	4-20 mA signal drift from the pressure transmitter FT-106 to the PLC.	Log into system remotely on 11/5/12 at 20:44. Following an inspection of the PLC data logger files the system was restarted and monitored for proper operation. The air flow rate was noted at approximately 550-600 cfm with all three manholes online pumping at a total flow rate of 70 gpm with a corresponding air stripper sump pressure of ~32 in.W.C., which confirmed that sufficient air flow was flowing through the air stripper.
11/7/2012	11/7/12 5:03	11/7/12 9:23	0.2	45	Low and High air stripper air flow rates, FT-106.	4-20 mA signal drift from the pressure transmitter FT-106 to the PLC.	Following receiving the alarm again on 11/7/12 at 5:03 ARCADIS mobilized to site that morning at 9:08 to inspect the system. Following an inspection of the PLC and other major system components, and confirming that the system was operating as intended the Process 45 alarm was changed from a fatal to non-fatal. The system was restarted at 9:23.
12/26/2012	12/26/12 4:24	12/26/12 12:24	0.3	32	Low water level in air stripper sump	Increased back pressure due to air stripper damper being left open too much.	Restart system remotely, monitor for proper operation including flows, pressures, float levels, etc.
2012 % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		11.0	355.0	97%			
2/4/2013	2/4/13 9:00	2/6/13 18:00	2.4	NA	System taken offline to upgrade PLC with cellular modem.	NA	NA
2/11/2013	2/11/13 9:00	2/11/13 18:59	0.4	NA	System temporarily taken offline to complete the cellular modem upgrade.	NA	NA
11/30/2013	11/30/13 5:50	11/30/13 20:21	0.6	32	Low water level in air stripper sump	The LSL-100 was tripped during a automated system shutdown. The data logger indicated that the LSL-100 was toggling back and forth during the 10 minute blower shutdown mode and latched long enough (5 second set point) in the off position to trigger the alarm.	Restart system and monitor for normal operation.
12/17/2013	12/17/13 4:40	12/17/13 8:07	0.1	32	Low water level in air stripper sump	The LSL-100 was tripped during a automated system shutdown. The data logger indicated that the LSL-100 was toggling back and forth during the 10 minute blower shutdown mode and latched long enough (5 second set point) in the off position to trigger the alarm.	Restart system and monitor for normal operation.
12/25/2013	12/25/13 5:07	12/25/13 21:08	0.7	32	Low water level in air stripper sump	The LSL-100 was tripped during a automated system shutdown. The data logger indicated that the LSL-100 was toggling back and forth during the 10 minute blower shutdown mode and latched long enough (5 second set point) in the off position to trigger the alarm.	Restart system and monitor for normal operation.
2013 % Run Time Summary (through December 31)		**Days Offline**	**Days Online**	**% Run Time**			
		4.2	360.8	99%			

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
1/14/2014	1/15/14 3:15	1/15/14 11:12	0.3	NA	Daily system operational status email not received.	Unknown - PLC processor not responding.	Reboot the PLC and restart system and monitor for normal operation.
3/5/2014	3/5/14 7:39	3/5/14 9:10	0.1	44	Building Low Temperature	Prolonged opening of overhead door cooled building temperature.	Temperature returned to normal and system restarted.
1st Quarter (2014) % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		0.4	89.6	100%			
5/7/2014	5/7/14 9:20	5/12/14 9:00	5.0	Manual	System was in manual mode	System was inadvertently switched to manual mode during a site visit and rendered the system inoperative.	System was restarted remotely in AUTO mode as soon as issue was found.
6/28/2014	6/28/14 7:31	6/29/14 13:00	1.2	36/38	Power loss to system building	Planned ConMed electrical shutdown	Could not restart system remotely - Site visit made and system was restarted manually.
2nd Quarter (2014) % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		6.2	84.8	93%			
7/1/2014	7/1/14 20:03	7/1/14 21:40	0.1	Process 41	High Air Stripper Sump Level	Butterfly valve closed on carbon manifold to increase pressure in air stipper sump and keep the sump level down.	System was restarted remotely in AUTO mode.
3rd Quarter (2014) % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		0.1	91.9	99.9%			
4th Quarter (2014) % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		0.0	92.0	100%			
2014 % Run Time Summary (through December 31)		**Days Offline**	**Days Online**	**% Run Time**			
		6.7	358.3	98%			

Notes:

1. Table does not include brief (less than 3 hours [0.1 days]) system shutdowns for routine operation and maintenance activities.

2. Table does not include non-fatal alarms (i.e. low liquid flow, low air flow, etc.) observed during the reporting period.

3. Between 11/29/10 and 12/31/10, temporary system was operational approximately 10 hours (7AM to 5PM) per weekday excluding 12/24/10, 12/30/10, and 12/31/10. System offline for nights and weekends due to lack of safety controls/interlocks and freezing weather conditions.

4. Between 1/1/11 and 1/24/11, the upgraded system was operated on the following dates: 1/13, 1/14, 1/17, 1/18 and 1/20. An average daily run time of 6 hours has been estimated for those dates.

Table 2. Groundwater Collection and Treatment System Effluent Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/L)	SPDES Effluent Limitations (ug/L)	1/8/2009	2/5/2009	3/4/2009	4/1/2009	5/5/2009	6/2/2009	7/1/2009	8/14/2009	9/4/2009	10/9/2009	11/4/2009	12/11/2009	1/12/2010	2/3/2010	3/3/2010	4/7/2010	5/5/2010	6/3/2010	7/8/2010	8/5/2010	9/7/2010	10/6/2010	11/10/2010	12/22/2010
1,1,1-Trichloroethane	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 1.0	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichlorobenzene	10	< 1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
cis-1,2-Dichloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Toluene	5	< 1.0	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60
trans-1,2-Dichloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Trichloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	**0.69**	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, total	15	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
pH (S.U.)[2]	**8.5**	**8.36**	**7.31**	**7.10**	**7.47**	**7.61**	**7.43**	**7.00**	**7.08**	**7.84**	**7.07**	**7.04**	**7.13**	**8.13**	**8.51**	**8.51**	**8.53**	**8.62[4]**	**7.19**	**8.5**	**8.1**	**8.3**	**7.8**	**8.1**	**8.0**
Volatile Organic[1] Compounds (µg/L)	**SPDES Effluent Limitations (ug/L)**	**1/28/2011**	**2/23/2011**	**3/22/2011**	**4/5/2011**	**5/12/2011**	**6/2/2011**	**7/7/2011**	**8/11/2011**	**9/8/2011**	**10/11/2011**	**11/1/2011**	**12/1/2011**	**1/26/2012**	**2/9/2012**	**3/1/2012**	**4/5/2012**	**5/1/2012**	**6/7/2012**	**7/12/2012**	**8/15/2012**	**9/11/2012**	**10/17/2012**	**11/8/2012**	**12/6/2012**
1,1,1-Trichloroethane	10	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0
o-Xylene	-	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36
Toluene	5	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Trichloroethene	10	< 0.46	**0.47**	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 0.90	< 1.0	< 1.0
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0
pH (S.U.)[2]	**8.5**	8.1	**8.2**	**8.1**	**8.1**	**6.9**	**6.8**	**8.1**	**8.2**	**7.9**	**7.8**	**7.8**	**7.7**	**7.9**	**7.9**	**7.9**	**7.1**	**7.9**	**8.2**	**7.8**	**8.1**	**8.1**	**8.4**	**8.2**	**8.2**
Volatile Organic[1] Compounds (µg/L)	**SPDES Effluent Limitations (ug/L)**	**1/16/2013**	**2/7/2013**	**3/5/2013**	**4/24/2013**	**5/9/2013**	**6/12/2013**	**7/11/2013**	**8/8/2013**	**9/10/2013**	**10/22/2013**	**11/5/2013**	**12/3/2013**	**1/23/2014**	**2/6/2014**	**3/4/2014**	**4/3/2014**	**5/5/2014**	**6/13/2014**	**7/10/2014**	**8/7/2014**	**9/3/2014**	**10/9/2014**	**11/5/2014**	**12/3/2014**
1,1,1-Trichloroethane	10	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 1.0	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 1.0	< 0.38	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 1.0	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 1.0	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 1.0	< 0.84	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 1.0	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 1.0	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 1.0	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	**0.88**	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 1.0	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 1.0	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0
o-Xylene	-	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 1.0	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 1.0	< 0.36	< 0.36	< 0.36
Toluene	5	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 1.0	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1.0	< 0.90	< 0.90	< 0.90
Trichloroethene	10	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	**1.1**	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 1.0	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, total	15	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0
pH (S.U.)[2]	**8.5**	**7.9**	**8.2**	**8.2**	**8.0**	**8.2**	**8.0**	**8.0**	**8.1**	**8.1**	**8.0**	**8.1**	**8.1**	**8.1**	**8.1**	**8.4**	**8.3**	**8.4**	**8.4**	**8.2**	**8.3**	**8.1**	**8.2**	**8.4**	**8.2**

Notes:

1. Analyzed using United States Environmental Protection Agency (USEPA) Method 8260.
2. Analyzed in field.

BOLD indicates detected concentrations.

Definitions:

< - less than laboratory detection limit listed
- No Standard
NS - Not Sampled For
mg/L - milligrams per liter
S.U. - Standard Units
µg/L - micrograms per liter

Table 3. Groundwater Collection and Treatment System Influent Groundwater Concentrations, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/L)	MH-1																						
	2/4/2009	1/12/2010	4/7/2010	7/8/2010	10/6/2010	12/22/2010	2/23/2011	4/5/2011	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/17/2012	1/15/2013	4/24/2013	7/11/2013	10/22/2013	2/6/2014	4/4/2014	7/10/2014	10/9/2014	1/8/2015
1,1,1-Trichloroethane	< 1.0	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 1.0	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	**8.4**	**9**	**6**	**6**	**6.2**	**3.6**	**4.2**	**2.7**	**8.5**	**5.9**	**4.9**	**8.5**	**10**	**8**	**3.5**	**5.4**	**4.2**	**5.9**	**5.8**	**3.3**	**3.3**	**6.5**	**1.7**
1,2-Dichlorobenzene	< 1.0	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 1.0	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 1.0	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 1.0	< 0.84	< 0.84	< 0.84
Benzene	< 1.0	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 1.0	< 0.41	< 0.41	< 0.41
Chlorobenzene	< 1.0	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 1.0	< 0.75	< 0.75	< 0.75
Chloroethane	**0.70 J**	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 1.0	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	**39**	**44**	**28**	**42**	**35**	**21**	**30**	**19**	**43**	**33**	**28**	**39**	**56**	**43**	**21**	**28**	**24**	**36**	**33**	**18**	**20**	**38**	**15**
Ethylbenzene	< 1.0	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 1.0	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 1.0	< 0.76	< 0.76	< 0.76
Tetrachloroethene	**31**	**31**	**27**	**29**	**21**	**8.4**	**23**	**18**	**26**	**19**	**16**	**23**	**36**	**28**	**16**	**21**	**16**	**24**	**22**	**14**	**12**	**27**	**12**
Toluene	< 1.0	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 1.0	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	< 1.0	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.9	< 0.90	< 1.0	< 0.90	< 0.90	< 0.90
Trichloroethene	**64**	**51**	**55**	**49**	**33**	**11**	**57**	**27**	**57**	**29**	**26**	**52**	**66**	**41**	**23**	**36**	**24**	**32**	**44**	**21**	**20**	**39**	**19**
Vinyl Chloride	**0.50 J**	**0.41 J**	< 1.0	< 1.0	< 1.0	**0.99 J**	**1.3**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 1.0	< 0.90	< 0.90	< 0.90	< 1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, total	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 1.0	< 0.66	< 0.66	< 0.66	< 1	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0

Volatile Organic[1] Compounds (µg/L)	MH-2																						
	2/4/2009	1/12/2010	4/7/2010	7/8/2010	10/6/2010	12/22/2010	2/23/2011	4/5/2011[2]	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/17/2012	1/15/2013	4/24/2013	7/11/2013	10/22/2013	2/6/2014	4/4/2014	7/10/2014	10/9/2014	1/8/2015
1,1,1-Trichloroethane	< 1.0	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	-	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 1.0	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	**1.6**	**11**	**2**	**2.4**	**2.6**	**1.9**	**1.5**	**-**	**3.5**	**3**	**1.5**	**1.8**	**2.5**	**2.4**	**1.3**	**1.4**	**2**	**2.5**	**1.3**	**0.97 J**	**2.1**	**2.6**	**1.2**
1,2-Dichlorobenzene	< 1.0	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	-	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 1.0	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	**-**	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 1.0	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	**-**	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 1.0	< 0.84	< 0.84	< 0.84
Benzene	< 1.0	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 1.0	< 0.41	< 0.41	< 0.41
Chlorobenzene	< 1.0	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	-	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 1.0	< 0.75	< 0.75	< 0.75
Chloroethane	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	**-**	< 0.32	< 0.32	< 0.32	< 0.32	< 0.35	< 0.35	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 1.0	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	**10**	**47**	**12**	**14**	**13**	**12**	**7.6**	**-**	**12**	**16**	**5.4**	**8.3**	**22**	**13**	**7.8**	**8.2**	**16**	**14**	**6.5**	**9.1**	**11**	**17**	**5.0**
Ethylbenzene	< 1.0	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	-	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 1.0	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	**-**	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 1.0	< 0.76	< 0.76	< 0.76
Tetrachloroethene	**3.8**	**28**	**3.5**	**9.3**	**7.5**	**4.5**	**2.6**	**-**	**2.8**	**3.6**	**1.6**	**1.7**	< 0.36	**0.76**	**2.5**	**2**	**3.9**	**2.5**	**1.1**	**2.7**	**2.1**	**0.98**	**2.2**
Toluene	< 1.0	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	-	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 1.0	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	**0.22 J**	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	**-**	< 0.90	< 0.90	< 0.90	< 0.90	**4.9**	**1.6**	< 0.90	< 0.90	< 0.90	< 0.9	< 0.90	< 1.0	< 0.90	**1.8**	< 0.90
Trichloroethene	**6.7**	**53**	**7.5**	**18**	**14**	**8.4**	**4.6**	**-**	**7.7**	**7.5**	**2.8**	**4.8**	**1.6**	**6.7**	**5.2**	**4.6**	**9.8**	**5.1**	**4.3**	**4.9**	**5.1**	**5.1**	**3.7**
Vinyl Chloride	**1.0 J**	< 1.0	**1.4**	**2.3**	**1.8**	**1.5**	**1.5**	-	**6.1**	**4.5**	**1.2**	**1.6**	**2.4**	**3.3**	< 0.90	**1.2**	**1.7**	**3.1**	< 1.0	< 1.0	< 1.0	**2.4**	< 1.0
Xylenes, total	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 1.0	< 0.66	< 0.66	< 0.66	< 1	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0

Volatile Organic[1] Compounds (µg/L)	MH-3																		
	1/28/2011	2/23/2011	4/5/2011	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/17/2012	1/15/2013	4/24/2013	7/11/2013	10/22/2013	2/6/2014	4/3/2014	7/10/2014	10/9/2014
1,1,1-Trichloroethane	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 1.0	< 0.82	< 0.82
1,1-Dichloroethane	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 1.0	< 0.38	< 0.38
1,2-Dichlorobenzene	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 1.0	< 0.79	< 0.79
1,3-Dichlorobenzene	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 1.0	< 0.78	< 0.78
1,4-Dichlorobenzene	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 1.0	< 0.84	< 0.84
Benzene	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 1.0	< 0.41	< 0.41
Chlorobenzene	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 1.0	< 0.75	< 0.75
Chloroethane	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 1.0	< 0.32	< 0.32
cis-1,2-Dichloroethene	**3.7**	**2.3**	**3.5**	**3.8**	**3.1**	**2.5**	**2.7**	**3.2**	< 0.81	**2.4**	**2.3**	**1.7**	**2.7**	**2.6**	**2.0**	**2.6**	**2.5**
Ethylbenzene	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 1.0	< 0.74	< 0.74
m-Xylene & p-Xylene	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1	< 1.0	< 2.0	< 1.0	< 1.0
o-Xylene	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 1.0	< 0.76	< 0.76
Tetrachloroethene	**1.2**	**1.1**	**12**	**21**	**23**	**33**	**49**	**49**	< 0.36	**44**	**48**	**32**	**35**	**37**	**30**	**41**	**33**
Toluene	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 1.0	< 0.51	< 0.51
trans-1,2-Dichloroethene	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.9	< 0.90	< 1.0	< 0.90	< 0.90
Trichloroethene	**4.2**	**5.6**	**9**	**19**	**13**	**16**	**17**	**22**	< 0.46	**14**	**14**	**13**	**16**	**15**	**10**	**17**	**17**
Vinyl Chloride	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, total	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1	< 1.0	< 1.0	< 1.0	< 1.0

Notes:

1. Analyzed using United States Environmental Protection Agency (USEPA) Method 8260.
2. Manhole MH-2 not sampled during Second Quarter 2011 event due to manhole being offline for pump replacement.

BOLD indicates detected concentrations.

Definitions:

< - less than laboratory detection limit listed

"-" - Analyte Not Analyzed For

J - Indicates concentration is estimated

µg/L - micrograms per liter

Table 4. Stormwater Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/L)	SPDES Effluent Limitations (µg/L)	CB-1																			
		1/12/2010	4/7/2010	7/8/2010	12/22/2010	2/23/2011	4/5/2011	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/16/2012	1/15/2013	4/24/2013	7/11/2013	10/22/2013	3/19/2014 [3]	4/3/2014	7/10/2014	10/9/2014
1,1,1-Trichloroethane	10	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 1.0	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.75	< 0.75	< 0.75	< 0.75	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 1.0	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 1.0	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 1.0	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 1.0	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 1.0	< 0.41	< 0.41
Chlorobenzene	-	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 1.0	< 0.75	< 0.75
Chloroethane	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 1.0	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.40	< 0.40	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 1.0	< 0.81	< 0.81
Ethylbenzene	5	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 1.0	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 1.0	< 0.76	< 0.76
Tetrachloroethene	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 1.0	< 0.36	< 0.36
Toluene	5	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 1.0	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1.0	< 0.90	< 0.90
Trichloroethene	10	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 1.0	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0

Volatile Organic[1] Compounds (µg/L)	SPDES Effluent Limitations (µg/L)	CB-2																			
		1/12/2010	4/7/2010	7/8/2010	12/22/2010	2/23/2011	4/5/2011	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/16/2012	1/15/2013	4/24/2013	7/11/2013	10/22/2013	3/19/2014 [3]	4/3/2014	7/10/2014	10/9/2014
1,1,1-Trichloroethane	10	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 1.0	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.75	< 0.75	< 0.75	< 0.75	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 1.0	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 1.0	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 1.0	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 1.0	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 1.0	< 0.41	< 0.41
Chlorobenzene	-	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 1.0	< 0.75	< 0.75
Chloroethane	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 1.0	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.40	< 0.40	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 1.0	< 0.81	< 0.81
Ethylbenzene	5	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 1.0	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 1.0	< 0.76	< 0.76
Tetrachloroethene	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 1.0	< 0.36	< 0.36
Toluene	5	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 1.0	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1.0	< 0.90	< 0.90
Trichloroethene	10	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 1.0	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0

Volatile Organic[1] Compounds (µg/L)	SPDES Effluent Limitations (µg/L)	CB-3																			
		1/12/2010	4/7/2010	7/8/2010	12/22/2010	2/23/2011	4/5/2011	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/16/2012	1/15/2013	4/24/2013	7/11/2013	10/22/2013	3/19/2014 [3]	4/3/2014	7/10/2014	10/9/2014
1,1,1-Trichloroethane	10	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 1.0	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.75	< 0.75	**0.85**	< 0.75	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	**0.64**	< 0.38	< 0.38	< 0.38	**0.42 J**	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 1.0	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 1.0	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 1.0	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 1.0	< 0.41	< 0.41
Chlorobenzene	-	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 1.0	< 0.75	< 0.75
Chloroethane	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 1.0	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.40	< 0.40	**1.9**	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 1.0	< 0.81	< 0.81
Ethylbenzene	5	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 1.0	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 1.0	< 0.76	< 0.76
Tetrachloroethene	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.36	**0.51**	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	**0.83**	< 1.0	< 0.36	< 0.36
Toluene	5	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 1.0	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1.0	< 0.90	< 0.90
Trichloroethene	10	< 0.46	< 0.46	**0.69**	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	**0.47**	< 0.46	< 0.46	< 0.46	< 1.0	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0

Notes:

1. Analyzed using United States Environmental Protection Agency (USEPA) Method 8260.
2. **BOLD** indicates concentrations above method detection limits.
3. Q1 2014 sampling delayed until March due to frozen conditions and lack of fluid during February.

Definitions:

< - less than laboratory detection limit listed

µg/L - micrograms per liter

Table 5. Groundwater Collection and Treatment System Flowrates, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Cumulative			MH-1			MH-2			MH-3			Air Stripper Parameters		
	Permanent Flow (gallons) [5]	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Permanent Flow (gallons) [5]	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Permanent Flow (gallons) [5]	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Permanent Flow (gallons) [5]	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Average Sump Pressure (in. W.C.)	Differential Pressure (in. W.C.)	Vapor Phase Flowrate (scfm)[3]
1/8/2009	51,642,496	547,845	10.3	43,857,473	468,600	8.8	7,785,023	79,245	1.5	-	-	-	14.0	1.0	1,398
2/5/2009	51,882,819	240,323	6.0	44,074,280	216,807	5.4	7,808,539	23,516	0.6	-	-	-	14.0	1.0	1,398
3/4/2009	52,290,566	407,747	10.5	44,426,462	352,182	9.1	7,864,104	55,565	1.4	-	-	-	15.0	1.0	1,398
4/1/2009	52,820,498	529,932	13.1	44,879,781	453,319	11.2	7,940,717	76,613	1.9	-	-	-	14.0	1.0	1,398
5/5/2009	53,224,271	403,773	8.2	45,236,249	356,468	7.3	7,988,022	47,305	1.0	-	-	-	14.0	1.0	1,398
6/2/2009	53,499,861	275,590	6.8	45,470,774	234,525	5.8	8,029,087	41,065	1.0	-	-	-	15.0	1.5	1,712
7/1/2009	53,736,159	236,298	5.7	45,666,782	196,008	4.7	8,069,377	40,290	1.0	-	-	-	15.0	1.5	1,712
8/14/2009	54,078,743	342,584	5.4	45,940,852	274,070	4.3	8,137,891	68,514	1.1	-	-	-	14.0	1.5	1,712
9/4/2009	54,230,373	151,630	5.0	46,060,707	119,855	4.0	8,169,666	31,775	1.1	-	-	-	14.0	1.5	1,712
10/9/2009	54,512,663	282,290	5.6	46,289,841	229,134	4.5	8,222,822	53,156	1.1	-	-	-	14.5	1.0	1,398
11/4/2009	54,750,788	238,125	6.4	46,494,959	205,118	5.5	8,255,829	33,007	0.9	-	-	-	14.5	1.0	1,398
12/11/2009	55,029,188	278,400	5.2	46,722,959	228,000	4.3	8,306,229	50,400	0.9	-	-	-	14.0	1.3	1,594
2009 Totals[1]	**-**	**3,934,537**	**7.3**	**-**	**3,334,086**	**6.2**	**-**	**600,451**	**1.1**	-	-	-	**14.3**	**1.2**	**1,519**
1/12/2010	55,368,138	338,950	7.4	47,041,049	318,090	6.9	8,327,089	20,860	0.5	-	-	-	18.0	1.2	1,531
2/3/2010	55,615,048	246,910	7.8	47,254,345	213,296	6.7	8,360,703	33,614	1.1	-	-	-	24.0	1.0	1,398
3/3/2010	55,830,985	215,937	5.4	47,442,614	188,269	4.7	8,388,371	27,668	0.7	-	-	-	11.0	1.7	1,823
4/7/2010	56,443,357	612,372	12.2	47,970,713	528,099	10.5	8,472,644	84,273	1.7	-	-	-	12.0	1.5	1,712
5/5/2010	56,705,454	262,097	6.5	48,202,863	232,150	5.8	8,502,591	29,947	0.7	-	-	-	17.5	2.7	2,297
6/3/2010	56,921,019	215,565	5.2	48,388,351	185,488	4.4	8,532,668	30,077	0.7	-	-	-	16.1	2.7	2,297
7/7/2010	57,256,158	335,139	6.8	48,646,601	258,250	5.3	8,609,557	76,889	1.6	-	-	-	15.5	2.4	2,166
8/5/2010	57,518,041	261,883	6.3	48,863,064	216,463	5.2	8,654,977	45,420	1.1	-	-	-	15.9	2.2	2,073
9/7/2010	57,797,649	279,608	5.9	49,095,255	232,191	4.9	8,702,394	47,417	1.0	-	-	-	18.5	1.9	1,927
10/5/2010	58,082,548	284,899	7.1	49,327,736	232,481	5.8	8,754,812	52,418	1.3	-	-	-	17.0	2.0	1,977
11/2/2010	58,456,895	374,347	9.3	49,643,060	315,324	7.8	8,813,835	59,023	1.5	-	-	-	22.0	0.9	1,289
12/22/2010	59,009,574	552,679	7.7	50,101,316	458,256	6.4	8,908,258	94,423	1.3	-	-	-	17.0	NA[2]	NA[2]
2010 Totals[2]	**-**	**3,980,386**	**7.4**	**-**	**3,378,357**	**6.2**	**-**	**602,029**	**1.1**	**-**	**-**	**-**	**17.0**	**1.8**	**1,863**
1/28/2011	59,088,966	79,392	1.5	50,142,913	41,597	0.8	8,930,851	22,593	0.4	15,202	-	-	25.9	-	718
2/23/2011	59,483,460	394,494	10.5	50,432,263	289,350	7.7	8,976,813	45,962	1.2	74,384	59182.0	1.6	26.0	-	742
3/22/2011	60,118,863	635,403	16.3	50,940,888	508,625	13.1	9,102,550	125,737	3.2	75,425	1041.0	0.0	26.2	-	681
4/5/2011	60,264,174	145,311	7.2	51,085,909	145,021	7.2	9,102,790	240	0.0	75,475	50	0.0	29.0	-	663
5/12/2011	61,189,715	925,541	17.4	51,609,588	523,679	9.8	9,161,683	58,893	1.1	418,444	342,969	9.2	26.5	-	553
6/2/2011	61,557,472	367,757	12.2	51,834,699	225,111	7.4	9,189,679	27,996	0.9	533,094	114,650	2.9	26.5	-	618
7/7/2011	61,975,516	418,044	8.3	52,075,707	241,008	4.8	9,227,668	37,989	0.8	672,141	139,047	2.8	25.2	-	636
8/11/2011	62,296,730	321,214	6.4	52,243,445	167,738	3.3	9,265,879	38,211	0.8	787,406	115,265	2.3	26.5	-	651
9/8/2011	62,817,398	520,668	12.9	52,508,569	265,124	6.6	9,342,539	76,660	1.9	966,290	178,884	4.4	28.5	-	609
10/11/2011	63,444,585	627,187	13.2	52,883,146	374,577	7.9	9,400,121	57,582	1.2	1,161,318	195,028	4.1	27.0	-	715
11/1/2011	63,764,975	320,390	10.6	53,071,145	187,999	6.2	9,435,095	34,974	1.2	1,258,735	97,417	3.2	27.0	-	784
12/1/2011	64,185,589	420,614	9.7	53,345,456	274,311	6.3	9,469,773	34,678	0.8	1,370,360	111,625	2.6	27.0	-	739
2011 Totals[2][5]	-	**5,176,015**	**10.4**	-	**3,244,140**	**6.5**	-	**561,515**	**1.1**	-	**1,355,158**	**2.7**	**26.8**	-	**676**
1/27/2012	64,972,202	786,613	9.6	53,871,038	525,582	6.4	9,542,467	72,694	0.9	1,558,697	188,337	2.3	32.2	-	745
2/9/2012	65,195,486	223,284	11.9	54,009,006	137,968	7.4	9,573,810	31,343	1.7	1,612,670	53,973	2.9	29.0	-	787
3/1/2012	65,448,455	252,969	8.4	54,180,412	171,406	5.7	9,596,526	22,716	0.8	1,671,517	58,847	1.9	29.0	-	766
First Quarter 2012	-	**1,262,866**	**9.6**	-	**834,956**	**6.4**	-	**126,753**	**1.0**	-	**301,157**	**2.3**	**30.1**	-	**766**
4/5/2012	65,853,255	404,800	8.0	54,447,552	267,140	5.3	9,635,004	38,478	0.8	1,770,699	99,182	2.0	27.0	-	740
5/1/2012	66,090,367	237,112	6.3	54,595,683	148,131	4.0	9,661,648	26,644	0.7	1,833,036	62,337	1.7	26.6	-	805
6/7/2012	66,591,098	500,731	9.4	54,904,479	308,796	5.8	9,710,985	49,337	0.9	1,975,634	142,598	2.7	27.4	-	752
Second Quarter 2012	-	**1,142,643**	**8.1**	-	**724,067**	**5.1**	-	**114,459**	**0.8**	-	**304,117**	**2.2**	**27.0**	-	**766**
7/12/2012	66,828,112	237,014	4.7	55,041,035	136,556	2.7	9,738,010	27,025	0.5	2,049,067	73,433	1.5	25.0	-	630
8/15/2012	67,068,471	240,359	4.9	55,163,445	122,410	2.5	9,766,492	28,482	0.6	2,138,534	89,467	1.8	27.7	-	701
9/11/2012	67,259,158	190,687	4.9	55,259,345	95,900	2.5	9,790,891	24,399	0.6	2,208,922	70,388	1.8	27.7	-	761
Third Quarter 2012	-	**668,060**	**4.8**	-	**354,866**	**2.6**	-	**79,906**	**0.6**	-	**233,288**	**1.7**	**26.8**	-	**697**
10/17/2012	67,568,957	309,799	6.0	55,424,161	164,816	3.2	9,830,240	39,349	0.8	2,314,556	105,634	2.0	26.2	-	677
11/8/2012	67,777,512	208,555	6.6	55,542,079	117,918	3.7	9,852,388	22,148	0.7	2,383,045	68,489	2.2	30.8	-	778
12/6/2012	67,979,019	201,507	5.0	55,665,689	123,610	3.1	9,874,745	22,357	0.6	2,438,585	55,540	1.4	29.3	-	934
Fourth Quarter 2012	-	**719,861**	**5.8**	-	**406,344**	**3.3**	-	**83,854**	**0.7**	-	**229,663**	**1.9**	**28.8**	-	**796**
2012 Totals	-	**3,793,430**	**7.1**	-	**2,320,233**	**4.3**	-	**404,972**	**0.8**	-	**1,068,225**	**2.0**	**28.2**	-	**756**
1/15/2013	68,601,819	622,800	10.8	56,064,192	398,503	6.9	9,937,367	62,622	1.1	2,600,260	161,675	2.8	29.6	-	830
2/7/2013	68,933,628	331,809	10.0	56,285,230	221,038	6.7	9,972,998	35,631	1.1	2,675,400	75,140	2.3	31.1	-	894
3/5/2013	69,250,256	316,628	8.5	56,490,599	205,369	5.5	10,000,253	27,255	0.7	2,759,404	84,004	2.2	28.7	-	836
First Quarter 2013	-	**1,271,237**	**9.9**	-	**824,910**	**6.4**	-	**125,508**	**1.0**	-	**320,819**	**2.5**	**29.8**	-	**853**
4/24/2013	69,990,978	740,722	10.3	56,960,249	469,650	6.5	10,083,948	83,695	1.2	2,946,781	187,377	2.6	27.7	-	715
5/9/2013	70,150,855	159,877	7.4	57,063,303	103,054	4.8	10,097,769	13,821	0.6	2,989,783	43,002	2.0	26.0	-	718
6/12/2013	70,634,036	483,181	9.9	57,352,931	289,628	5.9	10,154,228	56,459	1.2	3,126,877	137,094	2.8	25.5	-	635
Second Quarter 2013	-	**1,383,780**	**9.7**	-	**862,332**	**6.0**	-	**153,975**	**1.1**	-	**367,473**	**2.6**	**26.4**	-	**689**
7/11/2013	71,537,658	903,622	21.6	57,910,436	557,505	13.4	10,242,031	87,803	2.1	3,385,191	258,314	6.2	27.9	-	602
8/8/2013	71,875,374	337,716	8.4	58,109,657	199,221	4.9	10,279,795	37,764	0.9	3,485,922	100,731	2.5	28.0	-	633
9/10/2013	72,237,550	362,176	7.6	58,313,137	203,480	4.3	10,332,018	52,223	1.1	3,592,395	106,473	2.2	27.2	-	695
Third Quarter 2013	-	**1,603,514**	**12.4**	-	**960,206**	**7.4**	-	**177,790**	**1.4**	-	**465,518**	**3.6**	**27.7**	-	**643**
10/22/2013	72,683,219	445,669	7.4	58,574,976	261,839	4.3	10,387,447	55,429	0.9	3,720,796	128,401	2.1	28.0	-	763
11/5/2013	72,809,855	126,636	6.3	58,651,023	76,047	3.8	10,402,542	15,095	0.7	3,756,290	35,494	1.8	30.5	-	799
12/3/2013	73,139,690	329,835	8.2	58,855,332	204,309	5.1	10,439,113	36,571	0.9	3,845,245	88,955	2.2	31.0	-	702
Fourth Quarter 2013	-	**902,140**	**7.5**	-	**542,195**	**4.5**	-	**107,095**	**0.9**	-	**252,850**	**2.1**	**29.8**	-	**755**
2013 Totals	-	**5,160,671**	**9.9**	-	**3,189,643**	**6.1**	-	**564,368**	**1.1**	-	**1,406,660**	**2.7**	**28.4**	-	**735**
1/23/2014	73,923,345	783,655	10.7	59,358,620	503,288	6.9	10,527,204	88,091	1.2	4,037,521	192,276	2.6	32.4	-	771
2/6/2014	74,030,005	106,660	5.3	59,433,504	74,884	3.7	10,535,270	8,066	0.4	4,061,231	23,710	1.2	28.0	-	788
3/4/2014	74,323,569	293,564	7.8	59,644,595	211,091	5.6	10,556,036	20,766	0.6	4,122,938	61,707	1.6	28.0	-	848
First Quarter 2014	-	**1,183,879**	**9.0**	-	**789,263**	**6.0**	-	**116,923**	**0.9**	-	**277,693**	**2.1**	**29.5**	-	**802**
4/1/2014	74,817,439	493,870	12.2	59,967,227	322,632	8.0	10,598,933	42,897	1.1	4,251,279	128,341	3.2	27.0	-	821
5/5/2014	75,502,123	684,684	14.0	60,390,981	423,754	8.7	10,663,846	64,913	1.3	4,447,296	196,017	4.0	27.0	-	715
6/13/2014	76,112,994	610,871	10.9	60,788,558	397,577	7.1	10,724,198	60,352	1.1	4,600,238	152,942	2.7	25.5	-	656
Second Quarter 2014	-	**1,789,425**	**12.3**	-	**1,143,963**	**7.9**	-	**168,162**	**1.2**	-	**477,300**	**3.3**	**26.5**	-	**730**
7/8/2014	76,499,000	386,006	10.7	61,018,320	229,762	6.4	10,762,606	38,408	1.1	4,718,074	117,836	3.3	26.7	-	633
8/7/2014	76,854,057	355,057	8.2	61,236,646	218,326	5.1	10,792,351	29,745	0.7	4,825,060	106,986	2.5	26.4	-	630
9/3/2014	77,169,456	315,399	8.1	61,421,404	184,758	4.8	10,822,990	30,639	0.8	4,925,062	100,002	2.6	28.1	-	609
Third Quarter 2014	-	**1,056,462**	**8.9**	-	**632,846**	**5.4**	-	**98,792**	**0.8**	-	**324,824**	**2.8**	**27.1**	-	**624**
10/7/2014	77,458,482	289,026	5.9	61,596,858	175,454	3.6	10,850,636	27,646	0.6	5,010,988	85,926	1.8	26.0	-	563
11/5/2014	77,796,601	338,119	8.1	61,802,713	205,855	4.9	10,885,790	35,154	0.8	5,108,098	97,110	2.3	28.0	-	637
12/3/2014	78,138,217	341,616	8.5	62,013,010	210,297	5.2	10,915,655	29,865	0.7	5,209,552	101,454	2.5	29.0	-	674
Fourth Quarter 2014	-	**968,761**	**7.4**	-	**591,606**	**4.5**	-	**92,665**	**0.7**	-	**284,490**	**2.2**	**27.7**	-	**625**
2014 YTD Totals	-	**4,998,527**	**9.5**	-	**3,157,678**	**6.0**	-	**476,542**	**0.9**	-	**1,364,307**	**2.6**	**27.7**	-	**695**
Project Summary Totals	-	**27,043,566**	**8.7**	-	**18,624,137**	**6.0**	-	**3,209,877**	**1.0**	-	**5,194,350**	**2.6**	**27.8**	-	**710.7**

Notes:

1. 2009 Totals include data between 12/8/2008 and 12/11/2009.

2. Existing air stripper taken offline on 11/29/10 and temporary air stripper in operation through end of 2010 while system upgrades were being implemented. Current air stripper operated intermittently in January 2011 on the dates of 1/13, 1/14, 1/17, 1/18 and 1/20. Current air stripper brought online permanently in February 2011.

3. Prior to 2011, vapor phase flowrate calculated using the Air Velocity Measurement formula as provided in the Dwyer Instruments catalog. Differential pressure used in the blower intake pipe, and constants for temperature (70°F) and barometric pressure (29.92 in.Hg.) were assumed. Following the beginning of 2011, the vapor phase flowrate has been obtained from flow transmitter FT-106.

4. Manhole MH-2 offline for pump replacement from 3/22/11 to 4/20/11.

5. Data for Permanent Flow (gallons) retrieved from EOS Research ProView Totalizer Data File on PLC.

Definitions:

gpm - gallons per minute

In. W.C. - Inches of Water Column

cfm - cubic feet per minute

NA - Not applicable

Table 6. Vapor Phase Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/m³)	Pre-Carbon																																			
	1/28/2011	Q	2/23/2011	Q	4/5/2011	Q	7/7/2011	Q	10/12/2011	Q	1/26/2012	Q	4/5/2012	Q	7/12/2012	Q	10/17/2012	Q	1/15/2013	Q	4/24/2013	Q	7/11/2013	Q	10/23/2013	Q	2/7/2014	Q	4/4/2014	Q	7/10/2014	Q	10/9/2014	Q
1,1,1-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 1.6		< 11.00		< 2.20		< 4.40		< 1.10		< 2.20		< 3.30	
1,1,2,2-Tetrachloroethane	< 1.00		< 1.0		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 2.1		< 14.00		< 2.70		< 5.50		< 1.40		< 2.70		< 4.10	
1,1,2-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 1.6		< 11.00		< 2.20		< 4.40		< 1.10		< 2.20		< 3.30	
1,1-Dichloroethane	< 0.62		**18**		**19**		**71**		**41**		**38**		**49**		**150**		**44**		**46**		**36**		**28**		**44**		**28**		**15**		**25**		**49**	
1,1-Dichloroethene	< 0.60		< 0.60		< 0.60		**0.81**		**0.48**	J	<0.60		**0.97**		**1.2**		**0.87**		< 0.60		< 1.2		< 7.90		< 1.60		< 3.20		**0.39**	J	**0.39**	J	< 2.40	
1,2,4-Trichlorobenzene	< 1.10		< 1.1		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 5.6		< 37.00		< 7.40		< 15.00		< 3.70		< 7.40		< 11.00	
1,2,4-Trimethylbenzene	**1**		**4.6**		**1.6**		**1.3**		< 0.75		**0.5**	J	< 0.75		**1.8**		**0.9**		< 0.75		< 1.5		< 9.80		< 2.00		< 3.90		**0.20**	J	**0.35**	J	**0.59**	J
1,2-Dibromoethane	< 1.20		< 1.2		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 2.3		< 15.00		< 3.10		< 6.10		< 1.50		< 3.10		< 4.60	
1,2-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.8		< 12.00		< 2.40		< 4.80		< 1.20		< 2.40		< 3.60	
1,2-Dichloroethane	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 1.2		< 8.10		< 1.60		< 3.20		< 0.81		< 1.60		< 2.40	
1,2-Dichloropropane	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 1.4		< 9.20		< 1.80		< 3.70		< 0.92		< 1.80		< 2.80	
1,3,5-Trimethylbenzene	< 0.75		**1.5**		< 0.75		< 0.75		< 0.75		< 0.75		< 0.75		**0.65**	J	< 0.75		< 0.75		< 1.5		< 9.80		< 2.00		< 3.90		**0.069**	J	< 2.00		< 2.90	
1,3-butadiene	< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.66		< 4.40		< 0.88		< 1.80		< 0.44		< 0.88		< 1.30	
1,3-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.8		< 12.00		< 2.40		< 4.80		< 1.20		< 2.40		< 3.60	
1,4-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.8		< 12.00		< 2.40		< 4.80		< 1.20		< 2.40		< 3.60	
1,4-Dioxane	< 1.10		< 1.1		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 27		< 180.00		< 36.00		< 72.00		< 18.00		< 36.00		< 54.00	
2-Chlorotoluene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.6		< 10.00		< 2.10		< 4.10		< 1.00		< 2.10		< 3.10	
2,2,4-trimethylpentane	< 0.71		**0.76**		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		**0.31**	J	< 9.30		< 1.90		**1.9**	J	< 0.93		< 1.90		< 2.80	
4-ethyltoluene	**0.6**	J	**1.1**		< 0.75		< 0.75		< 0.75		< 0.75		< 0.75		**0.5**	J	< 0.75		< 0.75		< 1.5		< 9.80		< 2.00		< 3.90		< 0.98		< 2.00		< 2.90	
4-Isopropyltoluene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.6		< 11.00		< 2.20		< 4.40		< 1.10		< 2.20		< 3.30	
Acetone	**29**		**21**		**10**		**14**		**3.7**		**81**		**3.7**		**16**		**21**		**3.6**		**11**	J	**11**	J	**3.9**	J B	< 48.00		**5.4**	J	< 24.00		< 36.00	
Allyl chloride	< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 2.3		< 16.00		< 3.10		< 6.30		< 1.60		< 3.10		< 4.70	
Benzene	< 0.49		**1.5**		**0.91**		**0.39**	J	**0.75**		**1.2**		**0.42**	J	**0.65**		**0.32**	J	< 0.49		**0.62**	J	< 6.40		< 1.30		**1.2**	J	**0.32**	J	**0.18**	J	< 1.90	
Benzyl chloride	< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 1.6		< 10.00		< 2.10		< 4.10		< 1.00		< 2.10		< 3.10	
Bromodichloromethane	< 1.00		< 1.0		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 2.0		< 13.00		< 2.70		< 5.40		< 1.30		< 2.70		< 4.00	
Bromoform	< 1.60		< 1.6		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 3.1		< 21.00		< 4.10		< 8.30		< 2.10		< 4.10		< 6.20	
Bromomethane	< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 1.2		< 7.80		< 1.60		< 3.10		< 0.78		< 1.60		< 2.30	
Carbon disulfide	< 0.47		< 0.47		< 0.47		**0.32**	J	< 0.47		< 0.47		< 0.47		**1.3**		< 0.47		< 0.47		< 2.3		< 16.00		**0.47**	J	< 6.20		< 1.60		< 3.10		< 4.70	
Carbon tetrachloride	< 0.96		**0.77**	J	< 0.96		**0.9**	J	**0.38**	J	**0.38**	J	< 0.96		< 0.96		< 0.96		< 0.96		**0.49**		< 2.50		< 0.50		< 1.00		**0.40**		**0.51**		**0.53**	J
Chlorobenzene	< 0.70		**0.66**	J	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 1.4		< 9.20		< 1.80		< 3.70		< 0.92		< 1.80		< 2.80	
Chloroethane	< 0.40		**1.2**		< 0.40		< 0.40		**0.86**		<0.40		**1.3**		**1.2**		< 0.40		**0.64**		**0.94**	J	< 13.00		**1.5**	J	< 5.30		**0.49**	J	< 2.60		**0.69**	J
Chloroform	< 0.74		**5.7**		**10**		**8.5**		**1.3**		**1.8**		**0.94**		**1.9**		**1**		**0.55**	J	**0.41**	J	**1.8**	J	**0.57**	J	< 3.90		**0.43**	J	**3.0**		**2.0**	J
Chloromethane	**1.2**		**0.84**		< 0.31		< 0.31		**0.57**		< 0.31		**0.9**		< 0.31		< 0.31		< 0.31		**1.4**	J	**5.9**	J	**1.1**	J	< 4.10		**1.0**	J	**1.1**	J	< 3.10	
cis-1,2-Dichloroethene	< 0.60		**220**		**140**		**840**		**210**		**200**		**510**		**430**		**200**		**310**		**180**		**160**		**270**		**150**		**89**		**180**		**290**	
cis-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 1.4		< 9.10		< 1.80		< 3.60		< 0.91		< 1.80		< 2.70	
Cyclohexane	< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		**3.2**		< 6.90		< 1.40		**17**		< 0.69		< 1.40		< 2.10	
Dibromochloromethane	< 1.30		< 1.3		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 2.6		< 17.00		< 3.40		< 6.80		< 1.70		< 3.40		< 5.10	
Ethyl acetate	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		NS		NS		NS		NS		NS		NS		NS	
Ethylbenzene	**2.8**		**2.3**		**0.71**		< 0.66		< 0.66		**0.49**	J	< 0.66		**1.3**		< 0.66		< 0.66		**0.69**	J	< 8.70		< 1.70		< 3.50		**1.2**		**0.16**	J	< 2.60	
Freon 11	< 0.86		**1.7**		**6**		**1.8**		**1.1**		**2**		**1.5**		**2.5**		**1.7**		**1.5**		< 1.3		< 11.00		**2.2**	J	< 4.50		**1.3**		**1.4**	J	< 3.40	
Freon 113	< 1.20		**110**		**60**		**170**		**83**		**30**		**130**		**380**		**110**		**54**		**70**		**45**		**81**		**69**	B	**31**		**37**		**92**	
Freon 114	< 1.10		< 1.1		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 2.1		< 14.00		< 2.80		< 5.60		< 1.40		< 2.80		< 4.20	
Freon 12	**0.65**	J	**2.8**		**3.4**		**2.7**		**1.6**		**2.6**		**5.8**		< 0.75		**2.8**		**5.4**		**2.9**	J	**2.5**	J	**2.4**	J	**2.8**	J	**2.3**	J	**2.8**	J	**2.6**	J
Freon 22	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		**2.1**	J	< 18.00		< 3.50		**1.4**	J	**0.89**	J	**1.0**	J	**1.1**	J
Heptane	< 0.62		**0.92**		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		**0.5**	J	< 0.62		< 0.62		**1.2**		< 8.20		< 1.60		**5.9**		< 0.82		< 1.60		< 2.50	
Hexachloro-1,3-butadiene	< 1.60		< 1.6		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 3.2		< 21.00		< 4.30		< 8.50		< 2.10		< 4.30		< 6.40	
Hexane	< 0.54		< 0.54		< 0.54		< 0.54		**0.75**		**0.75**		< 0.54		**0.64**		< 0.54		< 0.54		**2.1**		< 7.00		**0.2**	J	**81**		< 0.70		< 1.40		< 2.10	
Isopropyl alcohol	< 0.37		**4.3**		**5.4**		< 0.37		< 0.37		**3.5**		< 0.37		**2**		< 0.37		**2.1**		**3.2**	J	< 120.00		< 25.00		< 49.00		**1.1**	J	< 25.00		< 37.00	
m&p-Xylene	**7.9**		**8.5**		**2.3**		**1.6**		**0.75**	J	**1.3**		< 1.30		**4.7**		< 1.30		**0.44**	J	**2.5**	J	< 22.00		< 4.30		< 8.70		**4.4**		**0.45**	J	< 6.50	
Methyl Butyl Ketone	< 1.20		< 1.2		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 3.1		< 20.00		4.1		< 8.20		< 2.00		< 4.10		< 6.10	
Methyl Ethyl Ketone	**10**		**2.7**		**2.5**		< 0.90		**1.2**		**4**		**0.42**	J	**1.6**		**1.1**		< 0.90		**2.6**		< 15.00		**1.2**	J B	< 5.90		**1.6**		< 2.90		**10**	
Methyl Isobutyl Ketone	< 1.20		< 1.2		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 3.1		< 20.00		< 4.10		< 8.20		**0.74**	J	< 4.10		< 6.10	
Methyl methacrylate	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 3.1		< 20.00		< 4.10		< 8.20		< 2.00		< 4.10		< 6.10	
Methyl tert-butyl ether	< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		**0.66**		**1.6**		< 0.55		< 0.55		< 1.1		< 7.20		< 1.40		< 2.90		< 0.72		**0.25**	J	< 2.20	
Methylene chloride	< 0.53		**1.8**		**1.8**		**1.8**		**0.56**		**1.2**		**2**		**2.6**		**1**		**1.4**		**3.2**	B	**2.3**	J B	**0.95**	J B	**4.9**	J	**1.1**	J	**1.1**	J	< 5.20	
n-Butane	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		**3.5**		< 12.00		**1.5**	J	**200**		< 1.20		< 2.40		< 3.60	
n-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.6		< 11.00		< 2.20		< 4.40		< 1.10		< 2.20		< 3.30	
n-Propylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.5		< 9.80		< 2.00		< 3.90		< 0.98		< 2.00		< 2.90	
Naphthalene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 3.9		< 26.00		< 5.20		< 10.00		< 2.60		< 5.20		< 7.80	
o-Xylene	**1.4**		**3.1**		**0.66**		**0.62**	J	< 0.66		**0.49**	J	< 0.66		**1.7**		< 0.66		< 0.66		**0.85**	J	< 8.70		< 1.70		< 3.50		**1.1**		**0.27**	J	**0.53**	J
Propylene	< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		NS		NS		NS		NS		NS		NS		NS	
sec-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.6		< 11.00		< 2.20		< 4.40		< 1.10		< 2.20		< 3.30	
Styrene	**0.52**	J	< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 1.3		< 8.50		< 1.70		< 3.40		**0.084**	J	< 1.70		**0.45**	J
tert-Butyl Alcohol	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 23		< 150.00		< 30.00		< 61.00		< 15.00		< 30.00		< 45.00	
tert-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.6		< 11.00		< 2.20		< 4.40		< 1.10		< 2.20		< 3.30	
Tetrachloroethylene	**0.83**	J	**110**		**180**		**460**		**140**		**290**		< 97.00		**470**		**240**		**380**		**120**		**170**		**23**		**40**		**140**		**280**		**160**	
Tetrahydrofuran	**72**		**2.4**		**5.1**		< 0.45		**0.96**		< 0.45		< 0.45		**1.8**		< 0.45		< 0.45		**0.68**	J	< 150.00		< 29.00		< 59.00		< 15.00		**0.95**	J	**2.4**	J
Toluene	**5.7**		**7.2**		**2.3**		**1.5**		**1.9**		**2.3**		< 0.57		**6.1**		**2.1**		**0.84**		**4.1**		**0.79**	J	< 1.50		< 3.00		**0.52**	J	**0.49**	J	**0.51**	J
trans-1,2-Dichloroethene	< 0.60		**0.64**		**1.5**		**1.1**		**1.4**		**1.7**		< 0.60		**3.2**		< 0.60		**1.3**		**0.45**	J	< 7.90		**1.1**	J	< 3.20		**0.37**	J	**0.92**	J	< 2.40	
trans-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 1.4		< 9.10		< 1.80		< 3.60		< 0.91		< 1.80		< 2.70	
Trichloroethene	**0.71**	J	**350**		**220**		**1,200**		**180**		**210**		< 76.00		**480**		**250**		**470**		**220**		**170**		**160**		**180**		**130**		**220**		**270**	
Vinyl acetate	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		NS		NS		NS		NS		NS		NS		NS	
Vinyl Bromide	< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 1.3		< 8.70		< 1.70		< 3.50		< 0.87		< 1.70		< 2.60	
Vinyl chloride	< 0.39		**4.7**		**2.3**		**3**		**1.7**		**3.9**		< 0.39		**2.3**		**2.6**		**1.4**		**1.8**		< 1.00		**2.1**		**1.4**		**1.2**		**1.0**		**1.4**	
Cumulative VOCs (µg/m³)[2]	134.31		890.69		675.48		2,781.34		673.96		877.11		707.61		1,967.74		879.39		1,279.17		676.24		597.29		601.29		784.50		431.60		758.32		883.80	
% Removal - Cumulative	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Target VOCs (µg/m³)[3]	1.54		698.64		560.50		2,572.10		572.40		739.70		559.00		1,533.20		734.00		1,207.30		556.00		528.00		498.10		398.00		374.37		705.92		769.00	
% Removal - Target VOCs	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Manholes Online[4]	MH-3[A]		MH-1[A]		MH-1, 3[A]		MH-1[M]		MH-1[A]		MH-1, 2, 3[M]		MH-1[M]		MH-1[M]		MH-1[A]		MH-1[A]		MH-1[A]		MH-1, 2[A]		MH-2[A]		MH-1[A]		MH-1, MH-3[A]		MH-1[A], MH-3[A]		MH-1[A]	
																							AVG AIR FLOWRATE (SCFM)				802		730		624		625	
																							Reporting Period Length				91		101		82		91	
																							Runtime % [6,7]				36%		43%		35%		30%	
VOC Mass Removal from Goundwater per Quarter (lbs) [5]	NA [5]		NA [5]		NA [5]		NA [5]		NA [5]		NA [5]		NA [5]		NA [5]		NA [5]		NA [5]		NA [5]		NA [5]		NA [5]		0.9		1.1		1.1		1.2	

Notes:

1. Samples analyzed for VOCs using USEPA Method TO-15.
2. Cumulative VOCs calculated using only detected concentrations.
3. Target VOC concentration calculated using only detected concentrations of the following compounds: 1,1-dichloroethene, cis-1,2-dichloroethene, tetrachloroethylene, trans-1,2-dichloroethene, and trichloroethene.
4. Indicates which manhole(s) were online during the sampling event.
5. VOC Mass Removal per Quarter calculations not generated before Jan. 2014. Refer to annual summary for previous calculations.
6. Runtime is the percentage of time the blower was physically running during the operational period. Operational periods are the same as flow reporting periods in Table 5.
7. Due to Consultant transition from Arcadis to Stantec, no Q1 data was recorded from PLC. Q1 runtime is an average of Q2, Q3, and Q4 runtime of 2014.

BOLD indicates detected concentrations.

VOCs Mass Removed from Groundwater (lbs)	
2011	22.8
2012	5.4
2013	6.2
2014	4.3
Cumulative since 1/28/2011	38.7

Definitions:

< - less than reporting limit listed
J - Indicates that the result was less than the RL, but greater than or equal to the MDL and the concentration is an estimate.
B - Indicates that the compound was also identified in the method blank and sample.
µg/m³ - micrograms per cubic meter
U - Indicates that compound was analyzed for but was not detected.
A - indicates that the system/manhole(s) was batching automatically during the sampling event
M - indicates that the air stripper/manhole(s) was turned on manually in order to collect a vapor sample.

Table 6. Vapor Phase Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/m³)	Mid-Carbon																															
	1/28/2011	Q	2/23/2011	Q	4/5/2011	Q	7/7/2011	Q	10/12/2011	Q	1/26/2012	Q	4/5/2012	Q	7/12/2012	Q	10/17/2012	Q	1/15/2013	Q	4/24/2013	Q	7/11/2013	Q	10/23/2013	Q	2/7/2014	Q	4/4/2014	Q	7/10/2014	Q	10/9/2014	Q
1,1,1-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 1.1		< 1.10		< 1.10		< 1.10		< 1.10		< 2.20		< 2.20	
1,1,2,2-Tetrachloroethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.4		< 0.76		< 1.40		< 1.40		< 1.40		< 2.70		< 2.70	
1,1,2-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 1.1		< 0.87		< 1.10		< 1.10		< 1.10		< 2.20		< 2.20	
1,1-Dichloroethane	**0.49**	J	< 0.62		< 0.62		**0.66**		**10**		**2.5**		**0.82**		**46**		**6.2**		**2.8**		**1.3**		< 0.93		**16**		**2.7**		**1.9**		**44**		**25**	
1,1-Dichloroethene	< 0.60		< 0.60		< 0.60		< 0.60		< 0.60		< 0.60		< 0.60		**1.7**		< 0.60		< 0.60		< 0.79		< 3.40		< 0.79		< 0.79		< 0.79		**0.79**	J	< 1.60	
1,2,4-Trichlorobenzene	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 3.7		< 2.20		< 3.70		< 3.70		< 3.70		< 7.40		< 7.40	
1,2,4-Trimethylbenzene	**1.9**		**2.1**		**3**		**14**	J	< 0.75		**5.9**		**0.65**	J	**1.2**		**0.6**	J	**0.5**	J	**0.79**	J	< 1.00		< 0.98		< 0.98		**0.38**	J	**0.86**	J	**1.0**	J
1,2-Dibromoethane	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.5		< 1.10		< 1.50		< 1.50		< 1.50		< 3.10		< 3.10	
1,2-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.60		< 1.20		< 1.20		< 1.20		< 2.40		< 2.40	
1,2-Dichloroethane	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.81		< 0.73		< 0.81		< 0.81		< 0.81		< 1.60		< 1.60	
1,2-Dichloropropane	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.92		< 1.10		< 0.92		< 0.92		< 0.92		< 1.80		< 1.80	
1,3,5-Trimethylbenzene	**0.8**		**0.8**		**1**		**4.4**		< 0.75		**1.4**		< 0.75		< 0.75		< 0.75		< 0.75		**0.27**	J	< 0.93		< 0.98		< 0.98		**0.18**	J	**0.35**	J	**0.35**	J
1,3-butadiene	< 0.34		< 0.34		<0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.44		< 0.55		< 0.44		< 0.44		< 0.44		< 0.88		< 0.88	
1,3-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.10		< 1.20		< 1.20		< 1.20		< 2.40		< 2.40	
1,4-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.10		< 1.20		< 1.20		< 1.20		< 2.40		< 2.40	
1,4-Dioxane	**2.3**		< 1.10		< 1.10		**1.3**		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 18		< 2.50		< 18.00		< 18.00		< 18.00		< 36.00		< 36.00	
2-Chlorotoluene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.0		< 0.67		< 1.00		< 1.00		< 1.00		< 2.10		< 2.10	
2,2,4-trimethylpentane	< 0.71		**0.66**	J	< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		**0.31**	J	< 0.70		**0.47**	J	**6.2**	J	< 0.93		< 1.90		< 1.90	
4-ethyltoluene	**0.6**	J	**0.95**		**2.2**		**3.5**		< 0.75		**0.9**		< 0.75		< 0.75		< 0.75		< 0.75		< 0.98		< 0.74		< 0.98		< 0.98		**0.10**	J	< 2.00		< 2.00	
4-Isopropyltoluene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 1.10		< 1.10		< 1.10		< 1.10		< 2.20		< 2.20	
Acetone	**20**		**37**		**7.5**		**25**		**3.5**		**4.3**		**1.9**		**4.2**		**4.4**		**10**		**21**		< 9.50		**14**	B	< 12.00		< 12.00		**7.7**	J	< 24.00	
Allyl chloride	< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 1.6		< 1.50		< 1.60		< 1.60		< 1.60		< 3.10		< 3.10	
Benzene	**2**		**0.81**		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		**0.63**		< 0.58		**0.28**	J	< 0.64		< 0.64		< 1.30		< 1.30	
Benzyl chloride	< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 1.0		< 1.10		< 1.00		< 1.00		< 1.00		< 2.10		< 2.10	
Bromodichloromethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.3		< 0.80		< 1.30		< 1.30		< 1.30		< 2.70		< 2.70	
Bromoform	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 2.1		< 0.74		< 2.10		< 2.10		< 2.10		< 4.10		< 4.10	
Bromomethane	< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.78		< 1.00		< 0.78		< 0.78		< 0.78		< 1.60		< 1.60	
Carbon disulfide	< 0.47		< 0.47		< 0.47		**0.32**	J	**0.85**		< 0.47		< 0.47		**1.4**		< 0.47		< 0.47		< 1.6		< 0.62		**30**		< 1.60		< 1.60		< 3.10		< 3.10	
Carbon tetrachloride	**0.77**	J	< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.25		< 0.82		< 0.25		< 0.25		< 0.25		< 0.50		< 0.50	
Chlorobenzene	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.92		< 0.60		< 0.92		< 0.92		< 0.92		**0.2**	J	< 1.80	
Chloroethane	< 0.40		< 0.40		< 0.40		< 0.40		**0.46**		**0.8**		**0.54**		< 0.40		< 0.40		< 0.40		**1.5**		< 0.87		**0.52**	J	**0.28**	J	< 1.30		< 2.60		< 2.60	
Chloroform	**8.9**		< 0.74		< 0.74		< 0.74		**3.7**		**0.5**	J	< 0.74		**2.7**		**2.2**		< 0.74		**0.16**	J	< 1.20		**0.96**		< 0.98		< 0.98		**1.2**	J	**1.3**	J
Chloromethane	**1.2**		**0.57**		< 0.31		< 0.31		**0.59**		< 0.31		**0.76**		< 0.31		**0.78**		< 0.31		**3.1**		< 0.70		**1.1**		**1.5**		**1.3**		**1.0**	J	< 2.10	
cis-1,2-Dichloroethene	**24**		< 0.60		< 0.60		**0.44**	J	**63**		**25**		**8.5**		**110**		**190**		**44**		**23**		< 3.30		**83**		**27**		**20**		**170**		**190**	
cis-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.91		< 0.59		< 0.91		< 0.91		< 0.91		< 1.80		< 1.80	
Cyclohexane	< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		**1.7**		< 0.65		< 0.69		< 0.69		< 0.69		< 1.40		< 1.40	
Dibromochloromethane	< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.7		< 0.94		< 1.70		< 1.70		< 1.70		< 3.40		< 3.40	
Ethyl acetate	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		NS		NS		NS		NS		NS		NS		NS	
Ethylbenzene	**0.97**		**4.5**		**8.2**		**7.5**		**0.71**		< 0.66		< 0.66		**0.66**		< 0.66		< 0.66		**0.76**	J	< 0.65		**0.2**	J	< 0.87		**1.1**		**0.25**	J	**0.37**	J
Freon 11	**3.1**		< 0.86		< 0.86		**9.9**		**1.5**		**0.86**		< 0.86		**8.5**		**1**		**0.63**	J	**1.3**		**3.1**	J	**5.9**		**0.98**	J	**1.1**		**1.9**	J	**1.8**	J
Freon 113	**1.2**		< 1.20		< 1.20		< 1.20		**16**		**0.93**		< 1.20		**66**		**12**		**0.78**	J	**0.72**	J	**4.6**	J	**21**		**1.4**	J	**0.69**	J	**30**		**53**	
Freon 114	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.4		< 1.50		**0.23**	J	< 1.40		< 1.40		< 2.80		< 2.80	
Freon 12	**3.6**		**4.2**		**4**		**5.7**		**3.8**		**2.6**		**1.6**		< 0.75		**2.5**		**2.9**		**3.1**		**2.4**	J	**2.5**		**2.8**		**2.7**		**3.0**	J	**1.7**	J
Freon 22	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		4.4		< 0.81		**1.5**	J	**1.5**	J	**1.4**	J	**1.1**	J	**1.1**	J
Heptane	**0.62**		**0.79**		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		**2.3**		< 0.70		**0.83**		< 0.82		< 0.82		< 1.60		< 1.60	
Hexachloro-1,3-butadiene	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 2.1		< 3.10		< 2.10		< 2.10		< 2.10		< 4.30		< 4.30	
Hexane	**0.9**		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		**1.1**		< 0.70		**0.78**		< 0.70		< 0.70		< 1.40		< 1.40	
Isopropyl alcohol	< 0.37		**5.3**		< 0.37		< 0.37		< 0.37		< 0.37		**0.52**		< 0.37		**0.52**		< 0.37		**6.2**	J	< 1.90		**2**	J	< 12.00		**0.77**	J	**1.4**	J	< 25.00	
m&p-Xylene	**2.4**		**34**	J	**20**		**75**		**3.1**		**1.9**		**1.2**	J	**3**		< 1.30		**0.62**	J	**2.8**		< 0.96		**0.55**	J	< 2.20		**4.2**		**1.1**	J	**1.4**	J
Methyl Butyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		**0.71**	J	< 1.60		< 2.00		< 2.00		< 2.00		< 4.10		< 4.10	
Methyl Ethyl Ketone	**3.1**		< 0.90		**1.9**		**1.7**		**0.87**	J	**0.9**		< 0.90		**0.9**		< 0.90		< 0.90		**4.5**		< 0.74		**4.9**	B	< 1.50		< 1.50		< 2.90		**7.5**	
Methyl Isobutyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 2.0		< 1.40		< 2.00		< 2.00		**0.65**	J	< 4.10		< 4.10	
Methyl methacrylate	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 2.0		< 0.66		< 2.00		< 2.00		< 2.00		< 4.10		< 4.10	
Methyl tert-butyl ether	< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.72		< 0.54		< 0.72		< 0.72		< 0.72		< 1.40		< 1.40	
Methylene chloride	**0.6**		**0.6**		< 0.53		**1.4**		**1.3**		**0.81**		**1.2**		**3.5**		**0.78**		**3.6**		**1.8**	B	**2.9**	J B	**1.2**	J B	**1.8**		**1.1**	J	**1.1**	J	**1.7**	J
n-Butane	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		**6.1**		< 2.00		**7**		**4.4**		**2.0**		< 2.40		< 2.40	
n-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.52		< 1.10		< 1.10		< 1.10		< 2.20		< 2.20	
n-Propylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 0.98		< 1.20		< 0.98		< 0.98		< 0.98		< 2.00		< 2.00	
Naphthalene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 2.6		< 0.64		< 2.60		< 2.60		< 2.60		< 5.20		< 5.20	
o-Xylene	**0.71**		**5.2**		**5.7**		**30**		**1.6**		**0.88**		**0.62**	J	**1.2**		< 0.66		< 0.66		**1**		< 0.69		**0.25**	J	< 0.87		1.1		**0.84**	J	**0.99**	J
Propylene	< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		NS		NS		NS		NS		NS		NS		NS	
sec-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.82		< 1.10		< 1.10		< 1.10		< 2.20		< 2.20	
Styrene	**0.48**	J	< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		**0.46**	J	< 0.47		< 0.85		< 0.85		< 0.85		< 1.70		**0.33**	J
tert-Butyl Alcohol	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		**1.4**	J	< 1.20		**0.23**	J	< 15.00		< 15.00		< 30.00		< 30.00	
tert-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.60		1.1		< 1.10		< 1.10		< 2.20		< 2.20	
Tetrachloroethylene	**8.8**		< 1.00		< 1.00		**1.5**		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.4		< 1.00		**3.1**		< 1.40		**0.26**	J	**0.36**	J	**0.51**	J
Tetrahydrofuran	**12**		**5.5**		**8.4**		**4.2**		**6.5**		**1.8**		< 0.45		**5.8**		**2.7**		**1**		**2.1**	J	< 0.86		**1.1**	J	< 15.00		< 15.00		**1.0**	J	**2.2**	J
Toluene	**4**		**21**	J	**21**		**39**		**2.2**		**0.69**		**4.9**		**3.3**		**0.69**		< 0.57		**3.7**		< 0.53		**4**		< 0.75		**0.38**	J	**0.57**	J	**2.3**	
trans-1,2-Dichloroethene	**1**		< 0.60		< 0.60		< 0.60		**1.1**		< 0.60		< 0.60		**1.2**		< 0.60		< 0.60		**0.14**	J	< 0.91		**0.64**	J	< 0.79		< 0.79		**1.1**	J	< 1.60	
trans-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.91		< 0.68		< 0.91		< 0.91		< 0.91		< 1.80		< 1.80	
Trichloroethene	**32**		< 0.82		< 0.82		**3.2**		**0.49**	J	< 0.82		< 0.82		< 0.82		**0.66**	J	< 0.82		**0.21**		< 0.49		**0.46**		< 0.21		< 0.21		< 0.43		**0.94**	
Vinyl acetate	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		NS		NS		NS		NS		NS		NS		NS	
Vinyl Bromide	< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.87		< 0.83		< 0.87		< 0.87		< 0.87		< 1.70		< 1.70	
Vinyl chloride	< 0.39		**2.3**		**1.6**		**2.6**		**2.3**		**2.1**		**1**		**2.1**		**1.6**		**1.1**		**1.1**		< 0.23		**1.9**		**1.1**		**1.3**		**1.2**		**1.9**	
Cumulative VOCs (µg/m³)[2]	138.44		126.28		84.50		231.32		123.57		54.77		24.21		263.36		226.63		67.93		99.66		13.00		207.70		51.66		42.61		271.02		295.39	
% Removal - Cumulative	NA		86%		87%		92%		82%		94%		97%		87%		74%		95%		85%		98%		65%		93%		90%		64%		67%	
Target VOCs (µg/m³)[3]	66.29		0.00		0.00		5.80		74.59		27.50		9.32		157.20		196.86		46.80		24.65		0.00		103.20		29.70		22.16		215.46		216.45	
% Removal - Target VOCs	NA		100%		100%		100%		87%		96%		98%		90%		73%		96%		96%		100%		79%		93%		94%		69%		72%	
Manholes Online[4]	MH-3[A]		MH-1[A]		MH-1, 3[A]		MH-1[M]		MH-1[A]		MH-1, 2, 3[M]		MH-1[M]		MH-1[M]		MH-1[A]		MH-1[A]		MH-1[A]		MH-1, 2[A]		MH-2[A]		MH-1[A]		MH-1[A], MH-3[A]		MH-1[A], MH-3[A]		MH-1[A]	

Table 6. Vapor Phase Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/m³)	Effluent																																	
	1/28/2011	Q	2/23/2011	Q	4/5/2011	Q	7/7/2011	Q	10/12/2011	Q	1/26/2012	Q	4/5/2012	Q	7/12/2012	Q	10/17/2012	Q	1/15/2013	Q	4/24/2013	Q	7/11/2013	Q	10/23/2013	Q	2/7/2014	Q	4/4/2014	Q	7/10/2014	Q	10/9/2014	Q
1,1,1-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		**0.72**	J	< 0.83		< 1.1		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
1,1,2,2-Tetrachloroethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.4		< 0.76		< 1.40		< 1.40		< 1.40		< 1.40	
1,1,2-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 1.1		< 0.87		< 1.10		< 1.10		< 1.10		< 1.10	
1,1-Dichloroethane	< 0.62		< 0.62		< 0.62		< 0.62		**17**		**2.4**		**0.82**		**12**		**35**		**4.6**		**1.7**		< 0.93		**7.8**		**1.6**		**1.3**		**17**		**52**	
1,1-Dichloroethene	< 0.60		< 0.60		< 0.60		< 0.60		**0.48**	J	< 0.60		< 0.60		**0.64**		**0.69**		< 0.60		< 0.79		< 3.40		< 0.79		< 0.79		< 0.79		**0.57**	J	**0.70**	J
1,2,4-Trichlorobenzene	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 3.7		< 2.20		< 3.70		< 3.70		< 3.70		< 3.70		< 3.70	
1,2,4-Trimethylbenzene	**1.5**		**3.7**		**1.3**		**3.3**		< 0.75		< 0.75		< 0.75		**2.1**		**1.2**		**0.7**	J	**0.53**	J	< 1.00		< 0.98		< 0.98		< 0.98		**0.37**	J	**0.37**	J
1,2-Dibromoethane	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.5		< 1.10		< 1.50		< 1.50		< 1.50		< 1.50		< 1.50	
1,2-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.60		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
1,2-Dichloroethane	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.81		< 0.73		< 0.81		< 0.81		< 0.81		< 0.81		< 0.81	
1,2-Dichloropropane	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.92		< 1.10		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
1,3,5-Trimethylbenzene	**0.65**	J	**1.4**		**0.65**	J	**1.3**		< 0.75		< 0.75		< 0.75		**0.95**		**0.75**		< 0.75		< 0.98		< 0.93		< 0.98		< 0.98		< 0.98		**0.11**	J	< 0.98	
1,3-butadiene	< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.44		< 0.55		< 0.44		< 0.44		< 0.44		< 0.44		< 0.44	
1,3-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.10		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
1,4-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.10		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
1,4-Dioxane	**1.6**		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 18		< 2.50		**0.5**	J	< 18.00		< 18.00		< 18.00		< 18.00	
2-Chlorotoluene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.0		< 0.67		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00	
2,2,4-trimethylpentane	< 0.71		**0.81**		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		**0.3**	J	< 0.70		**0.23**	J	< 0.93		< 0.93		< 0.93		< 0.93	
4-ethyltoluene	< 0.75		**0.95**		**0.8**		**0.95**		< 0.75		< 0.75		< 0.75		**0.6**	J	< 0.75		< 0.75		< 0.98		< 0.74		< 0.98		< 0.98		< 0.98		**0.094**	J	< 0.98	
4-Isopropyltoluene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
Acetone	**100**		**27**		**8.5**		**6.2**		**4.4**		**5**		**3.9**		< 0.72		**140**		**4**		**18**		< 9.50		**15**	B	< 12.00		**4.9**	J	**4.4**	J	< 12.00	
Allyl chloride	< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 1.6		< 1.50		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60	
Benzene	**1.1**		**1.2**		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		**0.49**		**0.36**	J	< 0.49		**0.57**	J	< 0.58		**0.33**	J	< 0.64		< 0.64		**0.094**	J	**0.13**	J
Benzyl chloride	< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 1.0		< 1.10		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00	
Bromodichloromethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.3		< 0.80		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30	
Bromoform	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 2.1		< 0.74		< 2.10		< 2.10		< 2.10		< 2.10		< 2.10	
Bromomethane	< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.78		< 1.00		< 0.78		< 0.78		< 0.78		< 0.78		< 0.78	
Carbon disulfide	< 0.47		< 0.47		< 0.47		**0.47**		**0.38**	J	< 0.47		< 0.47		**1.1**		**1.6**		< 0.47		< 1.6		< 0.62		**0.41**	J	**18**		**0.32**	J	< 1.60		< 1.60	
Carbon tetrachloride	< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.25		< 0.82		< 0.25		< 0.25		< 0.25		< 0.25		< 0.25	
Chlorobenzene	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.92		< 0.60		< 0.92		< 0.92		< 0.92		**0.077**	J	< 0.92	
Chloroethane	< 0.40		< 0.40		< 0.40		< 0.40		**0.54**		< 0.40		< 0.40		< 0.40		< 0.40		< 0.40		< 1.3		< 0.87		**0.47**	J	< 1.30		< 1.30		< 1.30		< 1.30	
Chloroform	< 0.74		< 0.74		< 0.74		< 0.74		**4.2**		**0.55**	J	< 0.74		**2.9**		**6**		< 0.74		**0.26**	J	< 1.20		**0.16**	J	< 0.98		< 0.98		**0.47**	J	**1.4**	
Chloromethane	**1.3**		**0.8**		**0.94**		**1.2**		**0.92**		< 0.31		**0.76**		< 0.31		< 0.31		< 0.31		1.4		< 0.70		**1.2**		**1.4**		**1.2**		**1.2**		< 1.00	
cis-1,2-Dichloroethene	**9.7**	J	< 0.60		< 0.60		< 0.60		**32**		**12**		**5**		**54**		**290**		**34**		**23**		< 3.30		**1.8**		**5.5**		**2.0**		**30**		**130**	
cis-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.91		< 0.59		< 0.91		< 0.91		< 0.91		< 0.91		< 0.91	
Cyclohexane	< 0.52		< 0.52		< 0.52		**0.66**		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		**2.1**		< 0.65		**0.17**	J	< 0.69		< 0.69		< 0.69		< 0.69	
Dibromochloromethane	< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.7		< 0.94		< 1.70		< 1.70		< 1.70		< 1.70		< 1.70	
Ethyl acetate	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		NS		NS				NS		NS		NS		NS	
Ethylbenzene	**0.97**		**2.4**		**1.5**		**1.8**		< 0.66		< 0.66		< 0.66		**1.3**		< 0.66		< 0.66		**0.67**	J	< 0.65		**0.18**	J	< 0.87		**0.47**	J	**0.11**	J	< 0.87	
Freon 11	< 0.86		< 0.86		< 0.86		< 0.86		**1.9**		**1.4**		**0.63**	J	**12**		**3.2**		< 0.86		**0.5**	J	< 1.20		**2.5**		**0.72**	J	**0.48**	J	**7.9**		**1.8**	
Freon 113	< 1.20		< 1.20		< 1.20		< 1.20		**22**		**22**		< 1.20		**9.7**		**83**		**1**	J	**0.63**	J	< 1.50		**13**		**0.45**	J	**0.36**	J	**42**		**59**	
Freon 114	**0.85**	J	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.4		< 1.40		< 1.40		< 1.40		< 1.40		< 1.40		< 1.40	
Freon 12	**4.3**		**2.9**		**2.5**		**3.7**		**4.3**		**3.7**		**1.6**		< 0.75		**3.2**		**2.7**		**3.1**		**2.4**	J	**2.3**	J	**2.8**		**2.7**		**2.7**		**3.3**	
Freon 22	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		**4**		< 0.81		**1.9**		**1.4**	J	**1.3**	J	**1.2**	J	**1.2**	J
Heptane	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		**0.99**		< 0.70		**0.52**	J	< 0.82		< 0.82		< 0.82		< 0.82	
Hexachloro-1,3-butadiene	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 2.1		< 3.10		< 2.10		< 2.10		< 2.10		< 2.10		< 2.10	
Hexane	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		**0.95**		< 0.70		**0.58**	J	< 0.70		< 0.70		< 0.70		< 0.70	
Isopropyl alcohol	< 0.37		**6.7**		**4.2**		< 0.37		< 0.37		< 0.37		**1.3**		< 0.37		**20**		**1.5**		**7.2**	J	< 1.90		**6.7**	J	< 12.00		**0.64**	J	**0.60**	J	< 12.00	
m&p-Xylene	**2.7**		**9.9**		**7.2**		**8.4**		< 1.30		**1.3**		< 1.30		**6**		**0.71**	J	**0.44**	J	**2.1**	J	< 0.96		**0.57**	J	< 2.20		**1.6**	J	**0.38**	J	**0.36**	J
Methyl Butyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		**0.23**	J	< 1.60		< 2.00		< 2.00		< 2.00		< 2.00		< 2.00	
Methyl Ethyl Ketone	**22**		< 0.90		**2**		**1.9**		**1.5**		< 0.90		< 0.90		**0.99**		**0.72**	J	**0.63**	J	< 1.5		< 0.74		**7.4**	B	< 1.50		**0.99**	J	**2.6**		**4.1**	
Methyl Isobutyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 2.0		< 1.40		**0.18**	J	< 2.00		**0.34**	J	**0.13**	J	< 2.00	
Methyl methacrylate	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 2.0		< 0.66		< 2.00		< 2.00		< 2.00		< 2.00		< 2.00	
Methyl tert-butyl ether	< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.72		< 0.54		< 0.72		< 0.72		< 0.72		< 0.72		< 0.72	
Methylene chloride	< 0.53		**0.64**		**1.2**		**2.4**		**0.95**		**0.74**		**3.5**		**4.2**		**16**		**0.81**		**2.1**	B	**3.2**	J B	< 1.70	J B	**3.0**		**0.74**	J	**1.4**	J	**1.3**	J
n-Butane	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		**4.6**		< 2.00		**4.4**		**3.1**		**0.90**	J	**4.7**		< 1.20	
n-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.52		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
n-Propylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 0.98		< 1.20		< 0.98		< 0.98		< 0.98		< 0.98		< 0.98	
Naphthalene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 2.6		< 0.64		**0.92**	J	< 2.60		< 2.60		< 2.60		< 2.60	
o-Xylene	**0.88**		**3.8**		**1.8**		**2.5**		< 0.66		< 0.66		< 0.66		**2.2**		< 0.66		< 0.66		**0.63**	J	< 0.69		**0.21**	J	< 0.87		**0.35**	J	**0.25**	J	**0.39**	J
Propylene	< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		NS		NS		NS		NS		NS		NS		NS	
sec-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.82		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
Styrene	**0.65**		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		**0.45**	J	< 0.47		< 0.85		< 0.85		< 0.85		**0.17**	J	**0.22**	J
tert-Butyl Alcohol	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 15		< 1.20		< 15.00		< 15.00		< 15.00		< 15.00		< 15.00	
tert-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.60		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
Tetrachloroethylene	**1.9**		**0.83**	J	< 1.00		< 1.00		**1.2**		< 0.10		**1**		< 1.00		< 1.00		< 1.00		< 1.4		< 1.00		**0.16**	J	< 1.40		**0.20**	J	< 1.40		**0.22**	J
Tetrahydrofuran	**110**		**6.3**		**6**		**3.7**		**9.7**		**2.8**		**2.9**		**12**		**16**		**1.7**		**1.7**	J	< 0.86		**6**	J	**1.1**	J	< 15.00		< 15.00		**1.3**	J
Toluene	**2.1**		**8.1**		**1.4**		**2.5**		**0.69**		**0.73**		**0.57**		**6.9**		**2.4**		< 0.57		**4.1**		< 0.53		**1.8**		< 0.75		**0.13**	J	**0.20**	J	**0.46**	J
trans-1,2-Dichloroethene	< 0.60		< 0.60		< 0.60		< 0.60		**0.44**	J	< 0.60		< 0.60		< 0.60		**1.3**		< 0.60		**0.16**	J	< 0.91		< 0.79		< 0.79		< 0.79		**0.32**	J	< 0.79	
trans-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.91		< 0.68		< 0.91		< 0.91		< 0.91		< 0.91		< 0.91	
Trichloroethene	**21**		< 0.82		< 0.82		< 0.82		< 0.82		< 0.82		**1.4**		< 0.82		**3.7**		< 0.82		< 0.21		< 0.49		**0.35**		< 0.21		< 0.21		< 0.21		**0.21**	
Vinyl acetate	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		NS		NS		NS		NS		NS		NS		NS	
Vinyl Bromide	< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.87		< 0.83		< 0.87		< 0.87		< 0.87		< 0.87		< 0.87	
Vinyl chloride	< 0.39		**2.1**		**1**		**3.2**		**3.7**		**2.7**		**1.1**		**3.5**		**2.2**		**1.6**		**1.1**		< 0.23		**1.8**		**0.80**		**1.4**		**0.77**		**2.7**	
Cumulative VOCs (µg/m³)[2]	283.20		79.53		40.99		44.18		106.30		55.32		24.48		133.57		628.75		53.68		83.07		5.60		79.54		39.87		22.32		119.82		261.16	
% Removal - Cumulative	NA		91%		94%		98%		84%		94%		97%		93%		29%		96%		88%		99%		87%		95%		95%		84%		70%	
Target VOCs (µg/m³)[3]	32.60		0.83		0.00		0.00		50.64		14.40		8.22		66.00		330.00		38.60		24.86		0.00		10.11		7.10		3.50		47.32		182.43	
% Removal - Target VOCs	NA		**100%**		**100%**		**100%**		**91%**		**98%**		**99%**		**96%**		**55%**		**97%**		**96%**		**100%**		**98%**		**98%**		**99%**		**93%**		**76%**	
Manholes Online[4]	MH-3[A]		MH-1[A]		MH-1, 3[A]		MH-1[M]		MH-1[A]		MH-1, 2, 3[M]		MH-1[M]		MH-1[M]		MH-1[A]		MH-1[A]		MH-1[A]		MH-1[A]		MH-1, 2[A]		MH-2[A]		MH-1[A]		MH-1[A], MH-3[A]		MH-1[A], MH-3[A]		MH-1[A]	

Mass VOCs Adsorbed by Carbon Vessels (lbs)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		0.9		1.0		0.9		0.8	

Table 7. Summary of Estimated Air Stripper Emissions, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic Compounds[1]	AGC[2] (µg/m^3)	SGC[2] (µg/m^3)	Maximum Effluent Concentration (µg/m^3)[3]	1/28/2011 Result (µg/m3)	2/23/2011 Result (µg/m3)	4/4/2011 Result (µg/m3)	7/7/2011 Result (µg/m3)	10/12/2011 Result (µg/m3)	1/26/2012 Result (µg/m3)	4/5/2012 Result (µg/m3)	7/12/2012 Result (µg/m3)	10/17/2012 Result (µg/m3)	1/15/2013 Result (µg/m3)	4/24/2013 Result (µg/m3)	7/11/2013 Result (µg/m3)	10/23/2013 Result (µg/m3)	2/7/2014 Result (µg/m3)	4/4/2014 Result (µg/m3)	7/10/2014 Result (µg/m3)	10/9/2014 Result (µg/m3)	Maximum Emission Rate (lb/day)[4]	Actual Annual Impact (µg/m^3)[5]	Actual Annual Impact Percentage of AGC (%)
1,1,1-Trichloroethane	5,000	9,000	0.72	ND	ND	ND	ND	ND	ND	ND	ND	**0.72**	ND	ND	ND	ND	ND	ND	ND	ND	4.88E-05	5.70E-05	0.00
1,1-Dichloroethane	0.63	-	52	ND	ND	ND	ND	**17**	**2.4**	**0.82**	**12**	**35**	**4.6**	**1.7**	ND	**7.8**	**1.6**	**1.3**	**17**	**52**	3.53E-03	4.11E-03	0.65
1,1-Dichloroethene	70	-	0.69	ND	ND	ND	ND	ND	ND	ND	**0.64**	**0.69**	ND	ND	ND	ND	ND	ND	**0.57 J**	**0.70 J**	4.68E-05	5.46E-05	0.00
1,2,4-Trimethylbenzene	290	-	3.7	**1.5**	**3.7**	**1.3**	**3.3**	ND	ND	ND	**2.1**	**1.2**	**0.7**	**0.53**	ND	ND	ND	ND	**0.37 J**	**0.37 J**	2.51E-04	3.05E-04	0.00
1,3,5-Trimethylbenzene	290	-	1.4	**0.65 J**	**1.4**	**0.65 J**	**1.3**	ND	ND	ND	**0.95**	**0.75**	ND	ND	ND	ND	ND	ND	**0.11 J**	ND	9.49E-05	1.15E-04	0.00
1,4-Dioxane	0.13	3,000	1.6	**1.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.5**	ND	ND	ND	ND	1.08E-04	1.32E-04	0.10
2,2,4-trimethylpentane	3,300	-	0.81	ND	**0.81**	ND	ND	ND	ND	ND	ND	ND	ND	**0.3**	ND	**0.23**	ND	ND	ND	ND	5.49E-05	6.67E-05	0.00
4-ethyltoluene	-	-	0.95	ND	**0.95**	**0.8**	**0.95**	ND	ND	ND	**0.6**	ND	ND	ND	ND	ND	ND	ND	**0.094 J**	ND	6.44E-05	7.82E-05	-
Acetone	28,000	180,000	140	**100**	**27**	**8.5**	**6.2**	**4.4**	**5**	**3.9**	ND	**140**	**4**	**18**	ND	**15**	ND	**4.9 J**	**4.4 J**	ND	9.49E-03	1.15E-02	0.00
Benzene	0.13	1,300	1.2	**1.1**	**1.2**	ND	ND	ND	ND	ND	**0.49**	**0.36**	ND	**0.57**	ND	**0.33**	ND	ND	**0.094 J**	**0.13 J**	8.14E-05	9.88E-05	0.08
Carbon disulfide	700	6,200	18	ND	ND	ND	**0.47**	ND	ND	ND	**1.1**	**1.6**	ND	ND	ND	**0.41**	**18**	**0.32 J**	ND	ND	1.22E-03	1.48E-03	0.00
Chloroform	0.043	150	6	ND	ND	ND	ND	ND	ND	ND	**2.9**	**6**	ND	**0.26**	ND	**0.16**	ND	ND	**0.47 J**	**1.4**	4.07E-04	4.94E-04	1.15
Chloromethane	90	22,000	1.4	**1.3**	**0.8**	**0.94**	**1.2**	**0.92**	ND	**0.76**	ND	ND	ND	1.4	ND	**1.2**	**1.4**	**1.2**	**1.2**	ND	9.49E-05	1.15E-04	0.00
cis-1,2-Dichloroethene	63	-	290	**9.7 J**	ND	ND	ND	**32**	**12**	**5**	**54**	**290**	**34**	**23**	ND	**1.8**	**5.5**	**2.0**	**30**	**130**	1.97E-02	2.39E-02	0.04
Cyclohexane	6,000	-	2.1	ND	ND	ND	**0.66**	ND	ND	ND	ND	ND	ND	**2.1**	ND	**0.17**	ND	ND	ND	ND	1.42E-04	1.73E-04	0.00
Ethylbenzene	1,000	54,000	2.4	**0.97**	**2.4**	**1.5**	**1.8**	ND	ND	ND	**1.3**	ND	ND	**0.67**	ND	**0.18**	ND	**0.47 J**	**0.11 J**	ND	1.63E-04	1.98E-04	0.00
Freon 11	1,000	68,000	12	ND	ND	ND	ND	ND	**1.4**	**0.63 J**	**12**	**3.2**	ND	**0.5**	ND	**2.5**	**0.72 J**	**0.48 J**	**7.9**	**1.8**	8.14E-04	9.88E-04	0.00
Freon 113	180,000	960,000	83	ND	ND	ND	ND	ND	**22**	ND	**9.7**	**83**	**1**	**0.63**	ND	**13**	**0.45 J**	**0.36 J**	**42**	**59**	5.63E-03	6.83E-03	0.00
Freon 12	12,000	-	4.3	**4.3**	**2.9**	**2.5**	**3.7**	**4.3**	**3.7**	**1.6**	ND	**3.2**	**2.7**	**3.1**	**2.4**	**2.3**	**2.8**	**2.7**	**2.7**	**3.3**	2.92E-04	3.54E-04	0.00
Freon 22	50,000	-	4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**4**	ND	**1.9**	**1.4 J**	**1.3 J**	**1.2 J**	**1.2 J**	2.71E-04	3.29E-04	0.00
Heptane	3,900	210,000	0.99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.99**	ND	**0.52**	ND	ND	ND	ND	6.71E-05	8.15E-05	0.00
Hexane	700	-	0.95	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.95**	ND	**0.58**	ND	ND	ND	ND	6.44E-05	7.82E-05	0.00
Isopropyl alcohol	7,000	98,000	20	ND	**6.7**	**4.2**	ND	ND	ND	**1.3**	ND	**20**	**1.5**	**7.2**	ND	**6.7**	ND	**0.64 J**	**0.6 J**	ND	1.36E-03	1.65E-03	0.00
m&p-Xylene	100	4,300	9.9	**2.7**	**9.9**	**7.2**	**8.4**	ND	**1.3**	ND	**6**	**0.71**	**0.44**	**2.1**	ND	**0.57**	ND	**1.6 J**	**0.38 J**	**0.36 J**	6.71E-04	8.15E-04	0.00
Methyl Butyl Ketone	30	4,000	0.23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.23**	ND	ND	ND	ND	ND	ND	1.56E-05	1.89E-05	0.00
Methyl Ethyl Ketone	5,000	13,000	22	**22**	ND	**2**	**1.9**	**1.5**	ND	ND	**0.99**	**0.72**	**0.63**	ND	ND	**7.4**	ND	**0.99 J**	**2.6**	**4.1**	1.49E-03	1.81E-03	0.00
Methylene chloride	2.1	14,000	16	ND	**0.64**	**1.2**	**2.4**	**0.95**	**0.74**	**3.5**	**4.2**	**16**	**0.81**	**2.1**	**3.2**	ND	**3**	**0.74 J**	**1.4 J**	**1.3 J**	1.08E-03	1.32E-03	0.06
n-Butane	57,000	-	4.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**4.6**	ND	ND	**3.1**	**0.90 J**	**4.7**	ND	3.19E-04	3.87E-04	0.00
o-Xylene	100	4,300	3.8	**0.88**	**3.8**	**1.8**	**2.5**	ND	ND	ND	**2.2**	ND	ND	**0.63**	ND	**0.21**	ND	**0.35 J**	**0.25 J**	**0.39 J**	2.58E-04	3.13E-04	0.00
Styrene	1,000	17,000	0.65	**0.65**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.45**	ND	ND	ND	ND	**0.17 J**	**0.22 J**	4.41E-05	5.35E-05	0.00
Tetrachloroethylene	1	1,000	1.9	**1.9**	**0.83 J**	ND	ND	1.2	ND	**1**	ND	ND	ND	ND	ND	**0.16**	ND	**0.20 J**	ND	**0.22 J**	1.29E-04	1.56E-04	0.02
Tetrahydrofuran	350	30,000	110	**110**	**6.3**	**6**	**3.7**	**9.7**	**2.8**	**2.9**	**12**	**16**	**1.7**	**1.7**	ND	**6**	**1.1 J**	ND	ND	**1.3 J**	7.46E-03	9.06E-03	0.00
Toluene	5,000	37,000	8.1	**2.1**	**8.1**	**1.4**	**2.5**	**0.69**	**0.73**	**0.57**	**6.9**	**2.4**	ND	**4.1**	ND	**1.8**	ND	**0.13 J**	**0.20 J**	**0.46 J**	5.49E-04	6.67E-04	0.00
trans-1,2-Dichloroethene	63	-	1.3	ND	ND	ND	ND	ND	ND	ND	ND	**1.3**	ND	**0.16**	ND	ND	ND	ND	**0.32 J**	ND	8.81E-05	1.07E-04	0.00
Trichloroethene	0.5	14,000	21	**21**	ND	ND	ND	ND	ND	**1.4**	ND	**3.7**	ND	ND	ND	**0.35**	ND	ND	ND	**0.21**	1.42E-03	1.73E-03	0.35
Vinyl chloride	0.1	180,000	3.7	ND	**2.1**	**1**	**3.2**	**3.7**	**2.7**	**1.1**	**3.5**	**2.2**	**1.6**	**1.1**	ND	**1.8**	**0.8**	**1.4**	**0.77**	**2.7**	2.51E-04	3.05E-04	0.30

Notes:

1. Volatile organic compounds shown are only those detected in effluent samples during 2011 through 2014
2. AGC and SGC values obtained from NYSDEC DAR-1 AGC/SGC Tables, dated 9/10/07.
3. Concentrations shown for each volatile organic compound are the maximum concentrations detected from 2011 through 2013.
4. Maximum emission rate calculated using the maximum vapor phase concentrations for each volatile organic compound and the average instantaneous vapor phase effluent flow rate (756 scfm) during 2012. Note that the system is not operated continuously, so the actual annual impact estimated in this table is calculated using a significantly higher volume of air than in actually emitted by the system.
5. Actual annual impact calculated by following procedures described in NYSDEC DAR-1 Guidelines for the Control of Toxic Ambient Air Contaminants (NYSDEC 1991). Note effective stack height of 28 feet.

Definitions:

< - less than laboratory detection limit listed
"-" - indicates no guideline as been established
AGC - Annual Guideline Concentration
J - Indicates concentration is estimated
lb/day - pounds per day
ND - non-detect
Q - data qualifier
SGC - Short-term Guideline Concentration
µg/m^3 - micrograms per cubic meter

Table 8. Sequestering Agent Consumption Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Chemical Name - ARIES 2908
Chemical Specific Gravity - 1.04 to 1.09 1.065
Specific Weight of Water @ 60°F 8.3378 (lb/gallon)
Specific Weight of Chemical @ 60°F 8.8798 (lb/gallon)

Date	Drum #	Days	Volume in 30 Gallon Drum (gal.)	% Full	Δ Volume (gal.)	Δ Lbs	Consumption Rate (lbs/day)[1]	MH-1 Total Flow (gallons)	MH-2 Total Flow (gallons)	MH-3 Total Flow (gallons)	∑ Total Flows (gallons)	Δ Total Flow	Dose Rate This Period (ppm)[2]	Notes
4/20/2011	1	-	30	100%	-	-	-	51,271,950	9,102,881	224,649	60,599,480	-	-	Brought sequestering agent online for first time.
5/19/2011	1	29	18.5	62%	11.5	102.1	3.5	51,670,347	9,169,542	455,374	61,295,263	695,783	16.5	
6/2/2011	1	14	14.1	47%	4.4	39.1	2.8	51,837,640	9,189,887	534,242	61,561,769	266,506	16.5	
7/7/2011	1	35	12	40%	2.1	18.6	0.5	52,075,707	9,227,668	672,141	61,975,516	413,747	5.1	Under dosing due to CFP being offline due to noted past alarms.
8/11/2011	1	35	7	23%	5	44.4	1.3	52,243,445	9,265,879	787,928	62,297,252	321,736	15.5	
9/8/2011	1	28	0	0%	7	62.2	2.2	52,508,569	9,342,539	966,290	62,817,398	520,146	13.5	Drum #1 empty.
NEW DRUM ONLINE														
9/9/2011	2	-	30	100%	-	-	-	52,552,901	9,347,402	986,141	62,886,444	-	-	Brought Drum #2 online.
9/26/2011	2	17	26	87%	4	35.5	2.1	52,717,931	9,374,727	1,081,024	63,173,682	287,238	13.9	Low sequestering agent flow alarm occurs due to solidified chemical. See noted 3.
10/6/2011	2	10	26	87%	0	0.0	0.0	52,842,625	9,395,515	1,142,812	63,380,952	207,270	0.0	See Note 3.
NEW DRUM ONLINE														
10/6/2011	3	-	30	100%	-	-	-	52,842,625	9,395,515	1,142,812	63,380,952	-	-	Cleaned and inspected fittings/tubing; brought Drum #3 online.
11/1/2011	3	26	26	87%	4	35.5	1.4	53,071,145	9,435,095	1,258,735	63,764,975	384,023	10.4	Continue using 3rd drum.
12/1/2011	3	30	0	0%	26	230.9	7.7	53,349,688	9,469,794	1,371,989	64,191,471	426,496	61.0	3rd drum empty, reuse 2nd drum that was taken offline on 10/6/11
NEW/OLD DRUM ONLINE														
12/1/2011	2	-	26	87%	-	-	-	53,349,688	9,469,794	1,371,989	64,191,471	-	-	3rd drum empty, reuse 2nd drum that was taken offline on 10/6/11
12/22/2011	2		22	73%	4	35.5	1.7	53,525,286	9,491,900	1,437,180	64,454,366	262,895	15.2	
2011 Total	**-**	**246**	**-**	**-**	**68**	**603.8**	**-**	**-**	**-**	**-**	**-**	**3,854,886**	**17.6**	Through 12/22/2011
1/27/2012	2	36	15	50%	7	62.2	1.7	53,871,038	9,542,467	1,558,697	64,972,202	517,836	13.5	
2/9/2012	2	13	10	33%	5	44.4	3.4	54,009,006	9,573,810	1,612,670	65,195,486	223,284	22.4	
3/1/2012	2	21	7.5	25%	2.5	22.2	1.1	54,180,412	9,596,526	1,671,517	65,448,455	252,969	9.9	
4/5/2012	2	35	0	0%	7.5	66.6	1.9	54,447,552	9,635,004	1,770,699	65,853,255	404,800	18.5	Drum # 2 empty. Unmeasured volume of solidified chemical in bottom of drum; actual volume remaining greater than 0. Calculated dose rate assumes volume remaining of 0.
NEW DRUM OLINE														
4/5/2012	4	-	30	100%	-	-	-	54,447,552	9,635,004	1,770,699	65,853,255	-	-	Brought Drum #4 online.
5/1/2012	4	26	27.5	92%	2.5	22.2	0.9	54,595,683	9,661,648	1,833,036	66,090,367	237,112	10.5	Drum noted to be under vacuum due to changes in temperatures and not properly vented.
6/7/2012	4	37	18	60%	9.5	84.4	2.3	54,904,479	9,710,985	1,975,634	66,591,098	500,731	19.0	
7/12/2012	4	35	13.7	46%	4.3	38.2	1.1	55,041,035	9,738,010	2,049,067	66,828,112	237,014	18.1	
8/15/2012	4	34	9	30%	4.7	41.7	1.2	55,163,445	9,766,492	2,138,534	67,068,471	240,359	19.6	
9/11/2012	4	27	6	20%	3	26.6	1.0	55,259,345	9,790,891	2,208,922	67,259,158	190,687	15.7	
10/17/2012	4	36	0.5	2%	5.5	48.8	1.4	55,424,161	9,830,240	2,314,556	67,568,957	309,799	17.8	
10/19/2012	4	2	0	0%	0.5	4.4	2.2	55,441,907	9,832,600	2,326,244	67,600,751	31,794	15.7	
NEW DRUM ONLINE														
10/19/2012	5	-	30	100%	-	-	-	55,441,907	9,832,600	2,326,244	67,600,751	-	-	Brought Drum #5 online.
11/8/2012	5	20	27	90%	3	26.6	1.3	55,542,079	9,852,388	2,383,045	67,777,512	176,761	17.0	
12/6/2012	5	28	23	77%	4	35.5	1.3	55,665,689	9,874,745	2,438,585	67,979,019	201,507	19.9	
2012 Total	**-**	**350**	**-**	**-**	**59**	**523.9**	**-**	**-**	**-**	**-**	**-**	**3,524,653**	**16.7**	Through 12/6/2012
1/15/2013	5	40	12.5	42%	10.5	93.2	2.3	56,064,192	9,937,367	2,600,260	68,601,819	622,800	16.9	
2/7/2013	5	23	6	20%	6.5	57.7	2.5	56,285,230	9,972,998	2,675,400	68,933,628	331,809	19.6	Includes flow totals from loaner PLC from 2/6 through 2/11.
3/5/2013	5	26	0	0%	6	53.3	2.0	56,492,292	10,000,253	2,759,940	69,252,485	318,857	18.8	
NEW DRUM ONLINE														
3/5/2013	6	-	29	97%	-	-	-	56,490,599	10,000,253	2,759,940	69,250,792	-	-	Brought Drum #6 online. New drum starting only with 29 gallons. Flow monitoring device in fault mode (FA-200), which turns off the CFP.
3/22/2013	6	17	29	97%	0	0.0	0.0	56,582,710	10,017,495	2,798,316	69,398,521	147,729	0.0	FA-200 fault cleared locally, CFP resumed sequestering agent dosing.
4/24/2013	6	33	18.7	62%	10.3	91.5	2.8	56,960,249	10,083,948	2,946,781	69,990,978	592,457	17.4	
5/9/2013	6	15	15	50%	3.7	32.9	2.2	57,068,038	10,097,769	2,991,283	70,157,090	166,112	22.3	
6/7/2013	6	29	7	23%	8	71.0	2.4	57,299,819	10,144,690	3,098,532	70,543,041	385,951	20.7	Stroke length on CFP reduced from 100% to 85%
6/12/2013	6	5	5	17%	2	17.8	3.6	57,352,931	10,154,228	3,126,877	70,634,036	90,995	22.0	
6/25/2013	6	13	0	0%	5	44.4	3.4	57,552,196	10,187,599	3,219,750	70,959,545	325,509	15.4	
NEW DRUM ONLINE														
6/26/2013	7	-	29	97%	-	-	-	57,584,303	10,192,884	3,234,698	71,011,885	-	-	Drum #7 (29 gallons) put into service.
7/11/2013	7	15	20.9	70%	8.1	72.0	4.8	57,900,710	10,241,119	3,380,560	71,522,389	510,504	15.9	
8/8/2013	7	28	15.5	52%	5.4	47.6	1.7	58,109,657	10,279,795	3,485,922	71,875,374	352,985	15.2	
9/10/2013	7	33	9.6	32%	5.9	52.3	1.6	58,313,137	10,332,018	3,592,395	72,237,550	362,176	16.3	
10/22/2013	7	42	3.2	11%	6.4	57.1	1.4	58,574,976	10,387,447	3,720,796	72,683,219	445,669	14.4	
11/5/2013	7	14	1.6	5%	1.6	14.3	1.0	58,651,023	10,402,542	3,756,290	72,809,855	126,636	12.7	
11/14/2013	7	9	0.0	0%	1.6	14.3	1.6	58,715,549	10,412,625	3,785,392	72,913,566	103,711	15.5	
NEW DRUM ONLINE														
11/14/2013	8	-	30	100%	-	-	-	58,715,549	10,412,625	3,785,392	72,913,566	-	-	Drum #8 (30 gallons) put into service.
12/3/2013	8	19	27.1	90%	2.9	25.5	1.3	58,855,332	10,439,113	3,845,245	73,139,690	226,124	12.7	
2013 Total	**-**	**362**	**-**	**-**	**83.875**	**540.6**	**-**	**-**	**-**	**-**	**-**	**5,160,671**	**16.3**	Through 12/3/2013
1/23/2014	8	51	23.5	78%	3.6	32.2	0.6	59,358,620	10,527,204	4,037,521	73,923,345	783,655	4.6	It should be noted that the chemical feed pump's return 3-way valve was partially open to the return feed position, thereby allowing a portion of the sequestering agent to be returned to the drum, and not into the AS influent manifold. The 3-way valve was adjusted so that all of the flow would be redirected to the AS influent manifold
2/6/2014	8	-	30	100%	-	-	-	59,433,504	10,535,270	4,061,231	74,030,005	-	-	Product recovered from partially empty drum.
3/4/2014	8	26	25.8	86%	4.20	37.3	1.4	59,644,595	10,556,036	4,122,938	74,323,569	293,564	14.3	
4/1/2014	8	28	16	53%	9.80	87.0	3.1	59,967,227	10,598,933	4,251,279	74,817,439	493,870	19.8	
5/5/2014	8	34	4	13%	12.00	106.6	3.1	60,390,981	10,663,846	4,447,296	75,502,123	684,684	17.5	
NEW DRUM ONLINE														
5/5/2014	9	-	32	107%	-	-	-	60,390,981	10,663,846	4,447,296	75,502,123	-	-	
6/13/2014	9	39	21	70%	11.00	97.7	2.5	60,788,558	10,724,198	4,600,238	76,112,994	610,871	18.0	
7/7/2014	9	24	13.5	45%	7.50	66.6	2.8	61,011,389	10,760,338	4,714,103	76,485,830	372,836	20.1	
7/8/2014	9	1	19	63%	-	-	-	61,018,320	10,762,606	4,718,074	76,499,000	-	-	Recovered 5.5 gallons of sequesturing agent from previous drums.
8/7/2014	9	30	19	63%	0.00	0.0	0.0	61,236,646	10,792,351	4,825,060	76,854,057	355,057	0.0	Low sequestering agent flow alarm occurred on 8/2/14. See alarm log.
9/3/2014	9	27	13	43%	6.00	53.3	2.0	61,421,404	10,822,990	4,925,062	77,169,456	315,399	19.0	
10/7/2014	9	34	8	27%	5.00	44.4	1.3	61,596,858	10,850,636	5,010,988	77,458,482	289,026	17.3	
11/5/2014	9	29	1.5	5%	6.50	57.7	2.0	61,802,713	10,885,790	5,108,098	77,796,601	338,119	19.2	
		0		0%	0.00	0.0	0.0	62,013,010	10,915,655	5,209,552	78,138,217	968,761	0.0	
NEW DRUM ONLINE														
11/5/2014	10	-	30.0	100%	-	-	-	61,802,713	10,885,790	5,108,098	77,796,601	-	-	
12/3/2014	10	28	24.5	82%	5.5	48.8	1.7	62,013,010	10,915,655	5,209,552	78,138,217	341,616	16.1	
2014 Total	**-**	**337**	**-**	**-**	**65.63**	**631.6**	**-**	**-**	**-**	**-**	**-**	**4,998,527**	**13.1**	Through 12/3/2014

Notes:

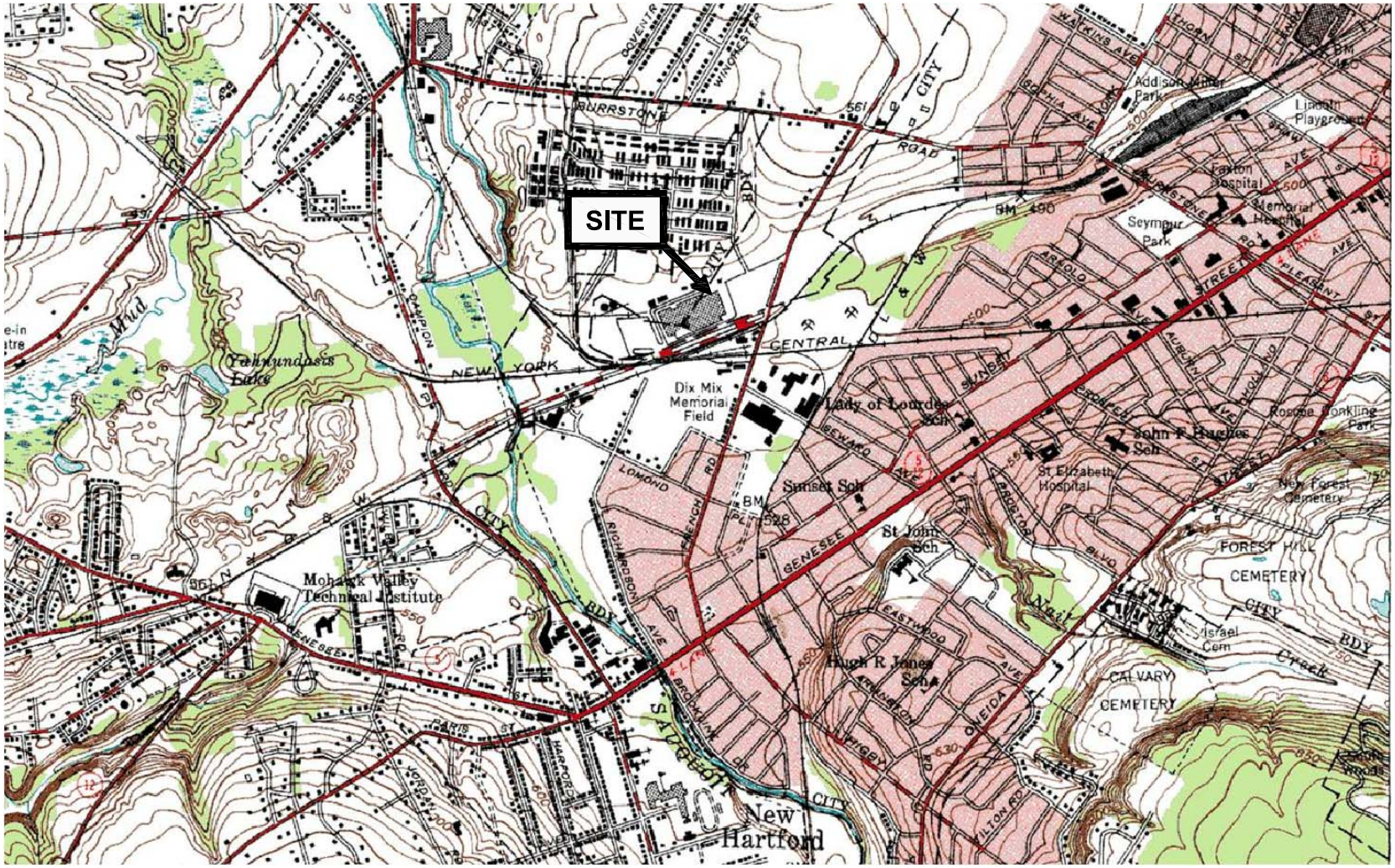
1) Maximum allowable daily loading rate of 12.5 lbs/day per WTC Usage Form dated 4/11/11.

2) Sequestering agent dosing rate is setup to be proportional to the aggregate flow transmitter value (not shown). However, this table utilizes the sum of the three individual pumping manhole flow transmitter values to calculate dose rate.

3) Sequestering agent low flow alarm occurred on 9/26/11 due to partial solidification of chemical within suction/injection fittings and tubing. Inspection not conducted until 10/6/11, during which time the fittings and tubing were cleaned. Drum #2 was taken offline until vendor could troubleshoot observation, in the interim Drum #3 was brought online.

Figures

CITY:(MAHWAH) DIV/GROUP:(ENRI-1) DB:(JG LD:(Opt) PIC:(Opt) PM:(CM) TM:(BM) LYR:(Opt)ON=*;OFF=*REF*
U:\190500800\05_report_deliv\deliverables\3-ANNUAL REPORTS\A-GCTS OM&M rpt\Figures\Draft 2\CAD\Figure 1 Site Location.dwg LAYOUT: 1 SAVED: 1/22/2015 3:07 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: -- PLOTSTYLETABLE: -- PLOTTED: 1/22/2015 3:08 PM BY: ARMINGTON, WILLIAM

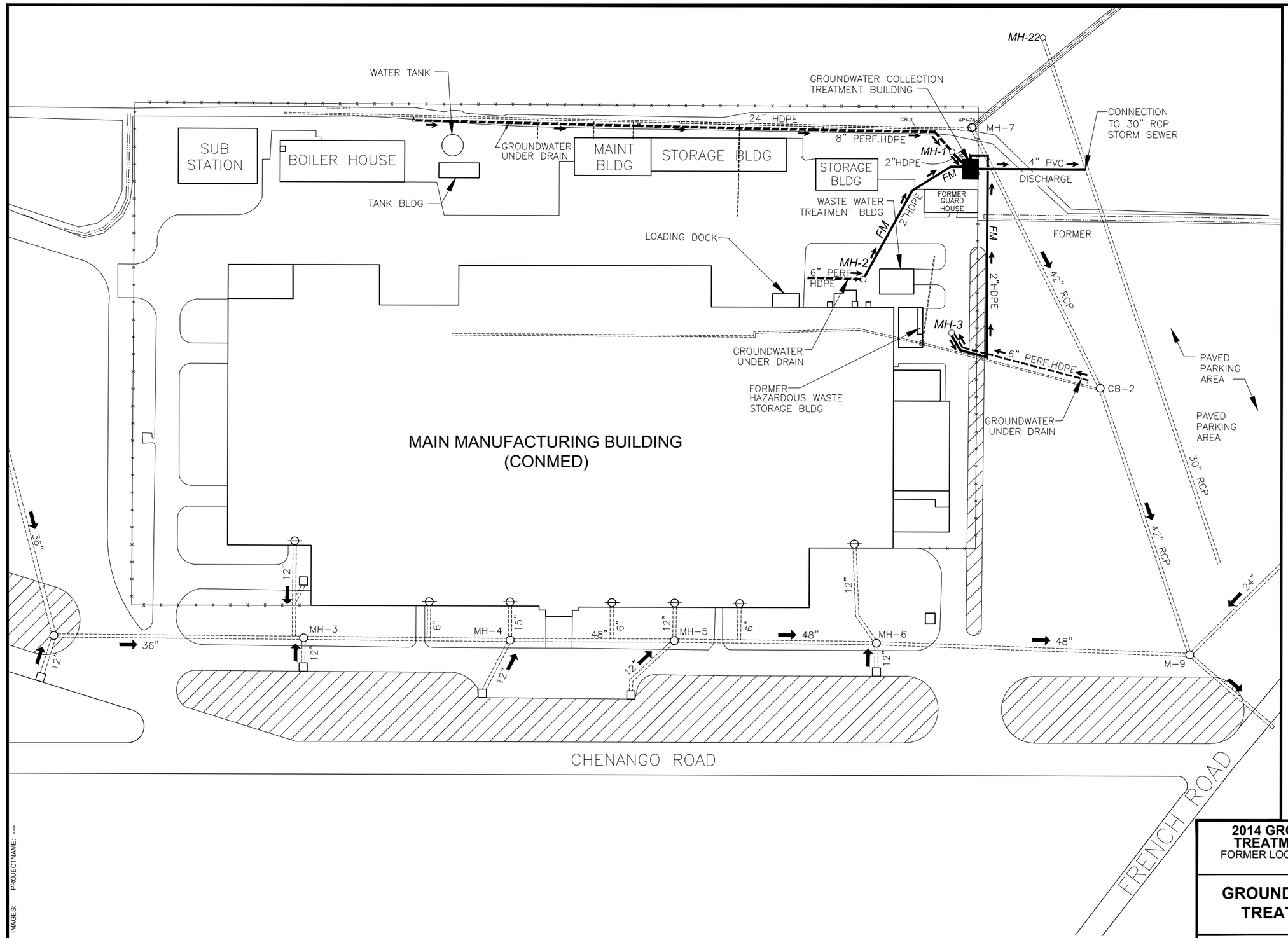


2014 GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY UTICA, NEW YORK

SITE LOCATION MAP

Stantec

FIGURE
1



2014 GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM LAYOUT

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FIGURE
2

U:\190500800\07_photos_maps_images\DRAWINGS\Report Figures\4- GCTS\2014 Annual\Figure 2 Facility Map.dwg LAYOUT: 2-1 SAVED: 2/19/2015 2:59 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: STANTEC - MONO - HALF.CTB PLOTTED: 2/19/2015 2:59 PM BY: LESS, ANDY
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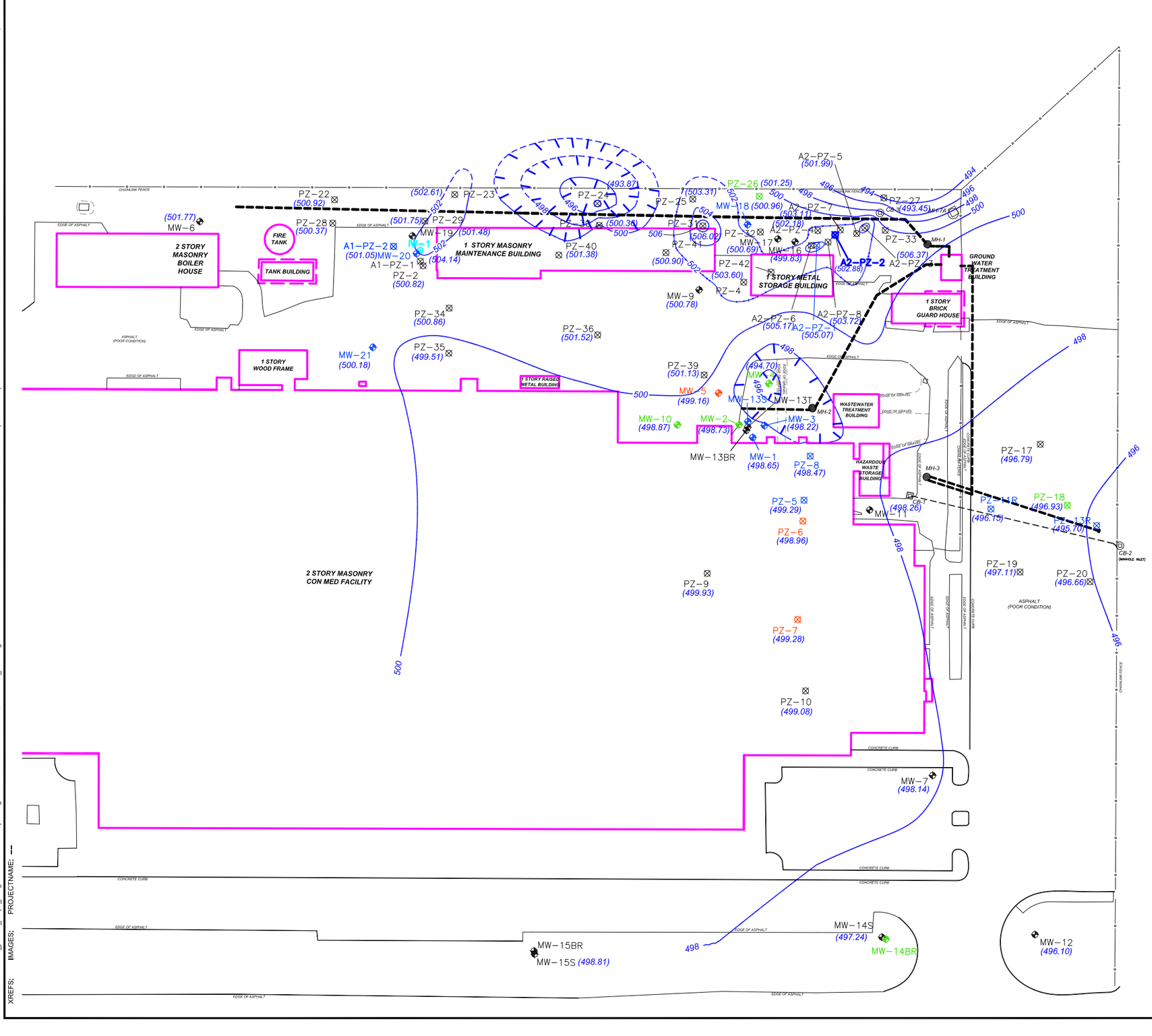

LEGEND:

- IW-1 — INJECTION WELL LOCATION
- MW-10 — MONITORING WELL LOCATION
- PZ-9 — PIEZOMETER LOCATION
- QUARTERLY SAMPLING LOCATION
- SEMI-ANNUAL SAMPLING LOCATION
- ANNUAL SAMPLING LOCATION
- (501.52) — QUARTERLY GROUNDWATER ELEVATION POINT (AMSL)
- 500 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER COLLECTION TRENCH AND PIPING
- FENCE LINE
- MH-2 — GROUNDWATER COLLECTION MANHOLE LOCATION
- CB-2 — MANHOLE WITH INLET GRATE LOCATION

NOTES:

1. BASE PLAN ADAPTED FROM DRAWING ENTITLED "2013 ANNUAL GROUNDWATER MONITORING REPORT, JANUARY 2013 GROUNDWATER CONTOURS" PREPARED BY ACRCADIS.
2. THIS DRAWING IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLAN COORDINATE SYSTEM (CENTRAL ZONE).
3. THE REFERENCED HORIZONTAL CONTROL STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION (CORS) DESIGNATED AS "ROME CORS ARP" (NYRM). NYRM IS A SPECIAL HORIZONTAL AND VERTICAL CONTROL STATION ESTABLISHED BY NATIONAL GEODETIC SURVEY IN JULY 1997.
4. CONTOURS DEVELOPED USING WATER LEVEL DATA FROM FEBRUARY 3, 2014.
5. WELLS PZ-8, AND MW-135 WERE GAUGED, BUT WAS DRY.

0 50' 100'
GRAPHIC SCALE

2014 GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK

GROUNDWATER CONTOURS FEBRUARY 2014

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3

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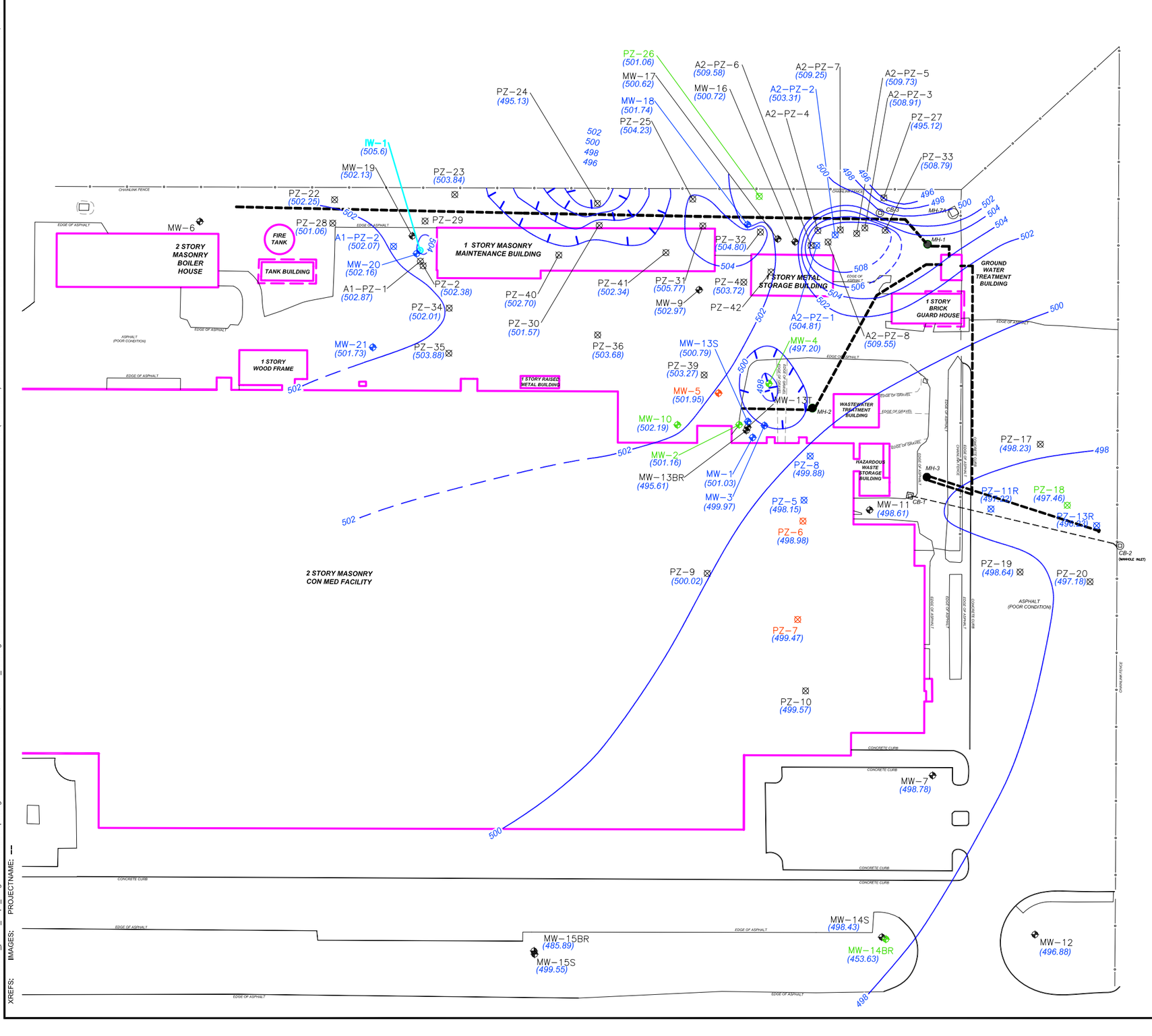

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- FENCE LINE
- MH-2 — GROUNDWATER COLLECTION MANHOLE LOCATION
- CB-2 — MANHOLE WITH INLET GRATE LOCATION

NOTES:

1. BASE PLAN ADAPTED FROM DRAWING ENTITLED "2013 ANNUAL GROUNDWATER MONITORING REPORT, JANUARY 2013 GROUNDWATER CONTOURS" PREPARED BY ACRCADIS.
2. THIS DRAWING IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLAN COORDINATE SYSTEM (CENTRAL ZONE).
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4. CONTOURS DEVELOPED USING WATER LEVEL DATA FROM APRIL 1, 2014.
5. WELLS MW-6, PZ-29, PZ-42, AND A2-PZ-4 WERE NOT GAUGED. PZ-21 WAS GAUGED BUT WAS DRY.

0 50 100
SCALE IN FEET

2014 GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK

GROUNDWATER CONTOURS APRIL 2014

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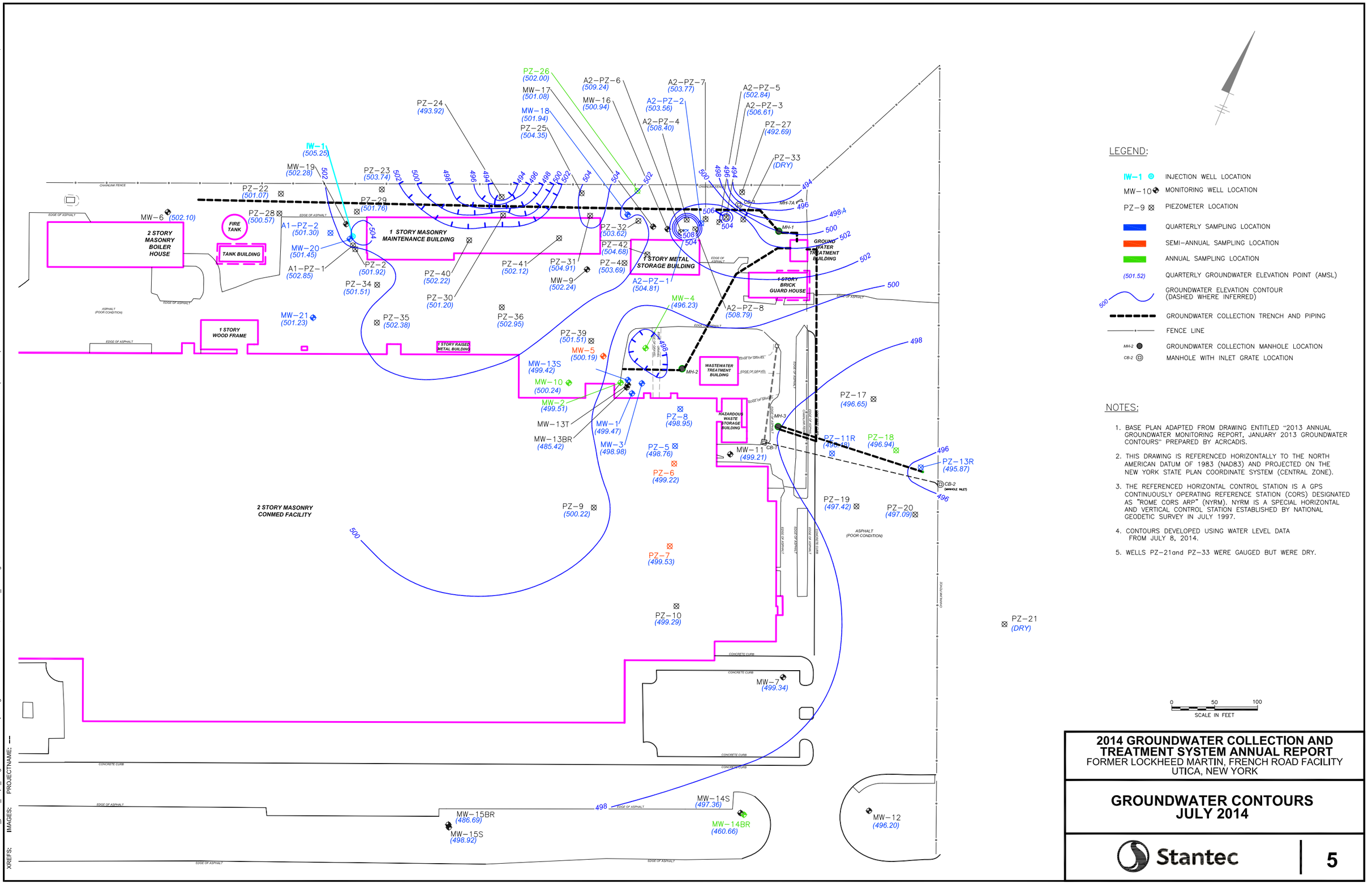

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4. CONTOURS DEVELOPED USING WATER LEVEL DATA FROM JULY 8, 2014.
5. WELLS PZ-21and PZ-33 WERE GAUGED BUT WERE DRY.

0 50 100
SCALE IN FEET

2014 GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK

GROUNDWATER CONTOURS JULY 2014

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CITY:MAHWAH DIV/GROUP:ENVIRONMENTAL DB:J.GONZALEZ LD:J.BONSTEEL PIC:L.MCBURNEY PM:C.MOTTA TM:J.BONSTEEL LYR:
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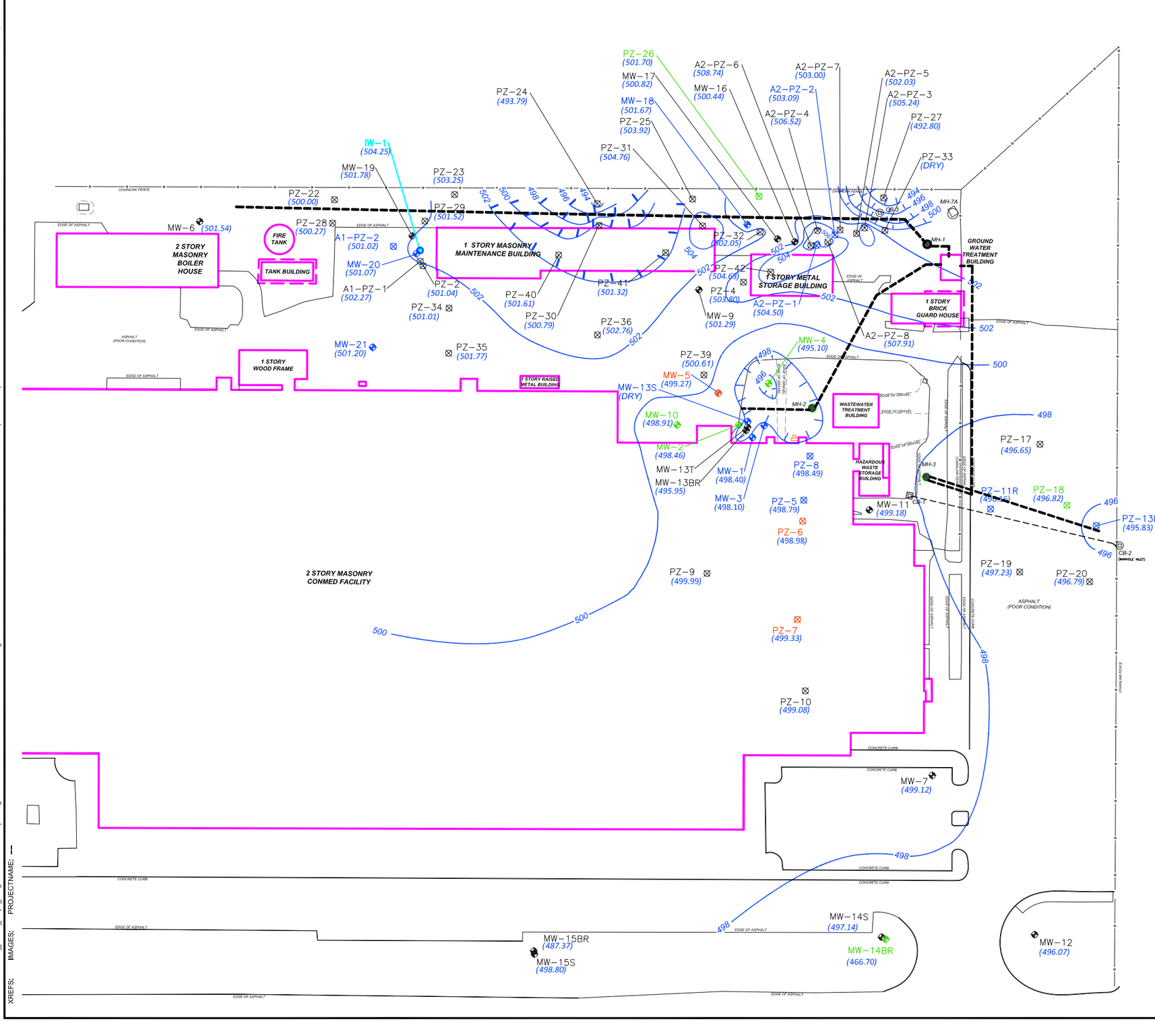

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4. CONTOURS DEVELOPED USING WATER LEVEL DATA FROM OCTOBER 7, 2014.
5. WELLS MW-13S, PZ-21 AND PZ-33 WERE GAUGED BUT WERE DRY.

0 50 100
SCALE IN FEET

2014 GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK

GROUNDWATER CONTOURS OCTOBER 2014

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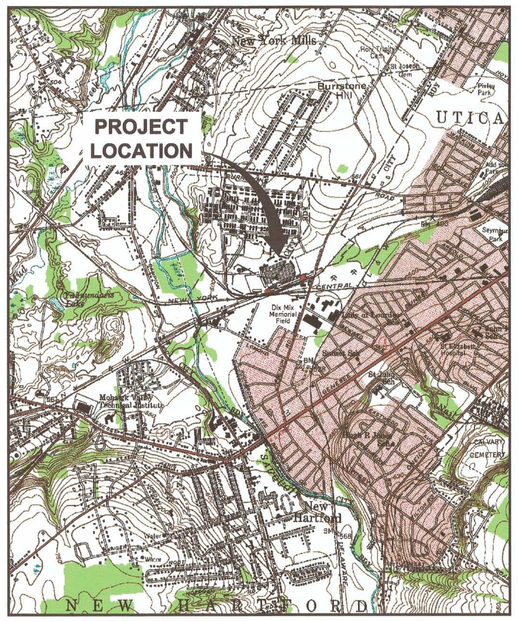
APPENDICES

Appendix A

Record Drawings

RECORD DRAWINGS

GROUNDWATER COLLECTION AND TREATMENT SYSTEM AT FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY



REFERENCE: BASE MAP USGS 7.5 MINUTE QUADRANGLE., UTICA WEST, 1955

LOCATION MAP

0 2000' 4000'
GRAPHIC SCALE



NEW YORK

DATE ISSUED
MARCH 2011

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

ARCADIS

ARCADIS OF NEW YORK, INC.

INDEX TO DRAWINGS

GENERAL
G-1 SITE PLAN
G-2 PLAN & PROFILE OF MH-3 AND GROUNDWATER COLLECTION TRENCH
G-3 PUMPING MANHOLE DETAILS AND SPECIFICATIONS
G-4 PIPING AND TRENCHING DETAILS
G-5 GENERAL NOTES AND ABBREVIATIONS
G-6 LEGEND AND SYMBOLS

MECHANICAL
M-1 PIPING AND INSTRUMENTATION DIAGRAM
M-2 FLOOR PLAN AND DETAILS
M-3 PROCESS FLOW DIAGRAM

ELECTRICAL
E-1 ELECTRICAL FLOOR PLANS
E-2 ONE LINE DIAGRAM, CONDUCTOR AND PANELBOARD SCHEDULES
E-3 CONTROL LOGIC

STRUCTURAL
S-1 BUILDING ELEVATION SECTION AND DETAILS

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 06/13/2011 BY: [signature]

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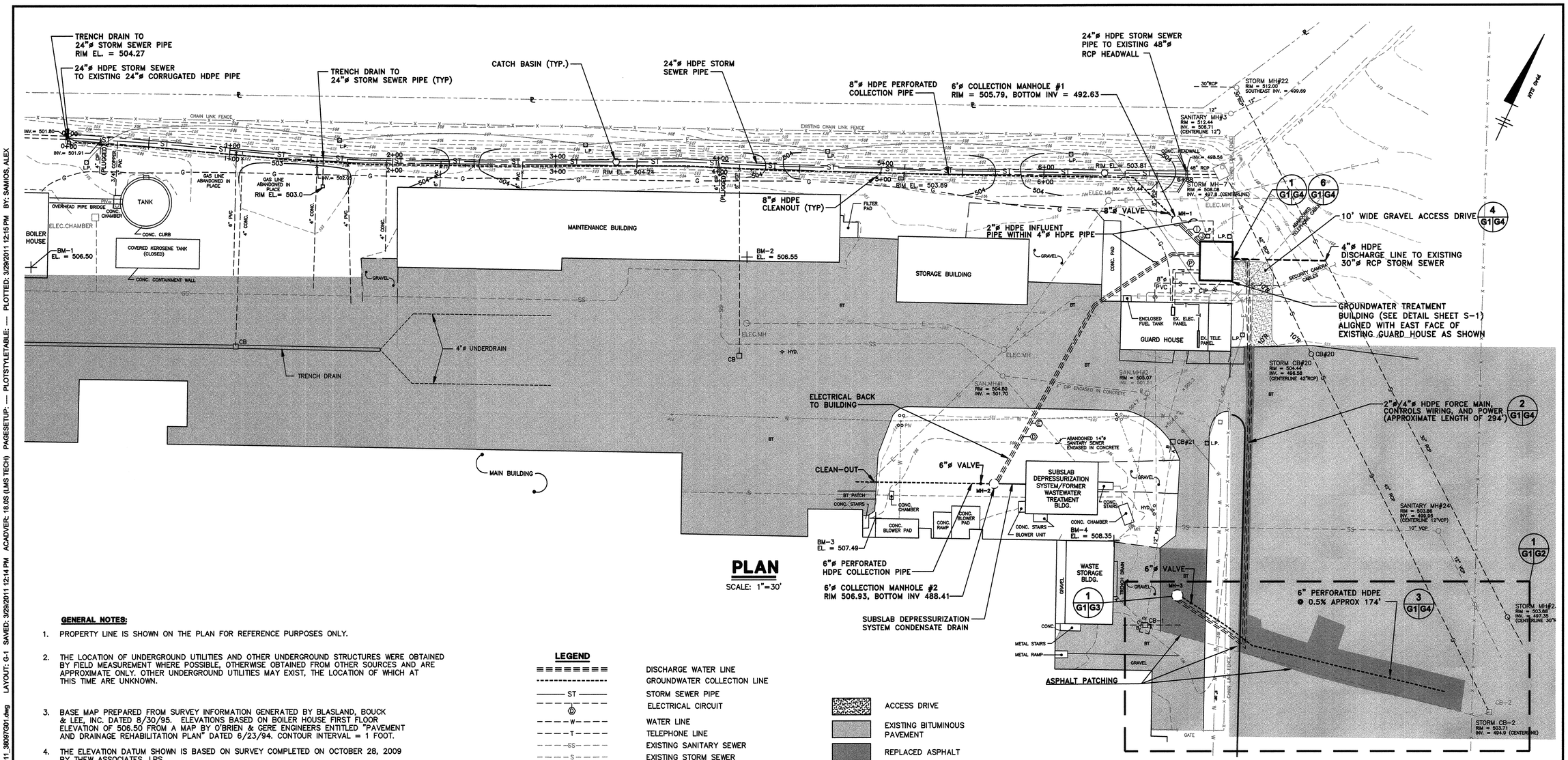

PLAN

SCALE: 1"=30'

GENERAL NOTES:

1. PROPERTY LINE IS SHOWN ON THE PLAN FOR REFERENCE PURPOSES ONLY.
2. THE LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WERE OBTAINED BY FIELD MEASUREMENT WHERE POSSIBLE, OTHERWISE OBTAINED FROM OTHER SOURCES AND ARE APPROXIMATE ONLY. OTHER UNDERGROUND UTILITIES MAY EXIST, THE LOCATION OF WHICH AT THIS TIME ARE UNKNOWN.
3. BASE MAP PREPARED FROM SURVEY INFORMATION GENERATED BY BLASLAND, BOUCK & LEE, INC. DATED 8/30/95. ELEVATIONS BASED ON BOILER HOUSE FIRST FLOOR ELEVATION OF 506.50 FROM A MAP BY O'BRIEN & GERE ENGINEERS ENTITLED "PAVEMENT AND DRAINAGE REHABILITATION PLAN" DATED 6/23/94. CONTOUR INTERVAL = 1 FOOT.
4. THE ELEVATION DATUM SHOWN IS BASED ON SURVEY COMPLETED ON OCTOBER 28, 2009 BY THEW ASSOCIATES, LPS.

LEGEND

DISCHARGE WATER LINE	ACCESS DRIVE
GROUNDWATER COLLECTION LINE	EXISTING BITUMINOUS PAVEMENT
STORM SEWER PIPE	REPLACED ASPHALT
ELECTRICAL CIRCUIT	EXISTING HYDRANT
WATER LINE	EXISTING POSITION INDICATOR VALVE
TELEPHONE LINE	EXISTING LIGHT POLE
EXISTING SANITARY SEWER	EXISTING MANHOLE
EXISTING STORM SEWER	EXISTING CATCH BASIN
EXISTING WATER LINE	
EXISTING GAS LINE	
EXISTING ELECTRIC LINE	
EXISTING CHAIN LINK FENCE	
EXISTING PROPERTY LINE	

0 30' 60'
GRAPHIC SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
3	03/23/11	AS-BUILT RECORD DRAWINGS	CM	MM
2	02/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	01/06/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/02/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

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Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 06/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

SITE PLAN AND DETAILS

ARCADIS Project No. NJ001024.0001.00005
Date MARCH 2011
ARCADIS OF NEW YORK, INC. 465 NEW KARNER ROAD ALBANY, NEW YORK TEL. 518.452.7826

G-1

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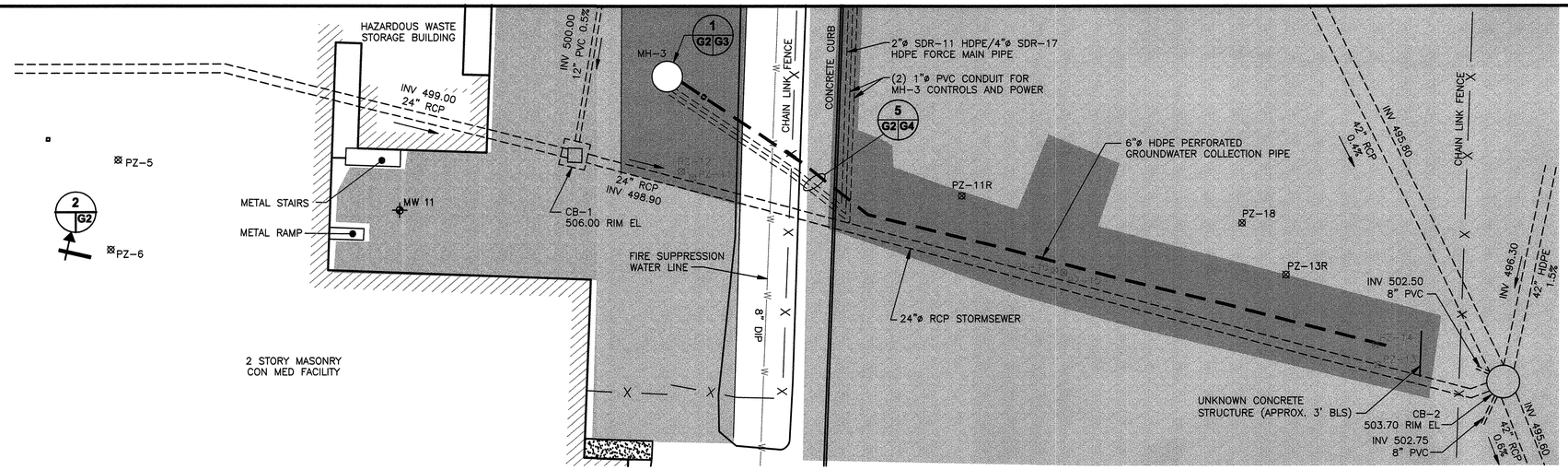
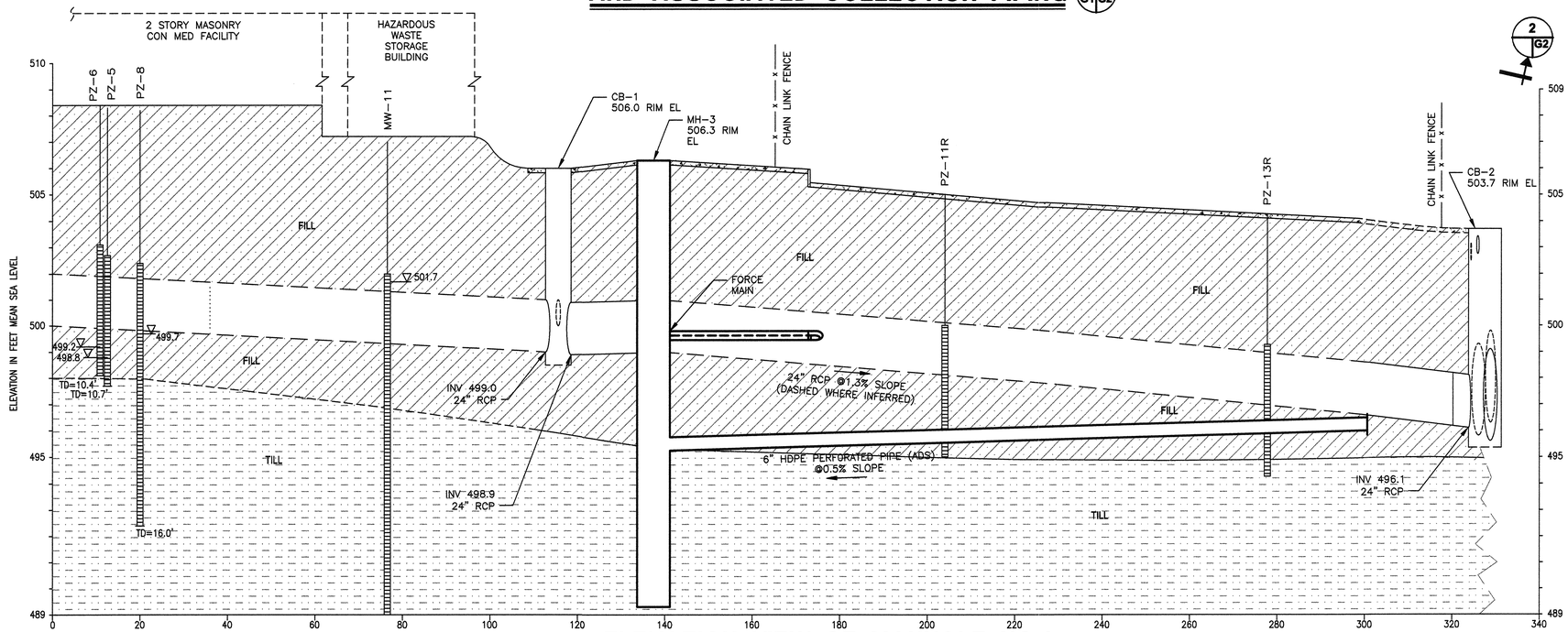


PLAN VIEW OF MANHOLE NO.3 AND ASSOCIATED COLLECTION PIPING (1 / G1 G2)



ELEVATION VIEW OF MANHOLE NO.3 AND ASSOCIATED COLLECTION PIPING (2 / G2)

LEGEND:

- MW 11 — MONITORING WELL LOCATION
- PZ-5 — PIEZOMETER LOCATION
- PZ-16 — FORMER PIEZOMETER LOCATION
- 501.7 — GROUNDWATER LEVEL, 11/18/08
- FILL
- TILL
- WELL DESIGNATION
- EXISTING LAND SURFACE (DASHED WHERE INFERRED)
- GEOLOGIC CONTACT (DASHED WHERE INFERRED)
- SCREENED INTERVAL
- END OF BOREHOLE

0 15' 30' HORIZONTAL SCALE
0 2.5' 5' VERTICAL SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
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2	02/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
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0	12/02/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

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Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 06/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK — MOH MOHIUDDIN — 074527 — LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PLAN & PROFILE OF MH-3 AND GROUNDWATER COLLECTION TRENCH

ARCADIS Project No. NJ001024.0001.00005
Date MARCH 2011
ARCADIS OF NEW YORK, INC. 465 NEW KARNER ROAD ALBANY, NEW YORK TEL. 518.452.7826

G-2

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
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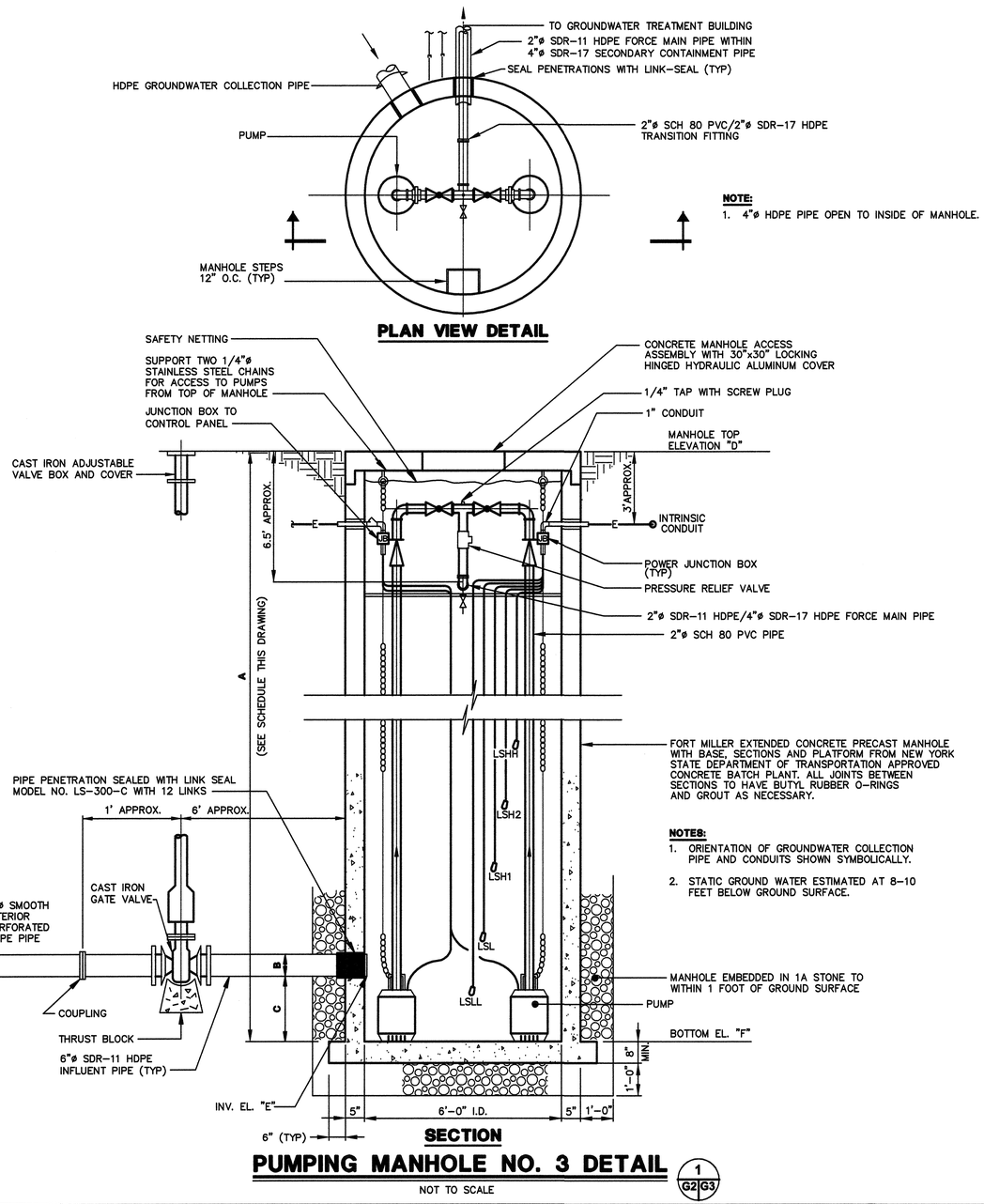

NOTE:
1. 4"ø HDPE PIPE OPEN TO INSIDE OF MANHOLE.

NOTES:
1. ORIENTATION OF GROUNDWATER COLLECTION PIPE AND CONDUITS SHOWN SYMBOLICALLY.
2. STATIC GROUND WATER ESTIMATED AT 8-10 FEET BELOW GROUND SURFACE.

LEGEND

- BALL VALVE
- CHECK VALVE
- NUT UNION
- SAMPLE/DRAIN TAP
- —E— POWER WIRING
- PRESSURE RELIEF VALVE

COLLECTION MANHOLE SCHEDULE	
DESCRIPTION	MH-3
DIST. A	17'-0"
DIST. B	0'-6"
DIST. C	6'-0"
TOP EL. D	506.3'
INV. EL. E	503.3'
BOT. EL. F	489.3'
LSLL	490.8'
LSL	491.8'
LSH1	494.3'
LSH2	496.3'
LSHH	498.8'

PUMPING MANHOLE NO. 3 DETAIL

1 G2 G3

NOT TO SCALE

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Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 3/31/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

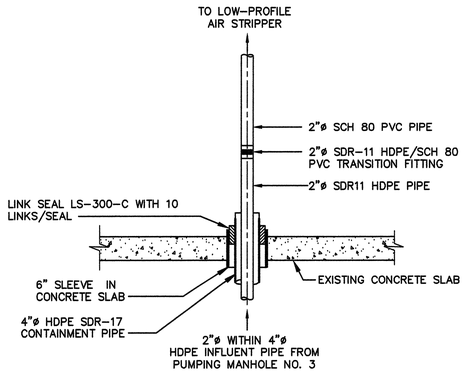
FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PUMPING MANHOLE DETAILS AND SPECIFICATIONS

ARCADIS Project No.: NJ001024.0001.00005
Date: MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

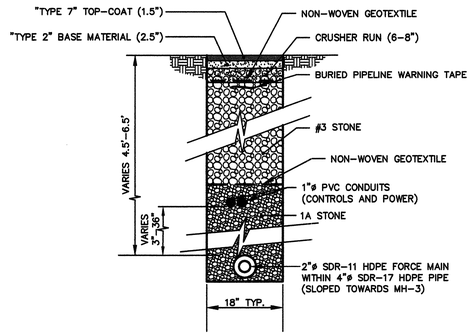
G-3



MANHOLE NO. 3 DISCHARGE PIPE FLOOR PENETRATION DETAIL

NOT TO SCALE

1 G1 G4

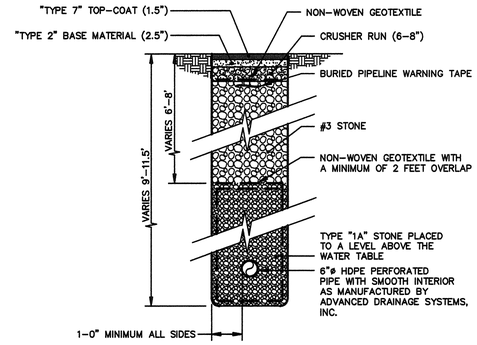


NOTE:
1. IN NON-PAVED AREAS, CRUSHER RUN, TYPE 2, AND TYPE 7 MATERIAL REPLACED WITH NATIVE MATERIAL.

MANHOLE NO. 3 DISCHARGE TRENCH DETAIL (TYPICAL)

NOT TO SCALE

2 G1 G4

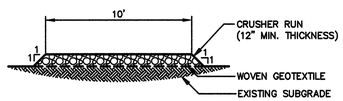


NOTE:
1. IN NON-PAVED AREAS, CRUSHER RUN, TYPE 2, AND TYPE 7 MATERIAL REPLACED WITH NATIVE MATERIAL.

MANHOLE NO. 3 COLLECTION TRENCH DETAIL (TYPICAL)

NOT TO SCALE

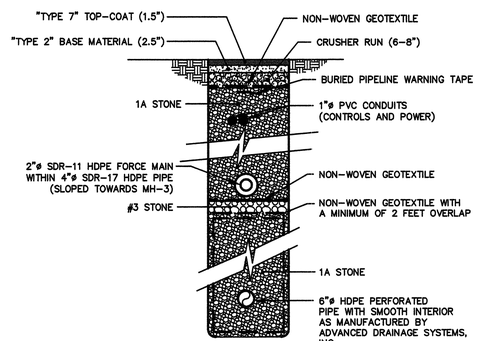
3 G1 G4



GRAVEL ACCESS DRIVE DETAIL

NOT TO SCALE

4 G1 G4

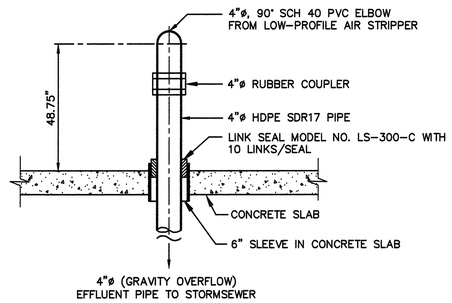


NOTE:
1. IN NON-PAVED AREAS, CRUSHER RUN, TYPE 2, AND TYPE 7 MATERIAL REPLACED WITH NATIVE MATERIAL.

COMBINED MANHOLE NO. 3 DISCHARGE AND COLLECTION TRENCH DETAIL (TYPICAL)

NOT TO SCALE

5 G2 G4



EFFLUENT PIPE FLOOR PENETRATION DETAIL

NOT TO SCALE

6 G1 G4

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0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

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Professional Engineer's No.: 074527
State: NY | Date Signed: 06/23/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

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GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PIPING AND TRENCHING DETAILS

ARCADIS Project No.: NJ001024.0001.00005
Date: MARCH 2011

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G-4

GENERAL NOTES:

1. AIR STRIPPER SYSTEM MANUFACTURED BY QED MODEL EZ-TRAY 12.4 STAINLESS STEEL FABRICATION.

2. ALL PIPING AND MANIFOLDS LABELED WITH STENCIL OR ADHESIVE. FLOW ARROWS LABELED AT INLET AND DISCHARGE CONNECTIONS, PIPING AND DESCRIPTION (E.G., MANHOLE NO. 3 INFLUENT) CLEARLY LABELED AT ALL VALVE AND APPURTENANCE LOCATIONS.

3. FLOW TRANSMITTERS ARE SIGNET ANALOG FLOW TOTALIZER, WHICH DISPLAYS FLOW RATE AND TOTALIZED FLOW VOLUME OR EQUAL. SIGNET INDICATOR ARE A MODEL 8511. ASSOCIATED SIGNET SENSORS ARE MODEL 3-2536-PO. FITTINGS AND DIAL RANGES ARE AS FOLLOWS:

   A. MANHOLE NO. 1, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING - PV8T020 (SALVAGED FROM DEMOLITION)
      DIAL RANGE - 3-180 GPM

   B. MANHOLE NO. 2, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING - PV8T020 (SALVAGED FROM DEMOLITION)
      DIAL RANGE - 3-180 GPM

   C. MANHOLE NO. 3, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING - PV8T020 (NEW)
      DIAL RANGE - 3-180 GPM

   D. COMBINED FLOW, 3 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING - PV8T020 (NEW)
      DIAL RANGE - 7-400 GPM

   E. SUMP PUMP 1-INCH DIAMETER INFLUENT LINE
      SENSOR FITTING - PV8T012 (EXISTING)
      DIAL RANGE - 3-180 GPM

4. ALL FLOW METERS HAVE STRAIGHT PIPE PRECEDING (10 TIMES PIPE DIAMETER) AND FOLLOWING (5 TIMES PIPE DIAMETER) THEM.

5. MANHOLE NO. 3 PUMPS ARE GOULDS PUMPS MODEL 3887 WITH VITON SEALS AND CAST IRON IMPELLER (3/4 HP, 230 VOLTS, 1,750 RPM, 1 PHASE) CAPABLE OF 50 GPM @ 25 FEET TDH (ONE PUMP) OR EQUAL.

6. DUCT HEATER IS HEAT EXCHANGE AND TRANSFER, INC. MODEL ADH-12-483 (12KW, 480V, 3 PHASE).

7. ALL SURFACES AT RECENTLY POURED CONCRETE RECEIVING NEW CONCRETE SHALL BE PREPARED BY CLEANING, WETTING AND TREATMENT WITH A NEAT CEMENT GROUT.

8. VAPOR PHASE CARBON VESSELS SIEMENS FB-1000 1,000 LB VESSELS. VESSELS UTILIZE SIEMENS VOCARB 36C VAPOR PHASE GRANULAR ACTIVATED CARBON.

ABBREVIATIONS:

A.F.F	ABOVE FINISHED FLOOR
BV	BALL VALVE
BFV	BUTTERFLY VALVE
CMP	CHEMICAL METERING PUMP
FS	FLOW SENSOR
FT	FLOW TRANSMITTER
HS	HAND SWITCH
LI	LEVEL INDICATOR
LSH	LEVEL SENSOR HIGH
LSL	LEVEL SENSOR LOW
LV	LOUVER
MIN.	MINIMUM
PI	PRESSURE INDICATOR
PT	PRESSURE TRANSMITTER
SP	SAMPLE PORT
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TT	TEMPERATURE TRANSMITTER
UH	UNIT HEATER

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
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Professional Engineer's No.: 074527
State: NY | Date Signed: 06/8/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

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FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

GENERAL NOTES AND ABBREVIATIONS

ARCADIS Project No.
NJ001024.0001.00005

Date
MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
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TEL. 518.452.7826

G-5

ELECTRICAL LEGEND

- 2 LAMP FLUORESCENT LIGHT FIXTURE, LETTER DENOTES FIXTURE TYPE
- WL — EXTERIOR WALL PACK LIGHT FIXTURE
- ELU — EMERGENCY LIGHT FIXTURE
- S — SINGLE POLE SWITCH
- DUPLEX RECEPTACLE
- GFI — GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE
- JB — JUNCTION BOX
- MOTOR
- CIRCUIT HOMERUN
- TELEPHONE OUTLET
- LS — LIMIT SWITCH
- CIRCUIT BREAKER
- DISCONNECTED, UNFUSED

SECTION AND DETAIL LEGEND

SECTION CUT

- X — SECTION IDENTIFICATION
- Y Z — DRAWING WHERE DETAIL IS LOCATED
- DRAWING WHERE DETAIL IS CALLED OUT

MECHANICAL LEGEND

INSTRUMENTATION SYMBOLS

- X Y — LOCALLY MOUNTED
- X Y — PANEL MOUNTED
- X Y HOA — ON-OFF HAND SWITCH
- PLC (INTERLOCK)

MOTORIZED EQUIPMENT

- MANHOLE PUMP
- BLOWER
- METERING PUMP

PIPING COMPONENTS

- REDUCER
- PI — SAMPLING/PRESSURE ASSEMBLY
- FM — FLOW METER
- E — POWER WIRING
- PI — PRESSURE INDICATOR
- SAMPLE/DRAIN TAP
- CHECK VALVE
- BALL VALVE
- BUTTERFLY VALVE
- FLOW DIRECTION
- PRESSURE RELIEF VALVE
- VACUUM RELIEF VALVE
- AIR FLOW
- HOSE BIBB
- UNION
- WM — WATER METER

OTHER EQUIPMENT

- VAPOR-PHASE GAC VESSEL
- AIR STRIPPER
- SEQUESTERING AGENT

CIVIL LEGEND

SITE PLAN LEGEND

- MANHOLE DISCHARGE WATER LINE
- GROUNDWATER COLLECTION LINE
- ST — STORM SEWER PIPE
- ELECTRICAL CIRCUIT
- W — WATER LINE
- T — TELEPHONE LINE
- SS — EXISTING SANITARY SEWER
- S — EXISTING STORM SEWER
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- G — EXISTING ELECTRIC LINE
- X — EXISTING CHAIN LINK FENCE
- EXISTING PROPERTY LINE
- ACCESS DRIVE
- EXISTING BITUMINOUS PAVEMENT
- HYD. — EXISTING HYDRANT
- PIV — EXISTING POSITION INDICATOR VALVE
- L.P. — EXISTING LIGHT POLE
- MH #22 — EXISTING MANHOLE
- CB#21 — EXISTING CATCH BASIN
- MW 11 — MONITORING WELL LOCATION
- PZ-5 — PIEZOMETER LOCATION
- TEST PIT LOCATION

PROFILE LEGEND

- 501.7 — GROUNDWATER LEVEL, 11/18/08
- OUTLINE OF TEST PIT PROFILE
- FILL
- TILL
- MW-11 — WELL DESIGNATION
- EXISTING LAND SURFACE (DASHED WHERE INFERRED)
- GEOLOGIC CONTACT (DASHED WHERE INFERRED)
- SCREENED INTERVAL
- END OF BOREHOLE

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Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 06/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK — MOH MOHIUDDIN — 074527 — LICENSED PROFESSIONAL ENGINEER

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GROUNDWATER COLLECTION AND TREATMENT SYSTEM

LEGEND AND SYMBOLS

ARCADIS Project No. NJ001024.0001.00005
Date MARCH 2011
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G-6

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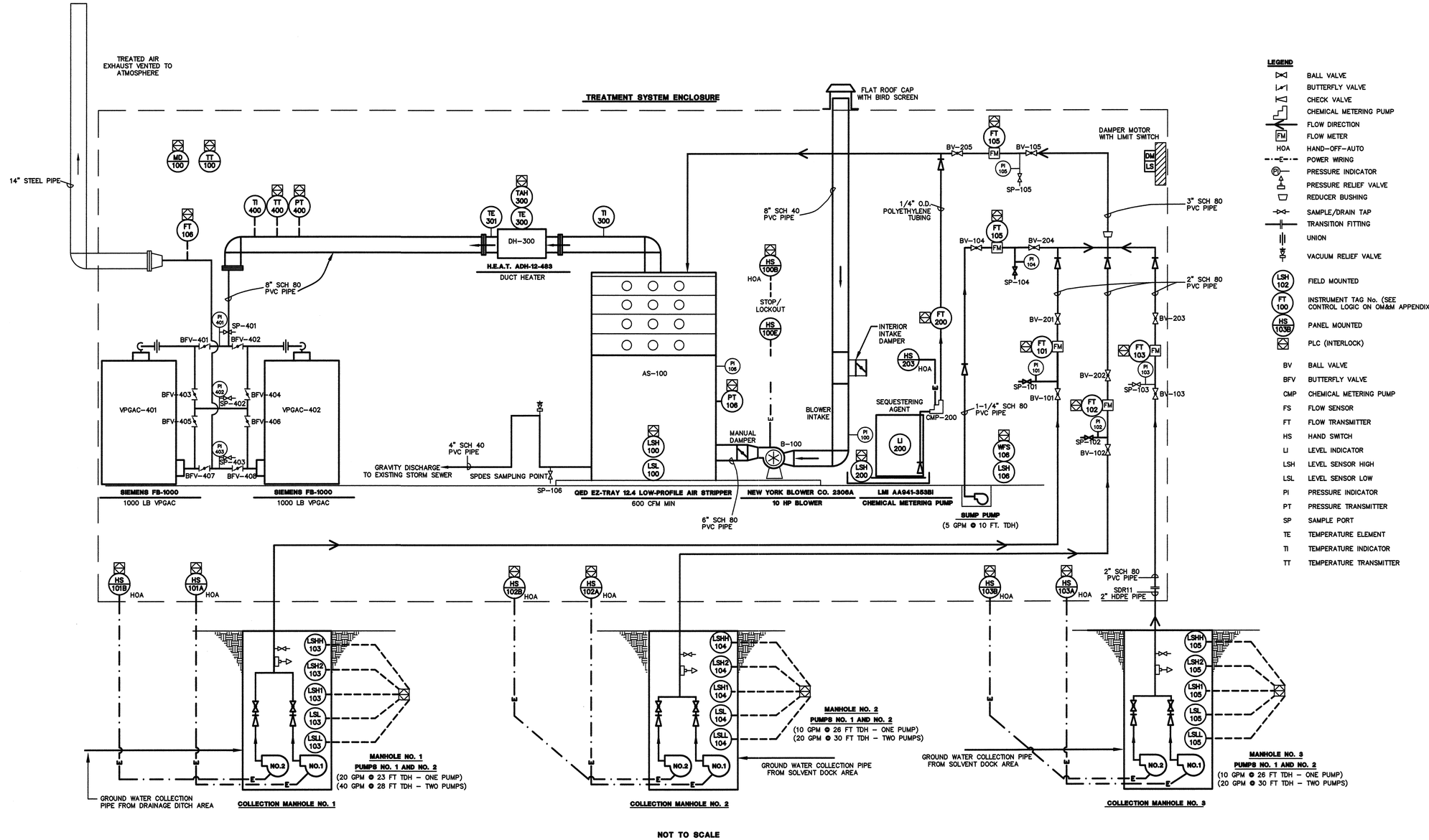

NOT TO SCALE

LEGEND

- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- CHEMICAL METERING PUMP
- FLOW DIRECTION
- FM — FLOW METER
- HOA — HAND-OFF-AUTO
- POWER WIRING
- PI — PRESSURE INDICATOR
- PRESSURE RELIEF VALVE
- REDUCER BUSHING
- SAMPLE/DRAIN TAP
- TRANSITION FITTING
- UNION
- VACUUM RELIEF VALVE
- LSH 102 — FIELD MOUNTED
- FT 100 — INSTRUMENT TAG No. (SEE CONTROL LOGIC ON OM&M APPENDIX)
- HS 103B — PANEL MOUNTED
- PLC (INTERLOCK)

BV	BALL VALVE
BFV	BUTTERFLY VALVE
CMP	CHEMICAL METERING PUMP
FS	FLOW SENSOR
FT	FLOW TRANSMITTER
HS	HAND SWITCH
LI	LEVEL INDICATOR
LSH	LEVEL SENSOR HIGH
LSL	LEVEL SENSOR LOW
PI	PRESSURE INDICATOR
PT	PRESSURE TRANSMITTER
SP	SAMPLE PORT
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TT	TEMPERATURE TRANSMITTER

SCALE(S) AS INDICATED

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Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 04/13/2011 | Project Mgr.: P.MILIONIS
Designed by: C.MCLAUGHLIN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

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GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PIPING AND INSTRUMENTATION DIAGRAM

ARCADIS Project No.: NJ001024.0001.00005
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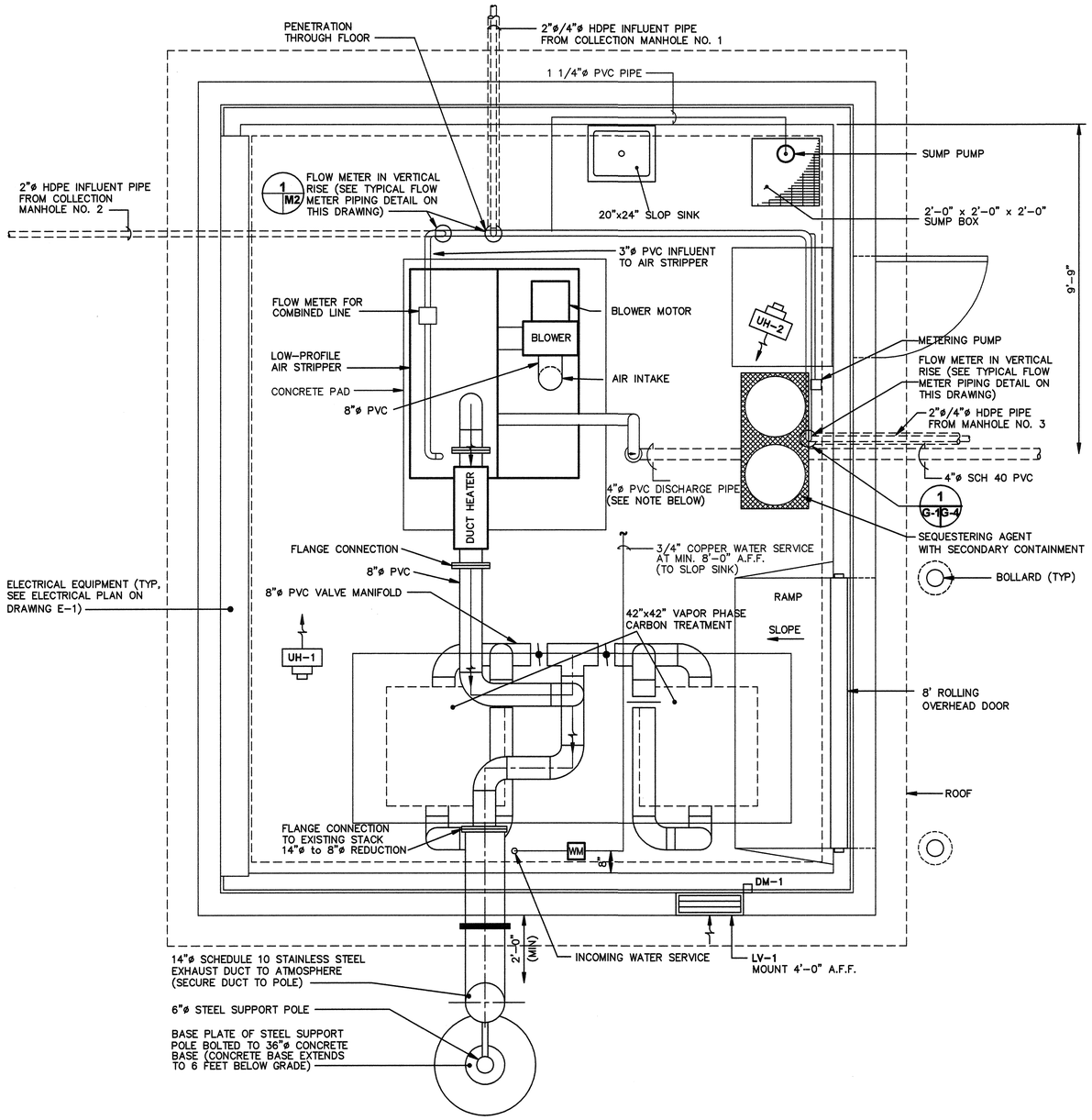
M-1



FLOOR PLAN

SCALE: 1/2"=1'-0"

1/2"=1'-0" 2' 0 2' 4'

NTS 0404

LEGEND

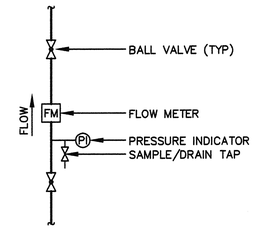
- DIRECTION OF FLOW
- AIR FLOW
- HOSE BIBB
- WM WATER METER

ABBREVIATIONS:

A.F.F.	ABOVE FINISHED FLOOR
MIN.	MINIMUM
DM	DAMPER MOTOR
LV	LOUVER
UH	UNIT HEATER

GENERAL NOTES:

1. REFER TO DRAWING G-5 FOR SPECIFICATIONS AND NOTES.



TYPICAL FLOW METER PIPING DETAIL

1 M2

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FLOOR PLAN AND DETAILS

ARCADIS Project No.: NJ001024.0001.00005
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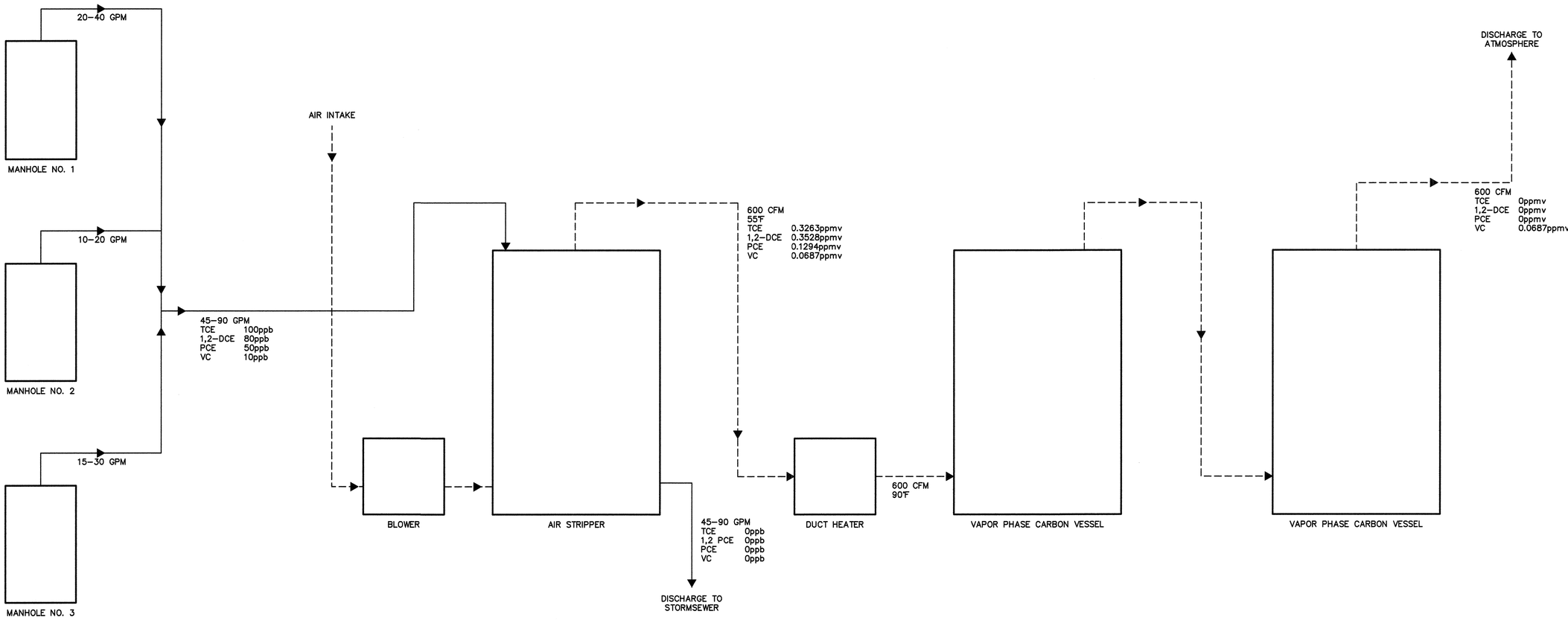

LEGEND

——— WATER

– – – – VAPOR

NOTES

1. OFF GAS CONCENTRATIONS BASED ON QED AIR STRIPPER MODEL VERSION 2.01 AT 90 GPM PROVIDED IN APPENDIX A OF GROUNDWATER COLLECTION AND TREATMENT SYSTEM 100% DESIGN WORKPLAN.

SCALE(S) AS INDICATED

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GROUNDWATER COLLECTION AND TREATMENT SYSTEM

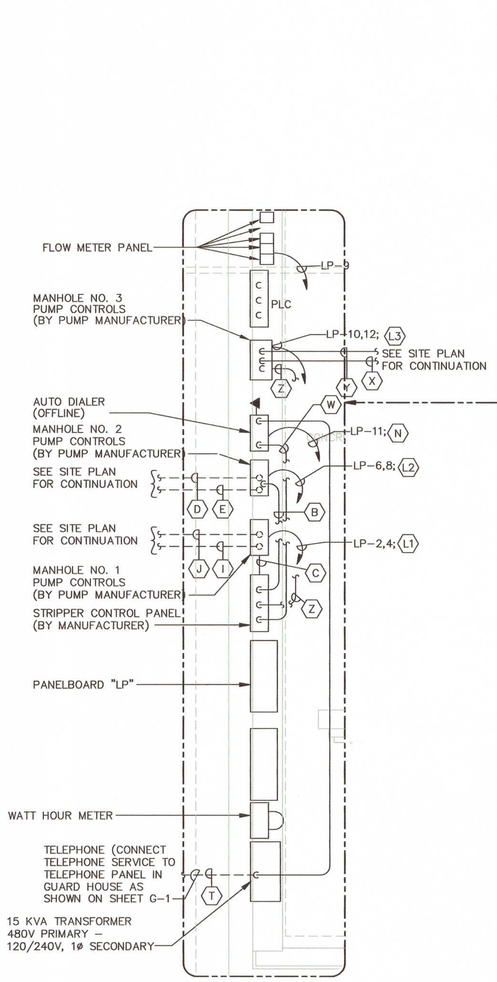
PROCESS FLOW DIAGRAM

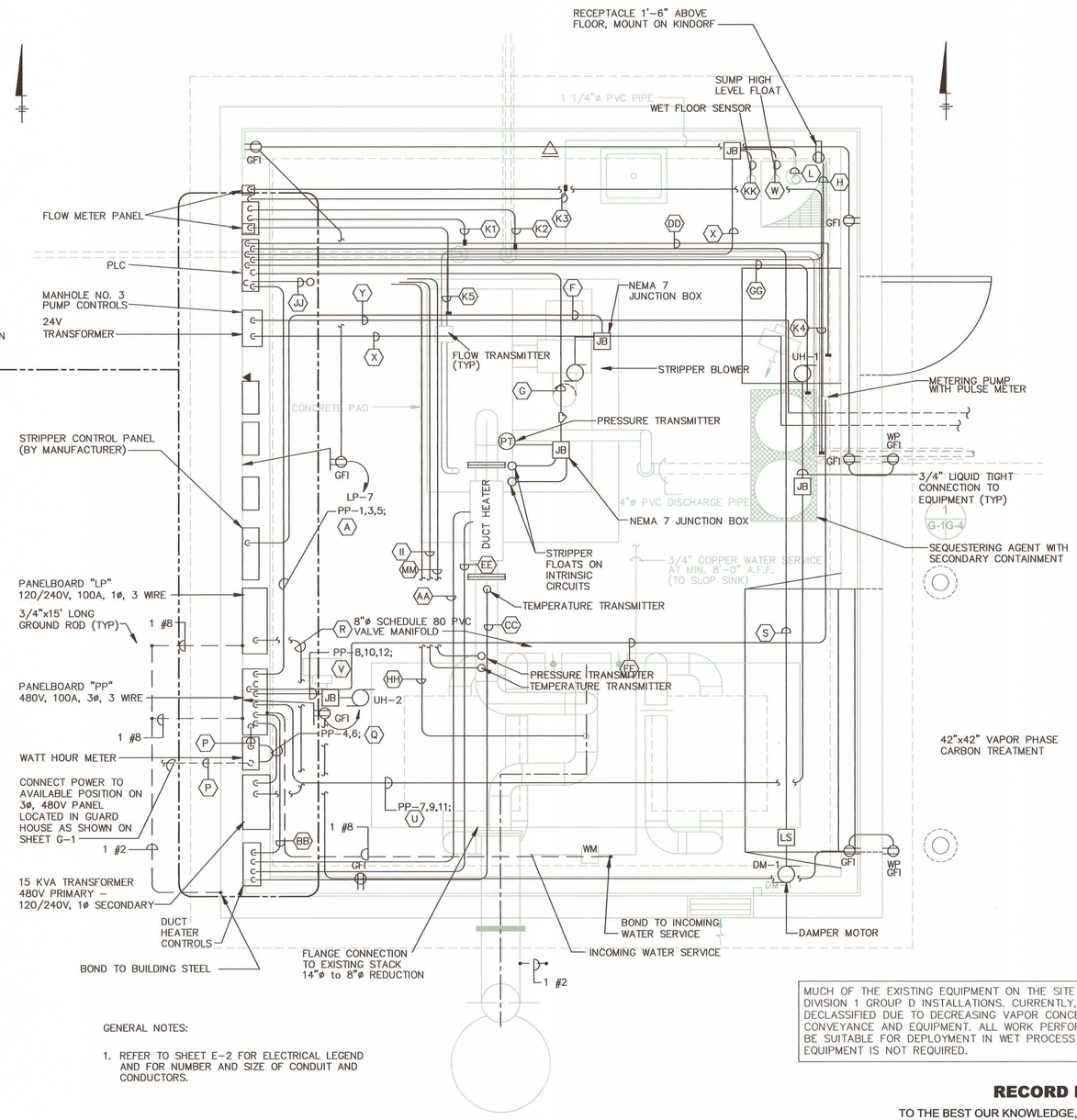
ARCADIS Project No.
NJ001024.0001.00005

Date
MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

M-3





GENERAL NOTES:

1. REFER TO SHEET E-2 FOR ELECTRICAL LEGEND AND FOR NUMBER AND SIZE OF CONDUIT AND CONDUCTORS.

MUCH OF THE EXISTING EQUIPMENT ON THE SITE IS SUITABLE FOR CLASS 1, DIVISION 1 GROUP D INSTALLATIONS. CURRENTLY, THE SITE HAS BEEN DECLASSIFIED DUE TO DECREASING VAPOR CONCENTRATIONS IN PROCESS CONVEYANCE AND EQUIPMENT. ALL WORK PERFORMED IN THIS PHASE SHALL BE SUITABLE FOR DEPLOYMENT IN WET PROCESS LOCATIONS, AND NEMA 7 EQUIPMENT IS NOT REQUIRED.

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 6/13/11 BY: Michael E. Currie

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
\\N12FP1\Data\-DATA\WIPLM\Utica\final as builts\GCS\01024E01.DWG LAYOUT: E-1 SAVED: 6/11/2011 7:52 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: 6030FULL.CTB PLOTTED: 6/13/2011 7:24 AM BY: CURRIE, MIKE

XREFS: 01024X00 01024M02
IMAGES:
PROJECTNAME: ----

1/2"=1'-0" (2' 0 2' 4')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
4	6/12/11	AS-BUILT RECORD DRAWINGS	MEC	MEC
3	3/14/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

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Professional Engineer's Name		
MICHAEL E. CURRE		
Professional Engineer's No.		
082521		
State	Date Signed	Project Mgr.
NY	6/13/11	P.MILIONIS
Designed by	Drawn by	Checked by
C.MCLAUGHLIN	J.GONZALEZ	M.CURRIE

STATE OF NEW YORK MICHAEL E. CURRE NO. 082521 LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

ELECTRICAL FLOOR PLANS

ARCADIS Project No. NJ001024.0001.00005

Date MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
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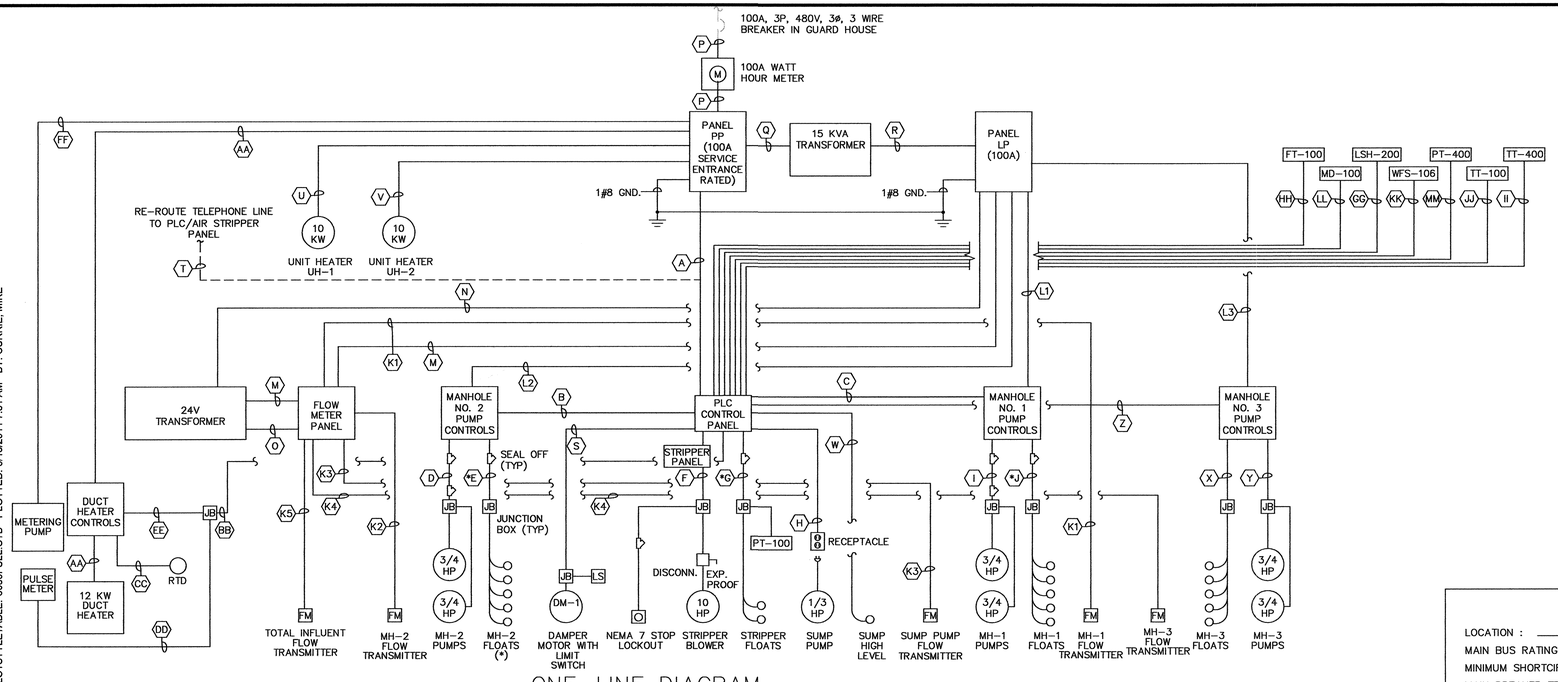
E-1



ONE-LINE DIAGRAM

NOT TO SCALE

CIRCUIT ⬡	CONDUCTOR SIZE	CONDUIT SIZE	NAME
A	3 #10, #10G	3/4" EMT	BLOWER, SUMP PUMP, AND STRIPPER CONTROL POWER FEED
B	8 #14	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 2 PUMP CONTROLS
C	8 #14	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 1 PUMP CONTROLS
D	6 #12, 2 #12G	1-1/2" EMT (INDOORS) 1" RGS (OUTDOORS)	MANHOLE NO. 2 PUMP POWER
E*	10 #12	1-1/2" EMT (INDOORS) 1" RGS (OUTDOORS)	MANHOLE NO. 2 LEVEL SWITCHES
F	3 #8, 1 #12G 2 #14	1-1/2" RGS	BLOWER POWER AND CONTROL
G*	8 #14	3/4" RGS	BLOWER PRESSURE SWITCH & LEVEL SWITCHES
H	2 #12, 1 #12G	3/4" RGS	SUMP PUMP RECEPTACLE POWER
I	6 #12, 2 #12G	1" RGS	MANHOLE NO. 1 PUMP POWER
J*	10 #14	1" RGS	MANHOLE NO. 1 LEVEL SWITCHES
K1 K2 K3 K4 K5	MANUFACTURER'S CABLES	3/4" RGS	MANHOLE NO. 1 FLOW METER, MANHOLE NO. 2 FLOW METER, & SUMP PUMP FLOW METER MANHOLE NO. 3 FLOW METER TOTAL INFLUENT FLOW METER
L1 L2 L3	3 #10, 1 #10G 3 #10, 1 #10G	3/4" EMT	PUMP CONTROL PANEL POWER FEEDS
M	2 #12, 1 #12G	3/4" EMT	FLOW METER & CHART REC. POWER FEED
N	2 #12, 1 #12G	3/4" EMT	24V TRANSFORMER POWER FEED

CIRCUIT ⬡	CONDUCTOR SIZE	CONDUIT SIZE	NAME
O	3 TSP #16	3/4" EMT	FLOW SIGNALS (SEE NOTE 1)
P	3 #2, 1 #6G	1-1/2" EMT (RGS OUTDOORS)	BUILDING POWER
Q	3 #8, 1 10G	1" SEAL TITE	TRANSFORMER FEED
R	3 #6, 1 #8G	1" SEAL TITE	PANEL LP FEED
S	2 #12, 1 #12G 2 #14	3/4" EMT	DAMPER MOTOR AND LIMIT SWITCH
T	6 #22	1-1/2" RGS	TELEPHONE SERVICE
U	3 #10, 1 #10G	3/4" EMT	UNIT HEATER (UH-1)
V	3 #10, 1 #10G	3/4" EMT	UNIT HEATER (UH-2)
W	10 #14	3/4" EMT	SUMP HIGH LEVEL
X	10 #14 1 #14G	1" RGS (SEE NOTE 9)	MANHOLE NO. 3 LEVEL SWITCHES
Y	6 #10 2 #10G	1" RGS (SEE NOTE 9)	MANHOLE NO. 3 PUMP POWER
Z	8 #14 1 #14G	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 3 PUMP CONTROLS
AA	3 #8 1 #8G	1" RGS	DUCT HEATER POWER
BB	6 #14 1 #14G	3/4" RGS	DUCT HEATER HOMERUN
CC	#18 SHIELDED TWISTED PAIR	1" RGS	DUCT HEATER TEMP SENSOR
DD	2 #14 1 #14G	1" RGS	METERING PUMP CONTROLS AND PULSE METER
EE	4 #14 1 #14G	3/4" RGS	DUCT HEATER CONTROLS

CIRCUIT ⬡	CONDUCTOR SIZE	CONDUIT SIZE	NAME
FF	2 #14 1 #14G	3/4" RGS	METERING PUMP POWER
GG	2 #22	3/4" EMT	WET PALLET SENSOR
HH	1 #18	3/4" EMT	AIR FLOW TRANSMITTER
II	1 #18	3/4" EMT	TEMPERATURE TRANSMITTER
JJ	1 #20	3/4" EMT	TEMPERATURE TRANSMITTER
KK	1 #18 1 #18G	3/4" EMT	WET FLOOR SENSOR
LL	1 #22	3/4" EMT	MOTION DETECTOR
MM	1 #18	3/4" EMT	PRESSURE TRANSMITTER

* INDICATES INTRINSICALLY SAFE SYSTEM PER NEC-504

CONDUIT/CONDUCTOR SCHEDULE

NOT TO SCALE

LEGEND

- 2 LAMP FLUORESCENT LIGHT FIXTURE, LETTER n DENOTES FIXTURE TYPE
- WL — EXTERIOR WALL PACK LIGHT FIXTURE
- ELU — EMERGENCY LIGHT FIXTURE
- S — SINGLE POLE SWITCH
- DUPLEX RECEPTACLE
- GFI — GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE
- JB — JUNCTION BOX
- MOTOR
- CIRCUIT HOMERUN
- TELEPHONE OUTLET
- LS — LIMIT SWITCH
- CIRCUIT BREAKER
- DISCONNECTED, UNFUSED

LOAD SERVICE - 480V CONNECTED LOADS					
LOAD/ITEM DESCRIPTION	LOAD (KW)	LOAD (HP)	LOAD (F.L.A.)	CB	SERVICE FACTOR
DUCT HEATER (12 KW)	12.0	--	67.7	30	50%
A/S BLOWER (NEW)	--	10	14.0	30	100%
UNIT HEATER (UH-1)	10.0	--	12.1	20	50%
UNIT HEATER (UH-2)	10.0	--	12.1	20	50%
WELL PUMPS (6)	--	3/4 (EA)	20.7	10	50%
MISC 1ø LOADS	--	--	4.6	20	50%
TOTAL	--	--	81.2A	--	--

PANELBOARD LP SCHEDULE

LOCATION : GROUND WATER TREATMENT BUILDING
MAIN BUS RATINGS : 100 AMPS , 240/120 VOLTS , 1 PHASE , 3 WIRE
MINIMUM SHORTCIRCUIT INTERUPTING RATING : 10,000 RMS. SYMM. AMPS
MAIN BREAKER TRIP : 60 AMPS , INCOMING FEED : 3#6, 1#8 GND., 1"C
ESTIMATED CONNECTED LOAD : 7.1 KVA ENCLOSURE : SURFACE MOUNTED NEMA 1

FED FROM : PANEL "PP" CIRCUITS 4 & 6
NQOD TYPE

DESCRIPTION	LOAD W-KW-HP	CB AMPS	CIR.	B C	CIR.	CB AMPS	LOAD W-KW-HP	DESCRIPTION	
INDOOR/OUTDOOR LIGHTING	480W	20/1	1		2	30/2	1.5 HP	MANHOLE NO.1 PUMP CONTROLS	L1
SPARE		20/1	3		4				
A RECEPTS (SOUTH)	720W	20/1	5		6	30/2	1.5 HP	MANHOLE NO.2 PUMP CONTROLS	L2
B RECEPTS & MTRG PMPS (NORTH)	900W	20/1	7		8				
	--	20/1	9		10	30/2	1.5 HP	MANHOLE NO.3 PUMP CONTROLS	L3
FLOW METER & CHART RECORDER	--	20/1	11		12				
SPARE	--	20/1	13		14	20/1	--	MANHOLE NO.3 FLOW METER	K4
UPS & CONTROLS IN ASMCP	--	15/1	15		16	20/1	--	C RECEPTS	K5
SPARE	--	20/1	17		18	20/1	--	SPARE	
SPACE	--		19		20	20/1	--	SPARE	
MAIN	--	60/2							

PANELBOARD PP SCHEDULE

LOCATION : GROUND WATER TREATMENT BUILDING
MAIN BUS RATINGS : 100 AMPS , 480 VOLTS , 3 PHASE , 3 WIRE
MINIMUM SHORTCIRCUIT INTERUPTING RATING : 10,000 RMS. SYMM. AMPS
MAIN BREAKER TRIP : 100 (SERVICE ENTRANCE RATED) AMPS , INCOMING FEED : 3#2, 1#6 GND., 1-1/2"C
ESTIMATED CONNECTED LOAD : - ENCLOSURE : SURFACE MOUNTED NEMA 1

FED FROM : GUARD HOUSE PANEL CIRCUIT
I-LINE HCN TYPE

DESCRIPTION	LOAD W-KW-HP	CB AMPS	CIR.	A B C	CIR.	CB AMPS	LOAD W-KW-HP	DESCRIPTION	
DUCT HEATER	12KW	40/3	1		2				
			3		4	20		WELL PUMP TRANSFORMER FEED	AA
		3	5		6				
BLOWER, STRIPPER CONTROLS	15HP	45/3	7		8	3			
			9		10	35/2	15KVA	TRANSFORMER FEED	Q
		3	11		12				
UNIT HEATER (UH-1)	10KW	30/3	13		14	30/2	10 KW	UNIT HEATER (UH-2)	U V
			15		16				
		3	17		18	3			A

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 6/13/11 BY:

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1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

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Professional Engineer's Name: MICHAEL E. CURRE
Professional Engineer's No.: 082521
State: NY | Date Signed: 6/13/11 | Project Mgr.: P.MILIONIS
Designed by: C.MCLAUGHLIN | Drawn by: J.GONZALEZ | Checked by: M.CURRIE

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

ONE LINE DIAGRAM, CONDUCTOR AND PANELBOARD SCHEDULES

ARCADIS Project No. NJ001024.0001.00005
Date MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

E-2

CITY: SYRACUSE NY DIVISION: GROUP: ENVIRONMENTAL DB: ePROJECTWISE USER: D.SOUDA PM: P.MILIONIS TM: J.BONSTEEL TR: C.DAVERN LYR:ON=*;OFF=*REF* J:\NJ\001024\0001\00005\ACAD\PP1\Data\TAWP\E2 PLOTSTYLETABLE: 6030FULL.CTB PLOTTED: 6/13/2011 7:31 AM BY: CURRIE, MIKE
PAGESETUP: ---- PLOTSTYLE: SAVED: 6/12/2011 8:39 AM ACADVER: 18.0S (LMS TECH) LAYOUT: E-2 SAVED: 6/13/2011 7:31 AM BY: CURRIE, MIKE
XREF: E2 final as built=GCS\01024\E02.dwg

LOGIC FOR MANHOLE NO. 1

PUMP NO. 1 SHALL NOT OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN OFF POSITION
3. MANHOLE NO. 1 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-103)
4. MANHOLE NO. 1 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-103)

PUMP NO. 1 SHALL OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-103) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-103) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN HAND POSITION

PUMP NO. 2 SHALL NOT OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN OFF POSITION
3. MANHOLE NO. 1 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-103)
4. MANHOLE NO. 1 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-103)

PUMP NO. 2 SHALL OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-103) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-103) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN HAND POSITION

LOGIC FOR MANHOLE NO. 2

PUMP NO. 1 SHALL NOT OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN OFF POSITION
3. MANHOLE NO. 2 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-104)
4. MANHOLE NO. 2 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-104)

PUMP NO. 1 SHALL OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-104) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-104) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN HAND POSITION

PUMP NO. 2 SHALL NOT OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN OFF POSITION
3. MANHOLE NO. 2 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-104)
4. MANHOLE NO. 2 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-104)

PUMP NO. 2 SHALL OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-104) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-104) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN HAND POSITION

LOGIC FOR MANHOLE NO. 3

PUMP NO. 1 SHALL NOT OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN OFF POSITION
3. MANHOLE NO. 3 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-105)
4. MANHOLE NO. 3 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-105)

PUMP NO. 1 SHALL OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-105) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-105) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN HAND POSITION

PUMP NO. 2 SHALL NOT OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN OFF POSITION
3. MANHOLE NO. 3 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-105)
4. MANHOLE NO. 3 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-105)

PUMP NO. 2 SHALL OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-105) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-105) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN HAND POSITION

LOGIC FOR AIR STRIPPER BLOWER (B-100)

BLOWER SHALL OPERATE IF:

1. BLOWER HOA SWITCH (HS-100) IS IN HAND POSITION
2. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 1 PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION AND MANHOLE NO. 1 PUMP NO. 1 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
3. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 1 PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION AND MANHOLE NO. 1 PUMP NO. 2 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
4. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 2 PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION AND MANHOLE NO. 2 PUMP NO. 1 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
5. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 2 PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION AND MANHOLE NO. 2 PUMP NO. 2 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
6. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 3 PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION AND MANHOLE NO. 3 PUMP NO. 1 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
7. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 3 PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION AND MANHOLE NO. 3 PUMP NO. 2 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]

BLOWER SHALL NOT OPERATE IF:

1. BLOWER HOA SWITCH (HS-100) IS IN OFF POSITION
2. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND FATAL ALARMS (SHOWN ON THIS DRAWING) HAVE BEEN INDICATED AT PLC FOR GREATER THAN TEN MINUTES
3. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND NONE OF THE STATEMENTS LISTED ABOVE ARE TRUE

LOGIC FOR DUCT HEATER (DH-300)

DUCT HEATER SHALL OPERATE IF:

1. DUCT HEATER HEAT ON/OFF SWITCH IS IN ON POSITION AND BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND BLOWER (B-100) IS RUNNING

DUCT HEATER SHALL NOT OPERATE IF:

1. DUCT HEATER HEAT ON/OFF SWITCH IS IN OFF POSITION
2. DUCT HEATER HEAT ON/OFF SWITCH IS IN ON POSITION AND BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND BLOWER (B-100) IS NOT RUNNING

LOGIC FOR CHEMICAL METERING PUMP (CMP-200)

CHEMICAL METERING PUMP SHALL OPERATE IF:

1. AGGREGATE FLOW TRANSMITTER (FT-105) IS REGISTERING AN INSTANTANEOUS FLOWRATE

CHEMICAL METERING PUMP SHALL NOT OPERATE IF:

1. AGGREGATE FLOW TRANSMITTER (FT-105) IS NOT REGISTERING AN INSTANTANEOUS FLOWRATE

FATAL ALARMS:

1. HIGH AIR STRIPPER SUMP PRESSURE (PT-106)
2. LOW AIR STRIPPER SUMP PRESSURE (PT-106)
3. HIGH AIR STRIPPER SUMP LEVEL (LSH-100)
4. LOW AIR STRIPPER SUMP LEVEL (LSL-100)
5. HIGH AIR FLOWRATE (FT-106)
6. LOW AIR FLOWRATE (FT-106)
7. PRE-CARBON HIGH TEMPERATURE (TT-400)
8. PRE-CARBON LOW TEMPERATURE (TT-400)
9. PRE-CARBON HIGH PRESSURE (PT-400)
10. PRE-CARBON LOW PRESSURE (PT-400)
11. BUILDING WET FLOOR SENSOR ALARM (WFS-106)

NOTES:

1. CONTROLS WERE MODIFIED FROM AN ELECTRICAL CIRCUIT RELAY. BASED CONTROL SYSTEM TO A MICROPROCESSOR BASED (PROGRAMMABLE LOGIC CONTROLLER) CONTROLS BY AZTECH TECHNOLOGIES, INC, IN DECEMBER 2007.
2. MODIFIED CONTROL DETAILS AND LINE DRAWINGS/SCHEMATIC ARE PROVIDED IN THE APPENDIX OF OM&M MANUAL.
3. PLC PROGRAMMING WILL BE PERFORMED BY ARCADIS.

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 6/13/11 BY:

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
\\N2FP1\Data-DAT4\WIPLM\C\Ulica\final as builts\GCS\01024E03.DWG LAYOUT: E-3 SAVED: 6/11/2011 7:52 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: 6030FULL.CTB PLOTTED: 6/13/2011 7:33 AM BY: CURRIE, MIKE
XREFS:
0102AX00
IMAGES: PROJECTNAME: ----

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: ——— USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
4	6/12/11	AS-BUILT RECORD DRAWINGS	MEC	MEC
3	3/14/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

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Professional Engineer's Name: MICHAEL E. CURRE
Professional Engineer's No.: 082521
State: NY | Date Signed: 6/13/11 | Project Mgr.: P.MILIONIS
Designed by: C.MCLAUGHLIN | Drawn by: J.GONZALEZ | Checked by: M.CURRIE

STATE OF NEW YORK · MICHAEL E. CURRE · LICENSED PROFESSIONAL ENGINEER · NO. 082521

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK

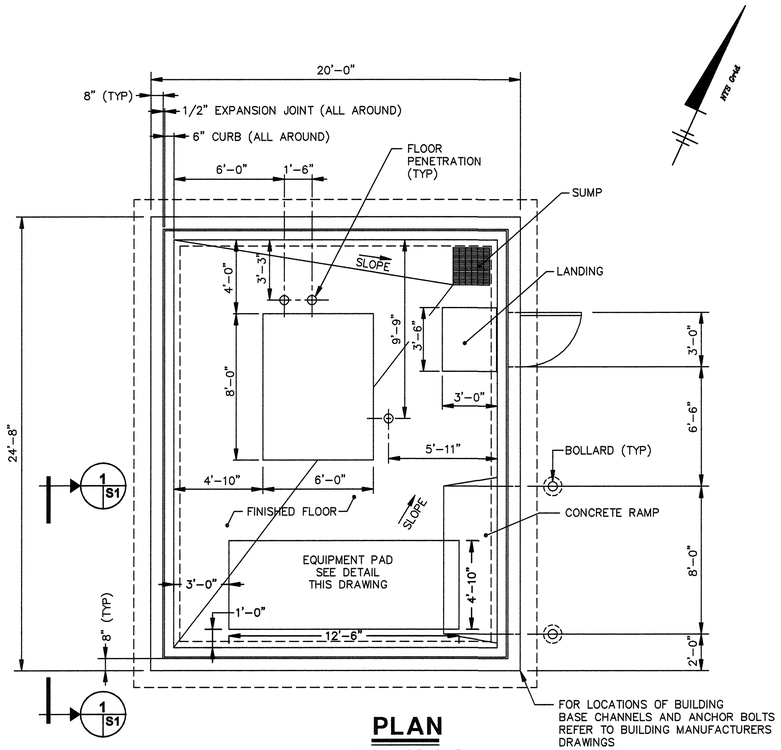
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

CONTROL LOGIC

ARCADIS Project No.: NJ001024.0001.00005
Date: MARCH 2011

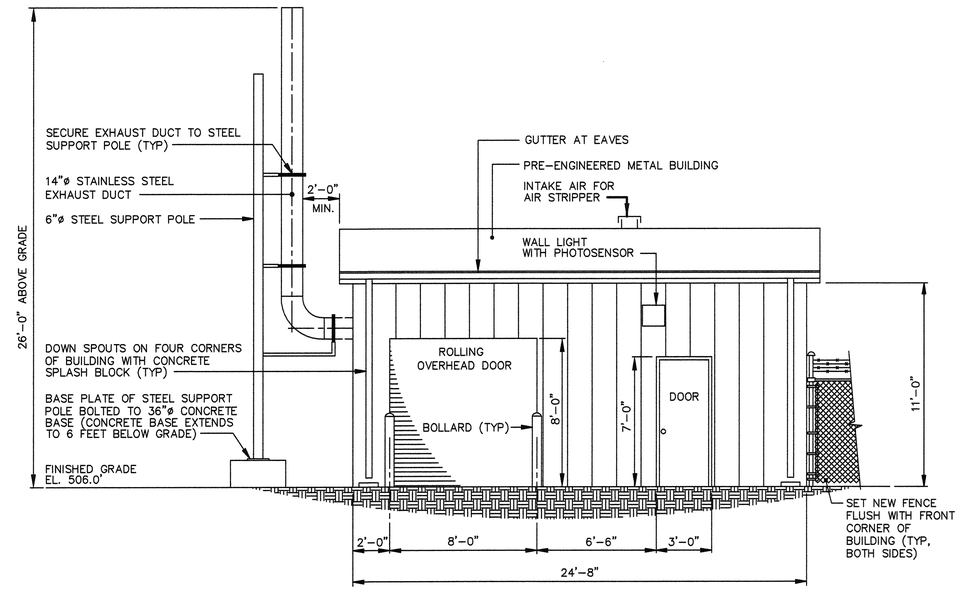
ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

E-3



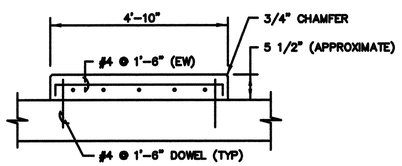
PLAN

SCALE: 1/4"=1'-0"



EAST ELEVATION

SCALE: 1/4"=1'-0"



EQUIPMENT PAD DETAIL 1 S1

NOT TO SCALE

SCALE: 1/4"=1'-0" 4' 2' 0 4' 8'

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYRON="OFF="REF"
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XREFS: IMAGES: PROJECTNAME: ---
01024X00

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: ——— USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
3	3/14/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

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Professional Engineer's Name	MOH MOHIUDDIN PhD, PE, DEE	
Professional Engineer's No.	074527	
State	Date Signed	Project Mgr.
NY	06/13/2011	P.MILIONIS
Designed by	Drawn by	Checked by
C.MCLAUGHLIN	J.GONZALEZ	E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

BUILDING ELEVATION, SECTION AND DETAILS

ARCADIS Project No. NJ001024.0001.00005

Date MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

S-1

Appendix B

Monthly/Quarterly

O&M Checklists

Updated Blank O&M Checklist Forms

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* _____
System currently cycling? _____
Alarms? (list) _____

_____

Electrical Meter Reading (kWh): _____

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]		(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*		(inches)
Blower intake line vacuum [PI-100]		(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*		(inches)
Interior dilution damper position *(0° is shut, 90° is open)*		(°) (inches)

Is white "POWER ON" light on air stripper control panel lit? _____
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? _____
Note scaling inside liquid effluent pipe from access port _____
Note scaling observed inside air stripper via clear tray access door _____

FLOWMETER / PUMP PARAMETERS

	MH-1	MH-2	MH-3
Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N)			

Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) _____

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time					
Instantaneous Flowrate [gpm]					
"Total" Flow (resettable, gal)					
"Perm" Flow (gal)					
Pump 1 Running (Y/N)?					NA
Pump 2 Running (Y/N)?				NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) _____ *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) _____ *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300		(°F)	
Pre-Carbon Temperature	TI-400		(°F)	
Duct Heater Temperature Setpoint	-		(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-		(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401		(in. W.C.)	
Mid-Carbon Pressure	PI-402		(in. W.C.)	
Effluent Pressure	PI-403		(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106		(in. W.C.)	
Vapor Flowrate	FT-106		(cfm)	
Pre-Carbon Temperature	TT-400		(°F)	
Pre-Carbon Pressure	PT-400		(in. W.C.)	
Building Temperature	TT-100		(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)		
Is low flow alarm present? (Y/N)		
Is pump in external mode? (Y/N)		
If in external mode, record one set of mA and stroke speed values	(mA) / (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length		*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	(gal)	*(1 Gallon tick marks hand written in marker on drum based on plastic molded gallon marks)*
Quantity of additional full drums		

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.) _____

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Time:
pH of effluent sample	
Model of pH meter	
Calibration notes / method used	
Are MH-2 or MH-3 online in auto during sampling collection?	MH-2: MH-3:

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

MONTHLY OM&M TASKS (continued)

Task	Notes		
Liquid flow sensors cleaned? (Y/N) (*only as needed*)			
	MH-1	MH-2	MH-3
Monthly manhole inspections conducted? (Y/N)			
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)			
Do level floats appear to be in good condition and hanging freely? (Y/N)			
Observe groundwater inside each manhole and note odor and appearance			
Is confined space entry signage present at each manhole? (Y/N)			
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks			
With pump(s) running, listen for any unusual sounds			
Inspect condition of collection line gate valve protection flush-mount covers for each manhole			
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations			
List any notable observations			
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*			

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	
Is eyewash/shower station operational and unobstructed? (Y/N)	
Is interior emergency lighting operational? (Y/N)	
Is first aid kit present and in good condition? (Y/N)	
Is lockout/tagout equipment available? (Y/N)	
Have electrical GFIs been tested and reset? (Y/N)	
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP: Date:
	OMM: Date:
Is emergency spill kit available? (Y/N)	
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	
Is current SPDES permit onsite? (Y/N) (note date)	Date:

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) _____

MH-1 influent pH _____ Date: _____ Time: _____
MH-2 influent pH _____ Date: _____ Time: _____
MH-3 influent pH _____ Date: _____ Time: _____

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) _____
Are MH-2 or MH-3 online in auto during sampling collection? _____
Treatment system valves exercised? _____

Sample Location	PID Tag	Vapor Sample collects? (Y/N)	Condensate present in sample? (Y/N)	Canister #	Canister Vacuum at Start (in. Hg)	Canister Vacuum at Finish (in. Hg)	Sample Time
Pre-Carbon							
Mid-Carbon							
Post-Carbon							

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) _____
Quarterly groundwater elevation levels collected? (Y/N) _____
Blower bearings greased? (Y/N) _____
Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) _____ (fpm) _____ (cfm)

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)* _____

Sensor Name	Test Type	MH in. Start	MH in. End	MH in. Δ	Δ Gal.	Sensor Start	Sensor End	Sensor Δ	% Diff.	Orig. K Factor	New K Factor
FT-101											
					FT-105						
FT-102											
					FT-105						
FT-103											
					FT-105						

	Test Type	MH1 % diff.	MH2 % diff.	MH3 % diff.	Avg. % Diff.	Orig. K Factor	New K Factor
FT-105							

Notes*: % Difference calculated by the following formula: $\frac{MH-S}{0.5(MH+S)}$ X 100

Manholes are 6' diameter. 1" manhole depth = 17.624 gallons.
If % difference is negative, increase K factor by that percentage to reach zero.
If % difference is positive, decrease K factor by that percentage to each zero.

Manhole floats tested? (Y/N): _____

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response):*

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal			
	Notes:					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal			
	Notes:					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal			
	Notes:					
Air Stripper Low Liquid Level	LSL-100	LA_100	fatal			
	Notes:					
High Air Flowrate	FT-106	FA_106	fatal			
	Notes:					
Low Air Flowrate	FT-106	FA_106	fatal			
	Notes:					
Pre-Carbon High Temperature	TT-400	TAH400	fatal			
	Notes:					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal			
	Notes:					
Pre-Carbon High Pressure	PT-400	PA_400	fatal			
	Notes:					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal			
	Notes:					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-1 Low Flowrate	FT-101	FA_101	warning			
	Notes:					
MH-2 Low Flowrate	FT-102	FA_102	warning			
	Notes:					
MH-3 Low Flowrate	FT-103	FA_103	warning			
	Notes:					
Aggregate Low Flowrate	FT-105	FA_105	warning			
	Notes:					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal			
	Notes:					
Building Sump High Level	LSH-106	LSH106	warning			
	Notes:					
Sequestering Agent Low Flow	FT-200	FA_200	warning			
	Notes:					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning			
	Notes:					
MH-1 High Level	LSHH-103	LA_MH1	warning			
	Notes:					
MH-1 Low Level	LSLL-103	LA_MH1	warning			
	Notes: Should force off both MH-1 pumps					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-2 High Level	LSHH-104	LA_MH2	warning			
	Notes:					
MH-2 Low Level	LSLL-104	LA_MH2	warning			
	Notes: Should force off both MH-2 pumps					
MH-3 High Level	LSHH-105	LA_MH3	warning			
	Notes:					
MH-3 Low Level	LSLL-105	LA_MH3	warning			
	Notes: Should force off both MH-3 pumps					
Building High Temperature	TT-100	TA_100	shutdown			
	Notes:					
Building Low Temperature	TT-100	TA_100	shutdown			
	Notes:					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

CRITICAL DEVICE CORRECTIVE ACTION LOG SHEET

Date: _____ Time: _____

Critical Device Failure:

Device Failure:

Corrective Action:

Completed O&M Checklists

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/23/14
Time: 1230
Technician: J. Gotkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? _____
Alarms? (list) Aerator Sump Alarm

a previous low level alarm was latched in PLC, but was not in that state during the monthly sampling event

Electrical Meter Reading (kWh): 197715

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	30.25	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	13.75	(inches)
Blower intake line vacuum [PI-100]	3	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.1	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.2	(°)

Is white "POWER ON" light on air stripper control panel lit? yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port very little
Note scaling observed inside air stripper via clear tray access door little scaling on windows

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) yes
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) yes All six

Parameter	MH-1 [FT-101] 1230	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	1/23/14 ~~0847~~	1/23/14/1236			
Instantaneous Flowrate [gpm]	37.23	0	0	0	36.91
"Total" Flow (resettable, gal)	1468396	288158	6620417	0	2297003
"Perm" Flow (gal)	19773551	3382758	4187107	1839	14133139
Pump 1 Running (Y/N)?	Yes	NO	NO	NO	NA
Pump 2 Running (Y/N)?	NO	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/23/14
Time: 1241
Technician: Jason Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	69	(°F)	
Pre-Carbon Temperature	TI-400	91	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	84	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	15	(in. W.C.)	
Mid-Carbon Pressure	PI-402	6	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	32.48	(in. W.C.)	
Vapor Flowrate	FT-106	719 to 771	(cfm)	
Pre-Carbon Temperature	TT-400	99.5	(°F)	
Pre-Carbon Pressure	PT-400	9.6	(in. W.C.)	
Building Temperature	TT-100	60.1	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	yes	
If in external mode, record one set of mA and stroke speed values	6 (mA) 5.1 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	23 1/2	inches from bottom
Quantity of additional full drums	None	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): All Good, NO leaks Or Wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 1245
pH of effluent sample	8.10
Model of pH meter	Hanna HI 991001
Calibration notes / method used	2 Point Cal.
Are MH-2 or MH-3 online in auto during sampling collection?	NO

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/23/14
Time: 1300
Technician: J. Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	yes
Monthly manhole inspections conducted? (Y/N)	NO Manholes Froze shut
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	
Do level floats appear to be in good condition and hanging freely? (Y/N)	
Observe groundwater inside each manhole and note odor and appearance	
Is confined space entry signage present at each manhole? (Y/N)	yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	
With pump(s) running, listen for any unusual sounds	
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All Good, No Leaks Or Distress
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	yes
List any notable observations	None
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	yes
Is eyewash/shower station operational and unobstructed? (Y/N)	yes
Is interior emergency lighting operational? (Y/N)	yes
Is first aid kit present and in good condition? (Y/N)	yes
Is lockout/tagout equipment available? (Y/N)	yes
Have electrical GFIs been tested and reset? (Y/N)	yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	yes OM&M 11/12 Hasp 1/13
Is emergency spill kit available? (Y/N)	yes in SSDS
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	yes
Is current SPDES permit onsite? (Y/N) (note date)	yes Posted on Wall 4/11/11

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 2/6/14
Time: —
Technician: CD/JG

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) Y

MH-1 influent pH 7.14
MH-2 influent pH 7.57
MH-3 influent pH 7.81

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Y

Are MH-2 or MH-3 online in auto during sampling collection? N

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) N

Quarterly groundwater elevation levels collected? (Y/N) Y

Blower bearings greased? (Y/N) Yes

Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) 2265 (fpm) / 718 (cfm)

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)* Yes, on 2/4/14

If yes, document testing and note any changes in sensor calibration factors

FT-101 → pumpdown test → Δ inches = 11 1/8" → 196 gal. Δ totalizer = 196 ✓ OK
FT-102 → Pumpdown test → Δ in. = 12 3/4" → 224 gal. Δ totalizer = 255 gal → +13.8 %.
Adjusted K-factor from 76.6 to 87.2.
FT-103 → Pumpdown test → Δ in. = 24 3/8" → 424 gal. Δ Totalizer = 415 → -3.3 % = OK
FT-105 → Did 4 comparisons while MH-1, 2, 3 online, respectively. FT-105 read 27% high, 28% high, + 26% high during MH-1, 2, + 3 pumpdowns, respectively. Increased FT-105 K-factor by 27% from 62.4 to 79.2.

Manhole floats tested? (Y/N) No.

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response)*:

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Changed high from 35 to 27, 10 sec delay. Shutdown.					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Changed ~~low~~ low from 8 to 30. 10 sec delay. Shutdown.					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Y	Y	Y
	Notes: Filled with clean sink water during non-cycle.					

2/5/14

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: [illegible]
Time: —
Technician: CD/WA/BH

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

	Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
2/5/14	Air Stripper Low Liquid Level	LSL-100	LA_100	fatal	Y	N	Y
		Notes: Closed BFV - Pre-Carbon Valve. 10 min delay. Non-fatal					
	High Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
		Notes: Setpoint 1200. Changed setpoint to 500 cfm. Shutdown.					
2/5/14	Low Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
		Notes: Setpoint 300. Changed to 1,000. Fatal alarm after 5 min.					
	Pre-Carbon High Temperature	TT-400	TAH400	fatal	Y	Y	Y
		Notes: Change high to 70, [redacted] delay. Shutdown. 1 minute					
	Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Y	Y	Y
		Notes: Change low to 109 °F. 3 minute delay. Shutdown.					
	Pre-Carbon High Pressure	PT-400	PA_400	fatal	Y	Y	Y
		Notes: Change high to 5 "w.c. 45 sec delay. Shutdown					
	Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Y	Y	Y
		Notes: Change low to 19. 45 sec delay. Shutdown.					
2/4/14	MH-1 Low Flowrate	FT-101	FA_101	warning	Y	N	Y
		Notes: Tested via turning HOA's offline.					
2/4/14	MH-2 Low Flowrate	FT-102	FA_102	warning	Y	N	Y
		Notes: Tested via turning MH-2 HOA's offline during cycle.					
↓	MH-3 Low Flowrate	FT-103	FA_103	warning	Y	N	Y
		Notes: Tested via turning both MH-3 HOA's off when running in auto					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: —
Time: —
Technician: CD/BH/WA

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

	Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
2/4/14	Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
		Notes: Tested during MH-1 thru MH-3 low flowrate tests					
2/5/14	Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Y	Y	Y
		Notes: Filled/overflowed sump.					
	Building Sump High Level	LSH-106	LSH106	warning	Y	N	Y
		Notes: Filled sump with clean sink water. Non-fatal.					
	Sequestering Agent Low Flow	FT-200	FA_200	warning	Y	N	Y
		Notes: Took suction out of drum.					
	Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Y	N	Y
		Notes: Wetted sensor. Non-fatal.					
	MH-1 High Level	LSHH-103	LA_MH1	warning			
		Notes:					
	MH-1 Low Level	LSLL-103	LA_MH1	warning			
		Notes: Should force off both MH-1 pumps					
	MH-2 High Level	LSHH-104	LA_MH2	warning			
		Notes:					
	MH-2 Low Level	LSLL-104	LA_MH2	warning			
		Notes: Should force off both MH-2 pumps					
	MH-3 High Level	LSHH-105	LA_MH3	warning			
		Notes:					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: see
Time: —
Technician: CD/WA/BH

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-3 Low Level	LSLL-105	LA_MH3	warning			
	Notes: Should force off both MH-3 pumps					
Building High Temperature (2/5/14)	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: setpoint = 110°F. Change setpoint to 60°F. 2 minute delay. Shutdown					
Building Low Temperature (2/5/14)	TT-100	TA_100	shutdown			
	Notes: setpoint = 40°F. Put snow up to probe.					

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/4/14
Time: 0930
Technician: BH WA

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Yes
System currently cycling? Yes
Alarms? (list) none

Electrical Meter Reading (kWh): 00208058

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	28	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	15	(inches)
Blower intake line vacuum [PI-100]	1.9	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.35	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port Small amount
Note scaling observed inside air stripper via clear tray access door Clear

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	3/4/14	3/4/14	3/4/14	—	3/4/14
Instantaneous Flowrate [gpm]	0	0	16.65-17.03	—	15.10-17.30
"Total" Flow (resettable, gal)	01761851	00317221	00749480	—	02724024
"Perm" Flow (gal)	20067020	03411821	04274562	—	14560179
Pump 1 Running (Y/N)?	N	N	N		NA
Pump 2 Running (Y/N)?	N	N	Y	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/4/14
Time: 0930
Technician: BH WA

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	65.0	(°F)	
Pre-Carbon Temperature	TI-400	98.0	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	86	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	14.0	(in. W.C.)	
Mid-Carbon Pressure	PI-402	5.6	(in. W.C.)	
Effluent Pressure	PI-403	0.6	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	30.40	(in. W.C.)	
Vapor Flowrate	FT-106	808.7-886.5	(cfm)	Range
Pre-Carbon Temperature	TT-400	97.0	(°F)	
Pre-Carbon Pressure	PT-400	11.0	(in. W.C.)	
Building Temperature	TT-100	59.2	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	4.6 (mA) 3 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	86	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200] (~~inches~~ of liquid from bottom of drum)	25.8	gallons
Quantity of additional full (30 gal) drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): No leaks or wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Y
pH of effluent sample	8.44
Model of pH meter	pH Testr 30
Calibration notes / method used	3 point calibration onsite
Are MH-2 or MH-3 online in auto during sampling collection?	No

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/4/14
Time: 0930
Technician: BH WA

MONTHLY OM&M TASKS (continued)

Task	Notes		
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	N		
Monthly manhole inspections conducted? (Y/N)	1	2	3
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	N	N	N
Do level floats appear to be in good condition and hanging freely? (Y/N)	Y	Y	Y
Observe groundwater inside each manhole and note odor and appearance	No odor No sheen	No odor No sheen	No odor No sheen
Is confined space entry signage present at each manhole? (Y/N)	Y	Y	Y
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	ok	ok	ok
With pump(s) running, listen for any unusual sounds	ok	ok	ok
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	ok	ok	ok
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	No notable problems		
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	No		
List any notable observations			
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Y		

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Y
Is eyewash/shower station operational and unobstructed? (Y/N)	Y
Is interior emergency lighting operational? (Y/N)	Y
Is first aid kit present and in good condition? (Y/N)	Y
Is lockout/tagout equipment available? (Y/N)	Y
Have electrical GFIs been tested and reset? (Y/N)	Y
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Y
Is emergency spill kit available? (Y/N)	Y
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Y
Is current SPDES permit onsite? (Y/N) (note date)	Y

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/1/14
Time: 13:00
Technician: MH + BH

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? yes MH-1 P:1
Alarms? (list)

Electrical Meter Reading (kWh): 00215816 KWH

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	27	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	17.5	(inches)
Blower intake line vacuum [PI-100]	1.9	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0,25	(°) (inches)

Is white "POWER ON" light on air stripper control panel lit? yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port little
Note scaling observed inside air stripper via clear tray access door little to none

FLOWMETER / PUMP PARAMETERS

	MH-1	MH-2	MH-3
Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N)	Y	Y	Y

Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Y

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	4/1/14 1327	4/1/14 1327	4/1/14 1327	"	"
Instantaneous Flowrate [gpm]	36.15	0	0	0	38.95
"Total" Flow (resettable, gal)	2095282	362797	883040	-	3265050
"Perm" Flow (gal)	20400451	3457397	4408100	-	15101149
Pump 1 Running (Y/N)?	Y	N	N		NA
Pump 2 Running (Y/N)?	N	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/1/14
Time: 1300
Technician: WA + BH

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	50	(°F)	
Pre-Carbon Temperature	TI-400	72	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	12.9	(in. W.C.)	
Mid-Carbon Pressure	PI-402	5.0	(in. W.C.)	
Effluent Pressure	PI-403	0.5	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	26.34	(in. W.C.)	
Vapor Flowrate	FT-106	815	(cfm)	785 - 856
Pre-Carbon Temperature	TT-400	74.4	(°F)	
Pre-Carbon Pressure	PT-400	11.7	(in. W.C.)	
Building Temperature	TT-100	65.0	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	4.6 (mA)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
	3 (spm)	
Stroke length	87	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	16 (gal)	*(1 Gallon tick marks hand written in marker on drum based on plastic molded gallon marks)*
Quantity of additional full drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): OK

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Y Time: 0925
pH of effluent sample	8.27
Model of pH meter	pH Testr 30
Calibration notes / method used	3 point
Are MH-2 or MH-3 online in auto during sampling collection?	MH-2: NO MH-3: Yes

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/1/14
Time: 1300
Technician: WA + BH

MONTHLY OM&M TASKS (continued)

Task	Notes		
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	Not needed		
	MH-1	MH-2	MH-3
Monthly manhole inspections conducted? (Y/N)	Y	Y	Y
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	N	N	N
Do level floats appear to be in good condition and hanging freely? (Y/N)	Y	Y	Y
Observe groundwater inside each manhole and note odor and appearance	No sheen No odor clear	No sheen No odor murky	No sheen, No odor clear
Is confined space entry signage present at each manhole? (Y/N)	Y	Y	Y
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	Good	Good	Good
With pump(s) running, listen for any unusual sounds	none	none	None
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good	Good	Good
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	OK		
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Y		
List any notable observations			
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Y		

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Y
Is eyewash/shower station operational and unobstructed? (Y/N)	Y
Is interior emergency lighting operational? (Y/N)	
Is first aid kit present and in good condition? (Y/N)	Y
Is lockout/tagout equipment available? (Y/N)	Y
Have electrical GFIs been tested and reset? (Y/N)	
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP: 3/14 Date:
	OMM: Original Date:
Is emergency spill kit available? (Y/N)	Y
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Y
Is current SPDES permit onsite? (Y/N) (note date)	Y Date: 4/2014

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/2/14
Time: 0830
Technician: MA & BH

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) _____

MH-1 influent pH	7.58	Date:	4/4/14	Time:	0915
MH-2 influent pH	7.73	Date:	4/4/14	Time:	0925
MH-3 influent pH	7.65	Date:	4/3/14	Time:	0855

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Y

Are MH-2 or MH-3 online in auto during sampling collection? MH-3

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) Y

Quarterly groundwater elevation levels collected? (Y/N) Y

Blower bearings greased? (Y/N) Y

Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) 1895 (fpm) / 600.715 (cfm)

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)* _____

Sensor Name	Test Type	MH in. Start	MH in. End	MH in. Δ	Δ Gal.	Sensor Start	Sensor End	Sensor Δ	% Diff.	Orig. K Factor	New K Factor
FT-101	pumpdown	114.0	126.25	12.25	215	0451	0671	220	-2%	76.5	—
				FT-105		5579	5834	255	-17.0%		
FT-102	pumpdown	173.125	184.875	11.75	207	7397	7574	177	15.6%	87.2	73.6
				FT-105		5202	5430	228	-9.7%		
FT-103	pumpdown	137.625	151.75	14.125	249	8000	8250	250	-0.4%	66.7	—
				FT-105		4947	5202	255	-2.4%		

	Test Type	MH1 % diff.	MH2 % diff.	MH3 % diff.	Avg. % Diff.	Orig. K Factor	New K Factor
FT-105	comparison	-17.0	-9.7	-2.4	-9.7	79.2	86.2

Notes*: % Difference calculated by the following formula: $\frac{MH-S}{0.5(MH+S)} \times 100$

Manholes are 6' diameter. 1" manhole depth = 17.624 gallons.

If % difference is negative, increase K factor by that percentage to reach zero.

If % difference is positive, decrease K factor by that percentage to each zero.

Manhole floats tested? (Y/N): No

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response)*:

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Set to 35" WC. Changed to 21" WC. 10s delay. System Shutdown					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Set to 8" WC. Changed to 25" WC. 10s delay System shutdown					

4/2

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/2/14
Time: 0830
Technician: WA + BH

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Y	Y	Y
4/2	Notes: pumped water into AS, turned off pump & blower at same time so water level rose. Used sink water					
Air Stripper Low Liquid Level	LSL-100	LA_100	fatal	Y	N	Y
	Notes: closed BF-401 ~half way to put back pressure on AS. Water level @ site tube down to 12", 10 min delay Control panel output tripped					
High Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Blower damper @ 2". Current FT-106 ≈ 750 cfm. Set point @ 1200. Changed to 600. 5 min delay, shutdown					
Low Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Current FT-106 ≈ 750 cfm. Set point @ 300, changed to 1000. 5 min delay. Shutdown					
Pre-Carbon High Temperature	TT-400	TAH400	fatal	Y	Y	Y
	Notes: setpoint @ 110°. Changed to 60°. 1 min delay. Shutdown					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Y	Y	Y
	Notes: setpoint @ 60°. Changed to 90°. 3 min delay. Shutdown					
Pre-Carbon High Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: setpoint 25 in WC. Changed to 5. Current PT-400 ≈ 12 in WC 45 sec delay, Shutdown					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Setpoint 1 in WC. Changed to 20 Current PT_400 ≈ 12 in WC 45 sec delay, fatal					
MH-1 Low Flowrate	FT-101	FA_101	warning	Y	N	Y
4/3	Notes: Turned HOA's to OFF during pump down cycle (Responds when float is tripped)					
MH-2 Low Flowrate	FT-102	FA_102	warning	Y	N	Y
4/4	Notes: Turned HOA to OFF during pump down cycle (Responds when float is tripped)					
MH-3 Low Flowrate	FT-103	FA_103	warning	Y	N	Y
4/3	Notes: Turned HOA to OFF during pump down cycle. (Responds when float is tripped)					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/2/14
Time: 0830
Technician: WA + BH

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
	Notes: With MH-1 + MH-3 pumping. Turned HOA switch to off.					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Y	Y	Y
	Notes: Wetted WFS106 w/ water dish					
Building Sump High Level	LSH-106	LSH106	warning	Y	N	Y
	Notes: Filled sump w/ sink water					
Sequestering Agent Low Flow	FT-200 off is normal	FA_200	warning	Y	N	Y
	Notes: Removed influent line from drum-broke suction. Kept effluent to system. Not bypass					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Y	N	Y
	Notes: Wetted sensor					
MH-1 High Level	LSHH-103	LA_MH1	warning			
	Notes:					
MH-1 Low Level	LSLL-103	LA_MH1	warning			
	Notes: Should force off both MH-1 pumps					
MH-2 High Level	LSHH-104	LA_MH2	warning			
	Notes:					
MH-2 Low Level	LSLL-104	LA_MH2	warning			
	Notes: Should force off both MH-2 pumps					
MH-3 High Level	LSHH-105	LA_MH3	warning			
	Notes:					

4/3
4/4
4/3

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/2/14
Time: 0830
Technician: WA + BH

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-3 Low Level	LSLL-105	LA_MH3	warning			
	Notes: Should force off both MH-3 pumps					
Building High Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Set to 110°. Change to 44°.					
Building Low Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Held ice to sensor					

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 5/5/14
Time: 0900
Technician: mt

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? NO
Alarms? (list) none

Electrical Meter Reading (kWh): 00223897

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	27	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	17	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.4	(°) (inches)

Is white "POWER ON" light on air stripper control panel lit? Y
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Y
Note scaling inside liquid effluent pipe from access port minimal
Note scaling observed inside air stripper via clear tray access door none

FLOWMETER / PUMP PARAMETERS

	MH-1	MH-2	MH-3
Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N)	Y	Y	Y

Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Y

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	5/5/14 0900	5/5/14 0900	5/5/14 0900	5/5/14 0900	5/5/14 0900
Instantaneous Flowrate [gpm]	0	0	0	0	0
"Total" Flow (resettable, gal)	02517153	00428395	01077999	0	03918307
"Perm" Flow (gal)	20822322	03522995	04603058	1839	15754443
Pump 1 Running (Y/N)?	N	N	N	N	NA
Pump 2 Running (Y/N)?	N	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) ~~N~~ Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 5/5/14
Time: 0900
Technician: mt

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	65	(°F)	
Pre-Carbon Temperature	TI-400	83	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	83	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	12.1	(in. W.C.)	
Mid-Carbon Pressure	PI-402	5.2	(in. W.C.)	
Effluent Pressure	PI-403	0.5	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	29.00	(in. W.C.)	
Vapor Flowrate	FT-106	715	(cfm)	674 - 756
Pre-Carbon Temperature	TT-400	88.4	(°F)	
Pre-Carbon Pressure	PT-400	9.2	(in. W.C.)	
Building Temperature	TT-100	61.5	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	6 (mA) 5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	86	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	4 (gal)	*(1 Gallon tick marks hand written in marker on drum based on plastic molded gallon marks)*
Quantity of additional full drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): None. Changed Sequestering Agent Drums. Start at 32 gal.

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Y Time: 1000
pH of effluent sample	8.44
Model of pH meter	pH Testr 30
Calibration notes / method used	3 point calibration @ 4, 7, 10
Are MH-2 or MH-3 online in auto during sampling collection?	MH-2: N MH-3: N

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: ~~04/~~ 5/5/14
Time: 0900
Technician: MA

MONTHLY OM&M TASKS (continued)

Task	Notes		
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	N		
	MH-1	MH-2	MH-3
Monthly manhole inspections conducted? (Y/N)	Y	Y	Y
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	N	N	N
Do level floats appear to be in good condition and hanging freely? (Y/N)	Y	Y	Y
Observe groundwater inside each manhole and note odor and appearance	No odor. clear	No odor, clear	no odor. clear
Is confined space entry signage present at each manhole? (Y/N)	Y	Y	Y
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	None	None	None
With pump(s) running, listen for any unusual sounds	None	None	None
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	ok	ok	ok
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	None		
List any notable observations			
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Y		

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Y
Is eyewash/shower station operational and unobstructed? (Y/N)	Y
Is interior emergency lighting operational? (Y/N)	Y
Is first aid kit present and in good condition? (Y/N)	Y
Is lockout/tagout equipment available? (Y/N)	Y
Have electrical GFIs been tested and reset? (Y/N)	Y
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP: Y Date: mar 2014
	OMM: Y Date: mar 2011
Is emergency spill kit available? (Y/N)	Y
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Y
Is current SPDES permit onsite? (Y/N) (note date)	Y Date: Apr 2011

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/13/14
Time: 0845
Technician: Ben Haravitch

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Yes
Alarms? (list) None

Electrical Meter Reading (kWh): 228 750

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	25.5	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	18.5	(inches)
Blower intake line vacuum [PI-100]	- 2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.4	(°) (inches)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port Minimal
Note scaling observed inside air stripper via clear tray access door Minimal

FLOWMETER / PUMP PARAMETERS

	MH-1	MH-2	MH-3
Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N)	Y	Y	Y

Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Y

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	6/13 0845	→	→	→	→
Instantaneous Flowrate [gpm]	40.27	0.00	0.00	0.00	40.09
"Total" Flow (resettable, gal)	2,915,822	486,834	1,232,870	0	4,501,032
"Perm" Flow (gal)	21,221,012	3,581,434	4,757,130	1,839	16,337,178
Pump 1 Running (Y/N)?	N	N	N	N	NA
Pump 2 Running (Y/N)?	Y	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/13/14
Time: 0845
Technician: BH

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	60	(°F)	
Pre-Carbon Temperature	TI-400	78	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	11	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	0.5	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	27.81	(in. W.C.)	
Vapor Flowrate	FT-106	655.7	(cfm)	612 - 685
Pre-Carbon Temperature	TT-400	77.5	(°F)	
Pre-Carbon Pressure	PT-400	8.5	(in. W.C.)	
Building Temperature	TT-100	69.2	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	5.1 (mA) 6 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	21 (gal)	*(1 Gallon tick marks hand written in marker on drum based on plastic molded gallon marks)*
Quantity of additional full drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): None. New drum delivered to GCTS on 6/12. Removed empty drum, added new full drum to pallet.

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Y Time: 0830
pH of effluent sample	8.4
Model of pH meter	pH Testr 30
Calibration notes / method used	3 point @ 4, 7, 10
Are MH-2 or MH-3 online in auto during sampling collection?	MH-2: N MH-3: Y

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/13/14
Time: 0930
Technician: BH

MONTHLY OM&M TASKS (continued)

Task	Notes		
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No		
	MH-1	MH-2	MH-3
Monthly manhole inspections conducted? (Y/N)	Y	Y	Y
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	N	N	N
Do level floats appear to be in good condition and hanging freely? (Y/N)	Y	Y	Y
Observe groundwater inside each manhole and note odor and appearance	No odor or sheen. Clear	No odor or sheen. clear	No odor or sheen. clear
Is confined space entry signage present at each manhole? (Y/N)	Y	Y	Y
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	OK	OK	OK
With pump(s) running, listen for any unusual sounds	None	None	None
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	ok	ok	ok
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	None, but considerable condensation		
List any notable observations			
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Y		

HEALTH AND SAFETY

Item	Status	
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Y	
Is eyewash/shower station operational and unobstructed? (Y/N)	Y	
Is interior emergency lighting operational? (Y/N)	Y	
Is first aid kit present and in good condition? (Y/N)	Y	
Is lockout/tagout equipment available? (Y/N)	Y	
Have electrical GFIs been tested and reset? (Y/N)	Y	
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y	
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP: Y	Date: 3/13/14
	OMM: Y	Date: 4/30/12 ← Last mod written in document dated March, 2011
Is emergency spill kit available? (Y/N)	Y	
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Y	
Is current SPDES permit onsite? (Y/N) (note date)	Y	Date: 4/2011

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/8/14
Time: 1200
Technician: GA + BH

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? no
Alarms? (list) no ne

Electrical Meter Reading (kWh): 231352

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	25	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	19.5	(inches)
Blower intake line vacuum [PI-100]	-2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.4	(°) (inches)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port minimal
Note scaling observed inside air stripper via clear tray access door none

FLOWMETER / PUMP PARAMETERS

	MH-1	MH-2	MH-3
Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N)	Y	Y	Y

Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) all auto

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	7/8/14 1200	7/8/14 1200	7/8/14 1200	7/8/14 1200	7/8/14 1200
Instantaneous Flowrate [gpm]	0.0	0.0	0.0	0.0	0.0
"Total" Flow (resettable, gal)	3149026	525578	1351000	0	4871491
"Perm" Flow (gal)	21454195	362078	4876059	1837	16707626
Pump 1 Running (Y/N)?	N	N	N	N	NA
Pump 2 Running (Y/N)?	N	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/8/14
Time: 1200
Technician: WA + BH

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	69	(°F)	
Pre-Carbon Temperature	TI-400	80	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	10	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	0.5	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	26.65	(in. W.C.)	
Vapor Flowrate	FT-106	633	(cfm)	
Pre-Carbon Temperature	TT-400	79.3	(°F)	
Pre-Carbon Pressure	PT-400	7.5	(in. W.C.)	
Building Temperature	TT-100	78.0	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	5.0 (mA) / 6 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	13.5. Added 5.5 gal = 19 (gal)	*(1 Gallon tick marks hand written in marker on drum based on plastic molded gallon marks)*
Quantity of additional full drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): OK

→ Added 5.5 gal remaining in old drum

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	7/10/14 Time: 0922
pH of effluent sample	8.2 7.9
Model of pH meter	pH Testr YSI
Calibration notes / method used	3-point. Calibration log in treatment building
Are MH-2 or MH-3 online in auto during sampling collection?	MH-2: No MH-3: Yes

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/8/14
Time: 1200
Technician: WA + BH

MONTHLY OM&M TASKS (continued)

Task	Notes		
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	Inspected 103 - ok. 101 + 102 sensor shaft unfit for removal. Flow values ok. Be prepared for replacem		
	MH-1	MH-2	MH-3
Monthly manhole inspections conducted? (Y/N)	Y	Y	Y
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	N	N	N
Do level floats appear to be in good condition and hanging freely? (Y/N)	Y	Y	Y
Observe groundwater inside each manhole and note odor and appearance	clear, no sheen no odor	No sheen, no odor	No sheen, no odor
Is confined space entry signage present at each manhole? (Y/N)	Y	Y	Y
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	OK	OK	OK
With pump(s) running, listen for any unusual sounds	None	None	None
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	ok	OK	ok
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	OK		
List any notable observations			
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Yes		

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Y
Is eyewash/shower station operational and unobstructed? (Y/N)	Y
Is interior emergency lighting operational? (Y/N)	Y
Is first aid kit present and in good condition? (Y/N)	Y
Is lockout/tagout equipment available? (Y/N)	Y
Have electrical GFIs been tested and reset? (Y/N)	Y
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP: Y Date: 3/13/14
	OMM: Y Date: 3/2011
Is emergency spill kit available? (Y/N)	Y
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Y
Is current SPDES permit onsite? (Y/N) (note date)	Y Date: 4/1/2011

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/8/14
Time: 1700
Technician: MA + BH

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) Y

MH-1 influent pH	7.1	Date:	7/10/14	Time:	0916
MH-2 influent pH	7.0	Date:	7/10/14	Time:	1700
MH-3 influent pH	7.5	Date:	7/10/14	Time:	0911

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Y 7/10/14

Are MH-2 or MH-3 online in auto during sampling collection? MH-3 on

Treatment system valves exercised? Yes

Sample Location	PID Tag	Vapor Sample collects? (Y/N)	Condensate present in sample? (Y/N)	Canister #	Canister Vacuum at Start (in. Hg)	Canister Vacuum at Finish (in. Hg)	Sample Time
Pre-Carbon	SP-401	Y	N	3081	-29.2	-5	1025
Mid-Carbon	SP-402	Y	N	S108	-30	-4.8	1017
Post-Carbon	SP-403	Y	N	3217	-30	-6	1012

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) Y

Quarterly groundwater elevation levels collected? (Y/N) Y

Blower bearings greased? (Y/N) Y

Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) 2052 (fpm) 650 (cfm)

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)* No. Values close to true

Sensor Name	Test Type	MH in. Start	MH in. End	MH in. Δ	Δ Gal.	Sensor Start	Sensor End	Sensor Δ	% Diff.	Orig. K Factor	New K Factor
FT-101	pump down	118.5	129.5	11	194	5361	5563	202	-4	76.5	-
				FT-105		9545	9735	190	+2.1		
FT-102	pump down	185	194	9	157	2549	2699	150	+4.5	73.6	-
				FT-105		9735	9872	137	+136		
FT-103	pump down	126.5	136.75	10.25	181	6445	6645	200	-10	66.7	-
				FT-105		0087	0269	180	+0.6		

	Test Type	MH1 % diff.	MH2 % diff.	MH3 % diff.	Avg. % Diff.	Orig. K Factor	New K Factor
FT-105	Comparison	+2.1	+13.6	+0.6	+5.4	86.2	-

Notes*: % Difference calculated by the following formula: $\frac{MH-S}{0.5(MH+S)} \times 100$

Manholes are 6' diameter. 1" manhole depth = 17.624 gallons.

If % difference is negative, increase K factor by that percentage to reach zero.

If % difference is positive, decrease K factor by that percentage to each zero.

Manhole floats tested? (Y/N): Yes

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/8/14
Time: 1200
Technician: WA + BH

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response)*:

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Set at 35. Change to 20. 10 sec delay. Fatal					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Set at 8. Change to 30. 10 sec delay. Fatal					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Y	Y	Y
	Notes: Filled building sump with tap water while stripper not running.					
Air Stripper Low Liquid Level	LSL-100	LA_100	~~Not~~ fatal	Y	N	Y
	Notes: Partially closed BFV-401 to induce pressure in AS sump. Liquid level ~ 11-12". 10 min delay. Non Fatal					
High Air Flowrate	FT-106	FA_106	~~Not~~ fatal	Y	Y	Y
	Notes: Set at 1200 cfm. Change to 550 during pump down cycle. 5 min delay. Fatal					
Low Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Set at 300 cfm. Change to 800 5 min delay. Fatal					
Pre-Carbon High Temperature	TT-400	TAH400	fatal	Y	Y	Y
	Notes: Set at 110°F. Change to 70°F 1 min delay. Fatal					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Y	Y	Y
	Notes: Set at 60°F. Change to 90°F 3 min delay. Fatal					
Pre-Carbon High Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Set at 25 IWC. Change to 5 45 sec delay. Fatal					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Set at 1.0 IWC. Change to 15 45 sec delay. Fatal					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/8/14
Time: 1200
Technician: MA + BH

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-1 Low Flowrate	FT-101	FA_101	warning	Y	N	Y
	Notes: Turned pump switch to OFF during pump down cycle. Non-fatal.					
MH-2 Low Flowrate	FT-102	FA_102	warning	Y	N	Y
	Notes: Turned pump switch to OFF during pump down cycle. Non-fatal					
MH-3 Low Flowrate	FT-103	FA_103	warning	Y	N	Y
	Notes: Turned pump switch to OFF during pump down cycle.					
Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
	Notes: Turned pump MH-1 switch to OFF during pump down. Non-fatal					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Y	Y	Y
	Notes: Wet sensor. 2 sec delay. Fatal					
Building Sump High Level	LSH-106	LSH106	warning	Y	N	Y
	Notes: Added purge water w/ pump unplugged, Warning during pump down cycle					
Sequestering Agent Low Flow	FT-200	FA_200	warning	Y	N	Y
	Notes: Removed suction line during pump down cycle Non-fatal					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Y	N	Y
	Notes: Wet sensor. 10 sec delay. Non-fatal					
MH-1 High Level	LSHH-103	LA_MH1	warning	Y	N	Y
	Notes: pulled float, Alarm tripped.					
MH-1 Low Level	LSLL-103	LA_MH1	warning	Y	N	Y
	Notes: Should force off both MH-1 pumps pulled float, Alarm tripped, shut off pumps					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/8/14
Time: 1200
Technician: MA + TS H

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-2 High Level	LSHH-104	LA_MH2	warning	Y	N	Y
	Notes: pulled float. Alarm tripped					
MH-2 Low Level	LSLL-104	LA_MH2	warning	Y	N	Y
	Notes: Should force off both MH-2 pumps pulled float, Alarm tripped. Both pumps shut off					
MH-3 High Level	LSHH-105	LA_MH3	warning	Y	N	Y
	Notes: pulled float. Alarm tripped					
MH-3 Low Level	LSLL-105	LA_MH3	warning	Y	N	Y
	Notes: Should force off both MH-3 pumps pulled float. Both pumps shut off					
Building High Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Set at 110°F. Change to 70. 2 min delay. Fatal					
Building Low Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Set at 40°F. Change to 90. 2 min delay. Fatal					

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 8/7/14
Time: 0945
Technician: W Frantzen

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? NO
Alarms? (list) FA-200, FA-102

Electrical Meter Reading (kWh): 233923

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	26.4	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	16.2	(inches)
Blower intake line vacuum [PI-100]	~~-2~~ 2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	~~0.4~~ .2	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.4	(°) (inches)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port little
Note scaling observed inside air stripper via clear tray access door some scaling

FLOWMETER / PUMP PARAMETERS

	MH-1	MH-2	MH-3
Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N)	Y	Y	Y

Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Y

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	8/7/14				0945
Instantaneous Flowrate [gpm]	0	0	0	0	0
"Total" Flow (resettable, gal)	3372304	555574	1459760	0	05215760
"Perm" Flow (gal)	21677473	3650174	4984819	1839	17051896
Pump 1 Running (Y/N)?	N	N	N	N	NA
Pump 2 Running (Y/N)?	N	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 8/7/14
Time: _____
Technician: _____

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	70	(°F)	
Pre-Carbon Temperature	TI-400	81	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	14	(in. W.C.)	
Mid-Carbon Pressure	PI-402	3.5	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	28.54	(in. W.C.)	
Vapor Flowrate	FT-106	630	(cfm)	
Pre-Carbon Temperature	TT-400	78.2	(°F)	
Pre-Carbon Pressure	PT-400	11.3	(in. W.C.)	
Building Temperature	TT-100	74.6	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	N | Y	
Is low flow alarm present? (Y/N)	Y | N	
Is pump in external mode? (Y/N)	N | Y	
If in external mode, record one set of mA and stroke speed values	4.6 (mA) 3 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	19* (gal)	*(1 Gallon tick marks hand written in marker on drum based on plastic molded gallon marks)*
Quantity of additional full drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): No problems

*(Note: sequestering agent usage appears essentially unchanged from July reading)

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Y Time: 1400
pH of effluent sample	8.3 8.3
Model of pH meter	pH tester 30 Myron Ultrameter II
Calibration notes / method used	3 pt by Eco rental
Are MH-2 or MH-3 online in auto during sampling collection?	MH-2: no MH-3: ✓ yes

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 8/7/14
Time:
Technician:

MONTHLY OM&M TASKS (continued)

Task	Notes		
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No		
	MH-1	MH-2	MH-3
Monthly manhole inspections conducted? (Y/N)			
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	N	N	N
Do level floats appear to be in good condition and hanging freely? (Y/N)	Y	Y	Y
Observe groundwater inside each manhole and note odor and appearance	Clear no odor	Clear no odor	No. od Clear
Is confined space entry signage present at each manhole? (Y/N)	Y	Y	Y
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	None	None	None
With pump(s) running, listen for any unusual sounds	None	None	None
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	good	good	good
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	None		
List any notable observations			
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Y		

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Y
Is eyewash/shower station operational and unobstructed? (Y/N)	Y
Is interior emergency lighting operational? (Y/N)	Y
Is first aid kit present and in good condition? (Y/N)	Y
Is lockout/tagout equipment available? (Y/N)	Y
Have electrical GFIs been tested and reset? (Y/N)	Y
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP: Stantec Date: 3/13/14 OMM: Arcadis Date: ~~3/2~~ 5/14
Is emergency spill kit available? (Y/N)	Y
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Y
Is current SPDES permit onsite? (Y/N) (note date)	Y Date: 8/1/2014

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 9/2/14
Time: 1230
Technician: BH

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Had to turn MH-1 on in hand. 9/3 1045. Then MH3 turned on in auto
Alarms? (list)

Electrical Meter Reading (kWh): 236080

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	26	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	16.75	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2"	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.4	(°) (inches)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Hand
Note scaling inside liquid effluent pipe from access port minimal
Note scaling observed inside air stripper via clear tray access door Needs cleaning

FLOWMETER / PUMP PARAMETERS

	MH-1	MH-2	MH-3
Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N)	Y	Y	Y

Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) MH-1, Pump #1 in Hand. All others Auto

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	9/3 1050				
Instantaneous Flowrate [gpm]	36.02	0.0	0.0	0.0	35.48
"Total" Flow (resettable, gal)	3,562,185	587,832	1,561,709	0	5,516,950
"Perm" Flow (gal)	21,867,336	3,682,432	5,086,769	1,839	17,353,095
Pump 1 Running (Y/N)?	Y	N	N	N	NA
Pump 2 Running (Y/N)?	N	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) ~~N~~ Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 9/3/14
Time: 1100
Technician: BA

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	70	(°F)	
Pre-Carbon Temperature	TI-400	80	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	14	(in. W.C.)	
Mid-Carbon Pressure	PI-402	3.5	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	28.14	(in. W.C.)	
Vapor Flowrate	FT-106	609	(cfm)	
Pre-Carbon Temperature	TT-400	78.6	(°F)	
Pre-Carbon Pressure	PT-400	11.1	(in. W.C.)	
Building Temperature	TT-100	74.9	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	4.6 (mA)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
	3 (spm)	
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	13 (gal)	*(1 Gallon tick marks hand written in marker on drum based on plastic molded gallon marks)*
Quantity of additional full drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): None

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes Time: 1100
pH of effluent sample	8.13
Model of pH meter	Horiba V-5000
Calibration notes / method used	3 pt. Logged in Calibration log on site
Are MH-2 or MH-3 online in auto during sampling collection?	MH-2: No MH-3: Yes

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 9/3/14
Time: 1100
Technician: BH

MONTHLY OM&M TASKS (continued)

Task	Notes		
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No		
	MH-1	MH-2	MH-3
Monthly manhole inspections conducted? (Y/N)	Y		Y
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	N	N	N
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes	Yes	Yes
Observe groundwater inside each manhole and note odor and appearance	clear/no odor	clear/no odor	clear/No odor
Is confined space entry signage present at each manhole? (Y/N)	Yes	Yes	Yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	ok	Ok	ok
With pump(s) running, listen for any unusual sounds	None	none	None
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	OK	OK	Ok
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	ok		
List any notable observations			
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	yes		

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	yes
Is interior emergency lighting operational? (Y/N)	Yes
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP: Yes Date: 3/13/14 OMM: Yes Date: 3/25/2014
Is emergency spill kit available? (Y/N)	yes
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes
Is current SPDES permit onsite? (Y/N) (note date)	Yes Date: 8/1/14-7/31/19

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/9/14
Time: 0800
Technician: wA + LL

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? No
Alarms? (list) None

Electrical Meter Reading (kWh): 238573

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	26	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	16	(inches)
Blower intake line vacuum [PI-100]	1	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.4	(°) (inches)

Is white "POWER ON" light on air stripper control panel lit? yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? yes
Note scaling inside liquid effluent pipe from access port Small amount
Note scaling observed inside air stripper via clear tray access door Small amount, trays cleaned

FLOWMETER / PUMP PARAMETERS

	MH-1	MH-2	MH-3
Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N)	Y	Y	Y

Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) yes

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	10/7/14 1300	10/7/14 1300	10/7/14 1300	10/7/14 1300	10/7/14 1300
Instantaneous Flowrate [gpm]	0.0	0.0	0.0	0.0	0.0
"Total" Flow (resettable, gal)	3734158	614362	1646961	0	5775278
"Perm" Flow (gal)	22039327	3708962	5172020	1839	17611414
Pump 1 Running (Y/N)?	N	N	N	N	NA
Pump 2 Running (Y/N)?	N	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/9/14
Time: 0800
Technician: WA + LL

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	65	(°F)	
Pre-Carbon Temperature	TI-400	78	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	14	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	0.5	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	30.37	(in. W.C.)	
Vapor Flowrate	FT-106	562.8	(cfm)	
Pre-Carbon Temperature	TT-400	79.8	(°F)	
Pre-Carbon Pressure	PT-400	10.1	(in. W.C.)	
Building Temperature	TT-100	68.4	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	5.3 (mA)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
	8 (spm)	
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	8 (gal)	*(1 Gallon tick marks hand written in marker on drum based on plastic molded gallon marks)*
Quantity of additional full drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): OK

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Y Time: 10:55
pH of effluent sample	8.17
Model of pH meter	YSI Quatro 20M
Calibration notes / method used	Pre-calibrated by ECO
Are MH-2 or MH-3 online in auto during sampling collection?	MH-2: NO MH-3: NO

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/9/14
Time: 0800
Technician: WA + LL

MONTHLY OM&M TASKS (continued)

Task	Notes		
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	N		
	MH-1	MH-2	MH-3
Monthly manhole inspections conducted? (Y/N)	Y	Y	Y
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	N	N	N
Do level floats appear to be in good condition and hanging freely? (Y/N)	Y	Y	Y
Observe groundwater inside each manhole and note odor and appearance	no odor murky	No odor murky	No odor murky
Is confined space entry signage present at each manhole? (Y/N)	Y	Y	Y
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	none	None	none
With pump(s) running, listen for any unusual sounds	none	None	none
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good	Good	Good
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	none		
List any notable observations			
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Y		

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Y
Is eyewash/shower station operational and unobstructed? (Y/N)	Y
Is interior emergency lighting operational? (Y/N)	Y
Is first aid kit present and in good condition? (Y/N)	Y
Is lockout/tagout equipment available? (Y/N)	Y
Have electrical GFIs been tested and reset? (Y/N)	
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP: Y Date: 3/14
	OMM: Y Date: 5/2014
Is emergency spill kit available? (Y/N)	Y
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Y
Is current SPDES permit onsite? (Y/N) (note date)	Y Date: 7/16/2014

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/9/14
Time: 0800
Technician: WA & LL

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) Y

MH-1 influent pH	7.31	Date:	10/9/14	Time:	16:50
MH-2 influent pH	7.44	Date:	10/9/14	Time:	17:20
MH-3 influent pH	7.54	Date:	10/9/14	Time:	17:25

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Y
Are MH-2 or MH-3 online in auto during sampling collection? NO
Treatment system valves exercised? Y

Sample Location	PID Tag	Vapor Sample collects? (Y/N)	Condensate present in sample? (Y/N)	Canister #	Canister Vacuum at Start (in. Hg)	Canister Vacuum at Finish (in. Hg)	Sample Time
Pre-Carbon	SP-401	Y	N	5128	25	4	17:12
Mid-Carbon	SP-402	Y	N	4337	25	4	17:07
Post-Carbon	SP-403	Y	N	3413	24	4	17:03

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) Y
Quarterly groundwater elevation levels collected? (Y/N) Y
Blower bearings greased? (Y/N) Y
Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) 2087 (fpm), 661.16 (cfm)

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)* Y

Sensor Name	Test Type	MH in. Start	MH in. End	MH in. Δ	Δ Gal.	Sensor Start	Sensor End	Sensor Δ	% Diff.	Orig. K Factor	New K Factor
FT-101	Pumpdown	121.5	133.75	12.25	215.994	9062	9286	224	-3.68	76.5	79.3
				FT-105		5415	5620	205	5.18		
FT-102	Pumpdown	188.625	200.5	11.875	209.295	7220	7421	201	4.01	73.6	70.6
				FT-105		5228	5415	187	11.25		
FT-103	Pumpdown	158	169.125	11.125	196.067	9267	9467	200	1.99	66.739	68.1
				FT-105		5061	5228	167	16.01		

Initial & Final values equal to K total.

	Test Type	MH1 % diff.	MH2 % diff.	MH3 % diff.	Avg. % Diff.	Orig. K Factor	New K Factor
FT-105	Comparison	5.18	11.25	16.01	9.10	86.17	79.3

Notes*: % Difference calculated by the following formula: $\frac{MH-S}{0.5(MH+S)} \times 100$

Manholes are 6' diameter. 1" manhole depth = 17.624 gallons.
If % difference is negative, increase K factor by that percentage to reach zero.
If % difference is positive, decrease K factor by that percentage to each zero.

Manhole floats tested? (Y)N):

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/9/14
Time: 0800
Technician: WAT LL

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response):*

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Set high alarm to 20 IWC. Went into shutdown. (was 35 IWC)					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Alarm level was 8 "WC, set to 34 "WC. Went into shutdown.					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Y	Y	Y
	Notes: Pumped clean H2O from sump into stripper until float tripped.					
Air Stripper Low Liquid Level	LSL-100	LA_100	fatal	Y	N	Y
	Notes: Increased air stripper sump pressure to force H2O out of the sump. Caused a warning alarm.					
High Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Alarm level was 1200 cfm, set to 500 cfm. Went into shutdown.					
Low Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Alarm level was 300 cfm, set to 800 cfm. Went into shutdown.					
Pre-Carbon High Temperature	TT-400	TAH400	fatal	Y	Y	Y
	Notes: Alarm level was 110° F, set to 65° F. Went into shutdown.					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Y	Y	Y
	Notes: Alarm level was 60° F, set to 100° F. caused Shutdown					
Pre-Carbon High Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Alarm level was 25 Iwc. Set to 2 Iwc. caused Shutdown					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Alarm level was 1.0 Iwc. Set to 24 Iwc. caused shutdown					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/9/14
Time: 0800
Technician: WT & LL

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-1 Low Flowrate	FT-101	FA_101	warning	Y	N	Y
	Notes: Turned HOA switch to "off" when pump was called in auto mode. Caused warning.					
MH-2 Low Flowrate	FT-102	FA_102	warning	Y	N	Y
	Notes: Turned HOA switch to "off" when pump was called in auto mode. caused warning					
MH-3 Low Flowrate	FT-103	FA_103	warning	Y	N	Y
	Notes: Turned HOA switch to "off" when pump was called in auto mode. Caused warning					
Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
	Notes: Turned MH-2 off w/ HOA switch when pump was called.					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Y	Y	Y
	Notes: put sensor in cup of water. caused shutdown					
Building Sump High Level	LSH-106	LSH106	warning	Y	N	Y
	Notes: Filled sump with clean H2O from sink. Tripped float.					
Sequestering Agent Low Flow	FT-200	FA_200	warning	Y	N	Y
	Notes: Pulled sequestering agent dispensing tubing out of drum while pump cycled. caused warning					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Y	N	Y
	Notes: placed sensor in cup of water. Caused warning					
MH-1 High Level	LSHH-103	LA_MH1	warning	Y	N	Y
	Notes: Used long pole to trip floats. Caused warnings.					
MH-1 Low Level	LSLL-103	LA_MH1	warning	Y	N	Y
	Notes: Should force off both MH-1 pumps Used long pole to trip float. Caused warning.					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/9/14
Time: 0800
Technician: WA + LL

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-2 High Level	LSHH-104	LA_MH2	warning	Y	N	Y
	Notes: ~~Alarm was set to 110°F~~ Used long pole to trip floats. caused warnings					
MH-2 Low Level	LSLL-104	LA_MH2	warning	Y	N	Y
	Notes: Should force off both MH-2 pumps Used long pole to trip float. Caused warning.					
MH-3 High Level	LSHH-105	LA_MH3	warning	Y	N	Y
	Notes: Used long pole to trip floats. caused warnings.					
MH-3 Low Level	LSLL-105	LA_MH3	warning	Y	N	Y
	Notes: Should force off both MH-3 pumps Used long pole to trip float. Caused warning					
Building High Temperature	TT-100	TA_100	shutdown	Y	Y	~~N~~ Y (WA)
	Notes: Alarm was set to 110°F. Set to 50°F. caused shutdown					
Building Low Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Alarm was set to 40°F. set to 80°F. caused shutdown					

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 11/5/14
Time: 0920
Technician: B. Haravitch
L. Lyons

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* AUTO
System currently cycling? Y
Alarms? (list) NONE, N/A

Electrical Meter Reading (kWh): 241644

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	28	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	15.5	(inches)
Blower intake line vacuum [PI-100]	-1	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.4	(°) (inches)

Is white "POWER ON" light on air stripper control panel lit? Y
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Y
Note scaling inside liquid effluent pipe from access port Minimal
Note scaling observed inside air stripper via clear tray access door None

FLOWMETER / PUMP PARAMETERS

	MH-1	MH-2	MH-3
Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N)	Y	Y	Y

Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Y

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	11/5/14 0920	11/5/14 0920	11/5/14 0920	11/5/14 0920	11/5/14 0920
Instantaneous Flowrate [gpm]	37.36	0	0	0	38.05
"Total" Flow (resettable, gal)	3940794	650802	95642	0	6113405
"Perm" Flow (gal)	22245955	3745402	5270204	1839	17949548
Pump 1 Running (Y/N)?	N	N	N	N	NA
Pump 2 Running (Y/N)?	Y	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 11/5/14
Time: 0920
Technician: BH, LL

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	67	(°F)	
Pre-Carbon Temperature	TI-400	80	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	84	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	14	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	0.5	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	30.43	(in. W.C.)	
Vapor Flowrate	FT-106	637.2	(cfm)	
Pre-Carbon Temperature	TT-400	90.8	(°F)	
Pre-Carbon Pressure	PT-400	10.8	(in. W.C.)	
Building Temperature	TT-100	63.0	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	5.1 (mA) 6 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	95	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	1.5 Ⓐ (gal)	*(1 Gallon tick marks hand written in marker on drum based on plastic molded gallon marks)*
Quantity of additional full drums	0, see note below	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): None; Ⓐ switched to new drum with 30 gallons in it.

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Y Time: 0930
pH of effluent sample	8.42
Model of pH meter	Hanna Piccolo HI-1290
Calibration notes / method used	2 pt. w/ buffer solution
Are MH-2 or MH-3 online in auto during sampling collection?	MH-2: No MH-3: No

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 11/5/14
Time: 0920
Technician: BH, LL

MONTHLY OM&M TASKS (continued)

Task	Notes		
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	Not needed.		
	MH-1	MH-2	MH-3
Monthly manhole inspections conducted? (Y/N)	Y	Y	Y
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	N	N	N
Do level floats appear to be in good condition and hanging freely? (Y/N)	Y	Y	Y
Observe groundwater inside each manhole and note odor and appearance	clear, no odor no sheen	clear, no odor or sheen	clear, no odor, no sheen
Is confined space entry signage present at each manhole? (Y/N)	Y	Y	Y
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	None	None	None
With pump(s) running, listen for any unusual sounds	None	None	None
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good	Good	Good
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	None, system is good		
List any notable observations	None		
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Y		

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Y
Is eyewash/shower station operational and unobstructed? (Y/N)	Y
Is interior emergency lighting operational? (Y/N)	Y
Is first aid kit present and in good condition? (Y/N)	Y
Is lockout/tagout equipment available? (Y/N)	Y
Have electrical GFIs been tested and reset? (Y/N)	Y
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP: Y Date: ~~3/31~~ 3/13/14
	OMM: Y Date: Oct-2014
Is emergency spill kit available? (Y/N)	Y
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Y
Is current SPDES permit onsite? (Y/N) (note date)	Y Date: 8/1/14 → 7/31/19

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/3/14
Time: 930
Technician: B Haravitch

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Yes
Alarms? (list) Aerator Sump Level (Process 32) - Non-fatal, low A/S sump level. Recognized and reported (logged) on 11/22/14. Adjusted BFV-401 to put less pressure on sump. Raised water level from 15.25" to 16.25".

Electrical Meter Reading (kWh): 246461

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	29	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	15.25	(inches)
Blower intake line vacuum [PI-100]	-1.5	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.4	(°) (inches)

raised to 16.25 by BFV-401

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port Minimal
Note scaling observed inside air stripper via clear tray access door None

FLOWMETER / PUMP PARAMETERS

	MH-1	MH-2	MH-3
Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N)	Y	Y	N

Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	12/3 930				
Instantaneous Flowrate [gpm]	35.62	0.0	0.0	0.0	37.52
"Total" Flow (resettable, gal)	4,155,938	679,941	198,892	0	6,460,266
"Perm" Flow (gal)	22,461,122	3,774,541	5,373,453	1,839	18,296,409
Pump 1 Running (Y/N)?	Y	N	N	N	NA
Pump 2 Running (Y/N)?	N	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/3/14
Time: 930
Technician: B Haravitch

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	67	(°F)	
Pre-Carbon Temperature	TI-400	89	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	14	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	1	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	30.98	(in. W.C.)	
Vapor Flowrate	FT-106	674.4	(cfm)	
Pre-Carbon Temperature	TT-400	91.8	(°F)	
Pre-Carbon Pressure	PT-400	11.1	(in. W.C.)	
Building Temperature	TT-100	61.7	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	5.0 (mA) 5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	24.5 (gal)	*(1 Gallon tick marks hand written in marker on drum based on plastic molded gallon marks)*
Quantity of additional full drums	0	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): OK

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Y Time: 0950
pH of effluent sample	~~8.22~~ 8.2
Model of pH meter	HI 1290 Piccolo
Calibration notes / method used	2 pt
Are MH-2 or MH-3 online in auto during sampling collection?	MH-2: N MH-3: N

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/3/14
Time: 9 30
Technician: B Haravitch

MONTHLY OM&M TASKS (continued)

Task	Notes		
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No		
	MH-1	MH-2	MH-3
Monthly manhole inspections conducted? (Y/N)	Y	Y	Y
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	N	N	N
Do level floats appear to be in good condition and hanging freely? (Y/N)	Y	Y	Y
Observe groundwater inside each manhole and note odor and appearance	clear, no sheen slight odor	No odor, No sheen	No odor No sheen
Is confined space entry signage present at each manhole? (Y/N)	Y	Y	Y
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	OK	OK	OK
With pump(s) running, listen for any unusual sounds	None	none	None
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	OK	OK	OK
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	OK		
List any notable observations			
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	yes		

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Y
Is eyewash/shower station operational and unobstructed? (Y/N)	Y
Is interior emergency lighting operational? (Y/N)	Y
Is first aid kit present and in good condition? (Y/N)	Y
Is lockout/tagout equipment available? (Y/N)	Y
Have electrical GFIs been tested and reset? (Y/N)	Y
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP: Y Date: 3/14 OMM: Y Date: 3/11
Is emergency spill kit available? (Y/N)	Y
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Y
Is current SPDES permit onsite? (Y/N) (note date)	Y Date: 8/1/14 - 7/31/19

Appendix C

Alarm Response Log Sheets

Fatal Alarms

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/21/2014
Time: 14:30
Technician: Todd Carignan

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 1/15/2014 Time: 6:30

Alarm Condition:

Automated daily system operational status email not received as scheduled at 6:30 am.

Cause of Alarm:

Unknown

Corrective Action:

Todd Carignan attempted to log into the system remotely on 1/15/14 at approximately 7:30. However, a remote connection was able to be made.

Dan Zuck was onsite 1/15/14 at 11:10 and found the system offline and the PLC screen in a frozen/locked state. The PLC was rebooted and appeared to start up normally. Todd Carignan logged into the system remotely while Dan Zuck was onsite. The system was restarted in "Auto" at 11:12. Each of the analog and discrete inputs were reviewed for accuracy. According to data logger files the PLC stopped running around 3:15 am.

It should be noted that the PLC was bench tested in February 2013 and was found to be functioning properly. Due to the fact that the PLC has microprocessor, similar to a PC, it is recommended that the PLC is continually rebooted on a quarterly basis. This is currently performed when testing the UPS unit during the quarterly critical device events.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/5/2014
Time: 13:30
Technician: WA/BH

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 3/5/14 Time: 7:37:00

Alarm Condition:

Process 44: Building Low Temperature

Cause of Alarm:

Arcadis personnel (on site to perform their last task related to groundwater sampling for the West Lot) were in GCTS building, reportedly cleaning out garbage, etc. The overhead door was left open for too long of a period and the cold outside air cooled the building to a point below the alarm set point of 45 degrees.

Stantec restarted the system at approximately 0910. No further action required.

Corrective Action:

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Wednesday, March 05, 2014 7:39 AM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 07:37:20 on 03/05/2014
ALARM was triggered by PROCESS 44. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in SHUTD mode and the last process to run was SHUTD process #02.
This system last shut down at 10:06:23 on 02/11/2014 and the cause was KEYPAD.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	ON	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	OFF	DH_300	OFF
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	ON	FA_105	OFF

FA_106	OFF	FA_200	OFF	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	59653114	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10556036	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	4125721	GAL	10.00	80.00	0.00	20.00
FT_105	0.00	GPM	14403195	GAL	3.00	80.00	0.00	20.00
PT_106	0.00	IWC			8.00	35.00	0.00	20.00
TT_400	94.0	DEG			60.0	110.0	0.0	20.0
PT_400	0.0	IWC			1.0	25.0	0.0	20.0
TT_100	38.0	DEG			40.0	110.0	0.0	20.0
FT_106	83.3	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	0.0%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 5/13/2014
Time: 0900
Technician: W. Armington

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 5/12/14 Time: 0900

Alarm Condition:

Not a formal alarm condition (i.e. an alarm email was not sent by the system). The GCTS did not pump water from 5/7/14 at 0920 to 5/12/14 at 0900.

Cause of Alarm:

During site visit on 5/6/14, the GCTS PLC was rebooted, at which time the PLC appears to have defaulted to Manual mode. Pumping occurred during May 6-7; however no pump operation occurred after 0920 on May 7.

Corrective Action:

On 5/12/14 at 0900, the GCTS was remotely switched to Auto mode and began to pump. As of 5/12/14 at 2310, manhole water levels have returned to their normal operating ranges. Note that the "high-high" alarm level was not reached in any of the manholes.

Stantec made changes to the PLC settings to facilitate generation of an alarm fax in the future if system outage results in high manhole water levels.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/28/2014
Time: 0731
Technician: WA

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 6/29/14 Time: 1230

Alarm Condition:

Alarms for Process 36 and process 38 of the GCTS were received at approximately 0730 6/28/2014.

Unable to connect to GCTS for restart.

Cause of Alarm:

Alarms may be related to the automatic sytem shutdown down resulting from ConMed's planned power

shutdown and local network; PLC connectivity problems may also have contributed.

Corrective Action:

Attempt to restart the systems remotely the morning of 6/29/2014 failed due to inability to connect to the

system. A site visit was made to manually clear alarms and restart the systems.

System returned to normal operation.

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Saturday, June 28, 2014 7:34 AM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 07:31:27 on 06/28/2014
ALARM was triggered by PROCESS 36. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in SHUTD mode and the last process to run was SHUTD process #02.
This system last shut down at 10:21:38 on 04/04/2014 and the cause was REMOTE.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	OFF
MH1_LL	OFF	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	OFF	MH2_LL	OFF	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	OFF	MH3_LL	OFF	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	OFF	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	ON	FA_101	OFF	LA_MH2	ON	FA_102	OFF
LA_MH3	ON	FA_103	OFF	PA_106	ON	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	60932468	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10748550	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	4674546	GAL	10.00	80.00	0.00	20.00
FT_105	1.47	GPM	16378324	GAL	3.00	80.00	0.00	20.00
PT_106	2.32	IWC			8.00	35.00	0.00	20.00
TT_400	81.3	DEG			60.0	110.0	0.0	20.0
PT_400	0.0	IWC			1.0	25.0	0.0	20.0
TT_100	70.7	DEG			40.0	110.0	0.0	20.0
FT_106	75.1	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	0.2%	Open Loop Proportional			

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Saturday, June 28, 2014 7:37 AM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 07:34:00 on 06/28/2014
ALARM was triggered by PROCESS 38. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in SHUTD mode and the last process to run was SHUTD process #02.
This system last shut down at 10:21:38 on 04/04/2014 and the cause was REMOTE.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	OFF
MH1_LL	OFF	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	OFF	MH2_LL	OFF	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	OFF	MH3_LL	OFF	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	OFF	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	ON	FA_101	OFF	LA_MH2	ON	FA_102	OFF
LA_MH3	ON	FA_103	OFF	PA_106	ON	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	60932468	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10748550	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	4674546	GAL	10.00	80.00	0.00	20.00
FT_105	1.50	GPM	16378324	GAL	3.00	80.00	0.00	20.00
PT_106	0.24	IWC			8.00	35.00	0.00	20.00
TT_400	86.4	DEG			60.0	110.0	0.0	20.0
PT_400	0.0	IWC			1.0	25.0	0.0	20.0
TT_100	70.9	DEG			40.0	110.0	0.0	20.0
FT_106	75.1	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	0.2%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Date:	7/1/2014
Alarm Time:	20:03:57
Technician:	WA

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/3/14 Time: 1200

Alarm Condition:

Process 41 (Fatal) - High Air Stripper Sump Pressure

Cause of Alarm:

Exact cause of alarm is unknown. During the last site visit on 6/29/2014, one of the butterfly valves in the carbon manifold was partly closed to increase back pressure in the sump. This was done to lower the sump operating water level in an effort to decrease the chance that a high sump level alarm would trip. It is possible this adjustment contributed to the alarm condition.

Corrective Action:

The system was remotely restarted at 21:40 on 7/1/2014 and operation was normal. Stantec will evaluate the carbon manifold adjustment during the upcoming quarterly OM&M visit the week of 7/7/2014 to determine if it continues to be necessary.

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Tuesday, July 01, 2014 8:07 PM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 20:03:57 on 07/01/2014
ALARM was triggered by PROCESS 41. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in SHUTD mode and the last process to run was SHUTD process #02.
This system last shut down at 10:01:28 on 06/29/2014 and the cause was LSH100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	OFF
MH1_LL	OFF	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	OFF	MH2_LL	OFF	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	OFF	MH3_LL	OFF	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	OFF	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	ON	FA_101	OFF	LA_MH2	ON	FA_102	OFF
LA_MH3	ON	FA_103	OFF	PA_106	ON	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	60961569	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10753276	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	4688968	GAL	10.00	80.00	0.00	20.00
FT_105	1.50	GPM	16423491	GAL	3.00	80.00	0.00	20.00
PT_106	1.40	IWC			8.00	35.00	0.00	20.00
TT_400	62.3	DEG			53.3	110.0	0.0	20.0
PT_400	0.0	IWC			1.0	25.0	0.0	20.0
TT_100	74.8	DEG			40.0	110.0	0.0	20.0
FT_106	69.7	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	0.2%	Open Loop Proportional			

Non-Fatal Alarms

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date:	12/19/2013
Time:	6:00
Technician:	TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date:		Time:	
	12/17/2013		10:31
	12/22/2013		23:14
	1/10/2014		2:44

Alarm Condition:

Processes 30.

Low flow alarm for FT-102 (Pump 1, Manhole MH-2).

Non-fatal alarm.

Cause of Alarm:

Flow transmitter FT-102 not recording flow despite MH-2-pump-2 being called to run.

Corrective Action:

Todd Carignan logged into the system remotely on 12/18/2013 at approximately to inspect the alarm condition. Upon review of the events, analog, and discrete logs it was confirmed that the low flow alarm occurred within the first few minutes of operation. Based on the data loggers MH-2 Pump-1 was called to run at 10:31:21 and the Process 30 alarm occurred at 10:31:51 (Note, alarm delay is set at 30 seconds). The next "analog in" logged flow measurement was at 10:40 which indicated that MH-2 Pump-1 was pumping at approx. 17 gpm for the remainder of the pump cycle. Based on this data the noted delay in registering flow may have been to due to a dirty paddlewheel sensor and/or a leaking inline check ball valve which allowed all of the water in the forcemain to drain back into the sump since the previous pump cycle (approx. 1 day prior), thus causing a slight delay of flow. FA-102 alarm was cleared and the system was monitored for a short period to confirm the proper operation of the flowmeter.

The manhole will be inspected during the January monthly O&M event. Corrective actions may include, if deemed necessary, the cleaning of MH-2's paddlewheel sensor and/or increasing the alarm time delay for FA-102 from 30 seconds to 60 seconds.

Further review of the data logger files also indicated that the Process 30 low flow alarms were most likely due to a delay in MH-2 paddlewheel sensor registering flow.

On 1/10/2014 at 12:15 the alarm time delay was increased from 30 seconds to 3 minutes in the event the alarms are related to a faulty inline check valve in the MH-2 discharge line. The MH-2 time delay setpoint calculation is attached.

It should be noted that the time delay for the Process 31 low flow alarm for MH-3 was increased from 30 seconds to 5 minutes in the event any future alarm low flow alarms related to a faulty inline check valve in the MH-3 discharge line. The MH-3 time delay setpoint calculation is attached. The MH-1 Process 29 low flow alarm setpoint was left at 30 seconds as a result of its close proximity to the treatment building.

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Sunday, December 22, 2013 11:16 PM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 23:14:49 on 12/22/2013
ALARM was triggered by PROCESS 30. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #30.
This system last shut down at 04:50:41 on 12/17/2013 and the cause was LSL100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	ON
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	ON
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	ON
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_4--ProControl_Outer--					

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Friday, January 10, 2014 2:46 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 02:44:28 on 01/10/2014
ALARM was triggered by PROCESS 30. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #30.
This system last shut down at 09:52:23 on 01/03/2014 and the cause was LSL100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	ON
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	ON	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	ON
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	ON
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_400	OFF	LSH200	OFF		

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	59202035	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10495734	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	3984322	GAL	10.00	80.00	0.00	20.00
FT_105	15.05	GPM	13744569	GAL	3.00	80.00	0.00	20.00
PT_106	28.02	IWC			8.00	35.00	0.00	20.00
TT_400	77.9	DEG			60.0	110.0	0.0	20.0
PT_400	11.9	IWC			1.0	25.0	0.0	20.0
TT_100	61.8	DEG			40.0	110.0	0.0	20.0
FT_106	938.4	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	2.3%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/21/2014
Time: 13:30
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 1/21/2014 Time: 4:01

Alarm Condition:

Process - 32 (Low level alarm via LSL-100) - Non-Fatal Alarm

Cause of Alarm:

The LSL-100 was tripped during a automated system startup (MH-3 called to run). The data logger indicated that the LSL-100 was toggling on/off after the MH-3 Pump 1 was online for until it latched long enough (10 minute set point) in the off position to trigger the alarm.

Corrective Action:

TMC logged in remotely on 1/21/2014 at 15:30 to review alarm condition, after review of alarm condition the alarm condition was cleared and remained cleared.

The ambient air temperature at the time of the alarm was 5 degrees F, which increases the pressure in the air stripper sump and results in lowering the water level enough to trip the LSL-100 switch.

It should be noted that the air flow through the air stripper during the alarm condition was recorded at a range of 810-821 cfm, which indicates that sufficient air flow is passing through the air stripper trays to treat the influent groundwater.

As noted in the last alarm response log for this alarm condition, the alternate options to address the process 32 nuisance alarm would be to disable or change the high air stripper sump alarm LA-101 to non-fatal/increasing the time delay, and then adjust the damper to reduce the blower back pressure in the air stripper sump, which would allow the water level to operate at a slightly higher level above the low level switch.

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Tuesday, January 21, 2014 4:03 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 04:01:27 on 01/21/2014
ALARM was triggered by PROCESS 32. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #32.
This system last shut down at 09:52:23 on 01/03/2014 and the cause was LSL100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	OFF
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	ON	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	ON
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_400	OFF	LSH200	OFF		

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	59339370	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10524506	GAL	10.00	80.00	0.00	20.00
FT_103	14.51	GPM	4031058	GAL	10.00	80.00	0.00	20.00
FT_105	13.58	GPM	13948989	GAL	3.00	80.00	0.00	20.00
PT_106	31.62	IWC			8.00	35.00	0.00	20.00
TT_400	102.5	DEG			60.0	110.0	0.0	20.0
PT_400	10.5	IWC			1.0	25.0	0.0	20.0
TT_100	60.7	DEG			40.0	110.0	0.0	20.0
FT_106	836.0	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	2.0%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/28/2014
Time: 12:00
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date:	1/23/2014	Time:	12:50
	1/24/2014		14:08

Alarm Condition:

MH-1 Pump 1 was not operating when being called to run by the PLC - Non-Fatal Alarm

Process 29/55 -MH-1/Aggregate Low Flow Alarm - Non-Fatal Alarm

Cause of Alarm:

Blown PLC discrete output fuse for MH-1 Pump 1

Corrective Action:

Upon review of the 1/24/14 daily operational log it was noted that MH-1 Pump 1 was being called to run, however there was no liquid flow present, and the air stripper sump pressure appeared to operating lower than usual based on the historical operational ranges, thus indicating no liquid flow into the stripper. TMC logged into the system remotely, upon review of the datalogger files, the pump had shutoff prematurely during a cycle the day before (1/23/2014). TMC attempted to start the pump remotely manually using the virtual "Hand" switch but was unable to do so. Dan Zuck was onsite 1/24/2014 and confirmed that Pump 1 would operate when the physical HOA switch was placed into Hand, which ruled out that the breaker for that pump had tripped out. Based on the initial troubleshooting the PLC's discrete output for Pump 1 to run was either faulty or had a blown fuse, and/or that one of the contacts/wires was bad between the PLC output and the pump.

TMC logged into the system remotely on daily basis (1/25-1/28) to force MH-1 Pump 2 online to maintain the operation of MH-1 until Chris Davern could be onsite to inspect the PLC outputs.

Chris Davern was onsite 1/29/2014 to inspect the PLC, HOA switch, and all wiring contacts for Pump 1. Upon inspection and testing the fuse for the PLCs discrete output (#33) was found blown and the contact block for Pump 1's run indicator light showed some signs of discoloration as a result of possibly overheating/arcing. Additionally, the contact block for MH-1's main power indicator light also showed signs of possible overheating/arcing. All other contacts and wire associated with Pump 1 were tested for continuity and passed. A temporary program was written in order for the MH-1 to call Pump 2 only for each pump cycle and ignore Pump 1 until a replacement fuse kit for the PLC, new contact blocks for the panel lights, and HOA switch could be ordered.

ARCADIS was onsite 2/11/2014 and installed the new fuse for discrete output #33, and new MH-1 light contact blocks and Pump 1 HOA switch. Each of these devises were successfully tested, these tests included testing the auto and manual operation of the pump via the physical and virtual HOA switches, and the run/power lights. The PLC logic was re-programmed to the previous program so that Pump 1 was brought back into cyclic operation.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date:	1/28/2014
Time:	12:10
Technician:	TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 1/26/2014 Time: 22:36

Alarm Condition:

Processes 31

Low flow alarm for FT-103 (Manhole MH-3, Pump 2).

Non-fatal alarm.

Cause of Alarm:

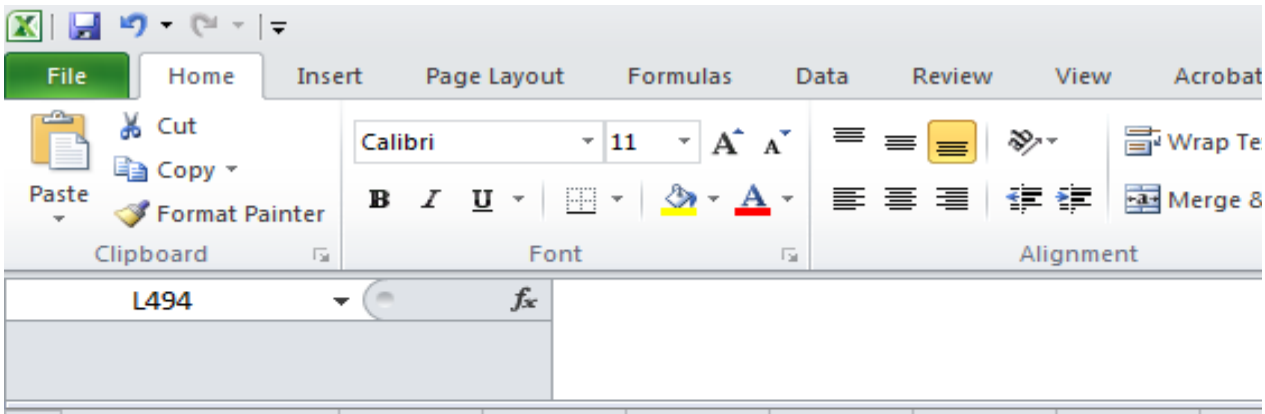
Flow transmitter FT-103 not recording flow despite MH-3 Pump-2 being called to run.

Corrective Action:

Todd Carignan logged into the system remotely on 1/28/2014 at approximately 12:15 to inspect the alarm condition. Upon review of the analog and discrete logs it was confirmed that the low flow alarm occurred after the first 10 minutes of operation. However, flow was registered during the entire pump cycle period by FT-105 (aggregate flowmeter). Based on this data the FT-103 paddlewheel sensor most likely had a build up of debris/scale which caused it to stop rotating temporarily. According to the data logger, FT-103 began registering flow two pump cycles later.

It should be noted that the time delay for the Process 31 low flow alarm for MH-3 was recently increased from 30 seconds to 5 minutes on 1/10/2014.

The flow meter paddlewheel sensor will be cleaned during the quarterly O&M event scheduled for the week of 2/3/2014.



	A	B	C	D	E	F	G	
1	EOS Research ProView Analog Data File							
2	The ARCADIS GCTS System in UTICA_NEW YORK							
3								
4	Date & Time	FT_101	FT_102	FT_103	FT_105	PT_106	TT_400	PT_4
485	1/26/14 21:20	36.12	-0.07	-0.07	35.71	31.78	96.3	
486	1/26/14 21:30	-0.12	-0.07	-0.07	-0.18	29.15	95.5	
487	1/26/14 21:40	-0.12	-0.07	-0.07	-0.18	0.06	145.8	
488	1/26/14 21:50	-0.12	-0.07	-0.1	-0.18	0.06	135.3	
489	1/26/14 22:00	-0.12	-0.07	-0.07	-0.18	0.09	122.6	
490	1/26/14 22:10	-0.12	-0.07	-0.07	-0.21	0.09	112.2	
491	1/26/14 22:20	-0.12	-0.07	-0.1	-0.21	0.06	103.9	
492	1/26/14 22:30	-0.12	-0.07	15.24	15.08	27.69	77.7	
493	1/26/14 22:40	-0.12	-0.1	-0.07	14.96	30.19	88.6	
494	1/26/14 22:50	-0.15	-0.07	-0.07	14.19	30.19	86.1	
495	1/26/14 23:00	-0.12	-0.07	-0.1	12.33	30.04	86.8	
496	1/26/14 23:10	-0.15	-0.07	-0.1	-0.21	28.82	89.4	
497	1/26/14 23:20	-0.12	-0.07	-0.07	-0.21	0.03	133.8	
498	1/26/14 23:30	-0.12	-0.07	-0.07	-0.21	0.03	123.7	
499	1/26/14 23:40	-0.12	-0.07	-0.07	-0.18	0.06	114.4	
500	1/26/14 23:50	-0.12	-0.07	-0.07	-0.18	0.09	106	
501	1/27/14 0:00	-0.12	-0.07	-0.07	-0.18	0.03	99.2	
502	1/27/14 0:10	-0.15	-0.07	-0.07	-0.18	0.06	93.5	
503	1/27/14 0:20	-0.12	-0.07	-0.07	-0.18	0.03	89.3	
504	1/27/14 0:30	-0.1	-0.07	-0.07	-0.18	0	85.6	
505	1/27/14 0:40	-0.12	-0.07	-0.07	-0.21	0	82.5	
506	1/27/14 0:50	-0.12	-0.07	-0.1	-0.21	0	80	
507	1/27/14 1:00	-0.15	-0.07	-0.07	-0.18	0	79.7	
508	1/27/14 1:10	-0.12	-0.07	-0.07	-0.18	0	81.8	
509	1/27/14 1:20	-0.12	-0.07	-0.07	-0.18	0.03	84.3	
510	1/27/14 1:30	-0.12	-0.07	-0.07	-0.21	0.03	86.9	
511	1/27/14 1:40	-0.15	-0.1	-0.07	-0.18	0.06	89.2	
512	1/27/14 1:50	-0.12	-0.07	-0.07	-0.21	0.06	91	
513	1/27/14 2:00	-0.12	-0.07	-0.07	-0.18	0.09	90.5	
514	1/27/14 2:10	-0.12	-0.07	-0.1	-0.18	0.09	88	

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Sunday, January 26, 2014 10:38 PM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 22:36:47 on 01/26/2014
ALARM was triggered by PROCESS 31. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #31.
This system last shut down at 09:52:23 on 01/03/2014 and the cause was LSL100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	ON	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	ON	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	ON	PA_106	OFF	LA_100	ON
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	ON

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_400	OFF	LSH200	OFF		

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	59381463	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10529851	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	4045393	GAL	10.00	80.00	0.00	20.00
FT_105	15.14	GPM	14008840	GAL	3.00	80.00	0.00	20.00
PT_106	30.13	IWC			8.00	35.00	0.00	20.00
TT_400	89.1	DEG			60.0	110.0	0.0	20.0
PT_400	10.4	IWC			1.0	25.0	0.0	20.0
TT_100	63.2	DEG			40.0	110.0	0.0	20.0
FT_106	815.5	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	2.3%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/28/2014
Time: 13:30
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 1/28/2014 Time: 5:03

Alarm Condition:

Process - 32 (Low level alarm via LSL-100) - Non-Fatal Alarm

Cause of Alarm:

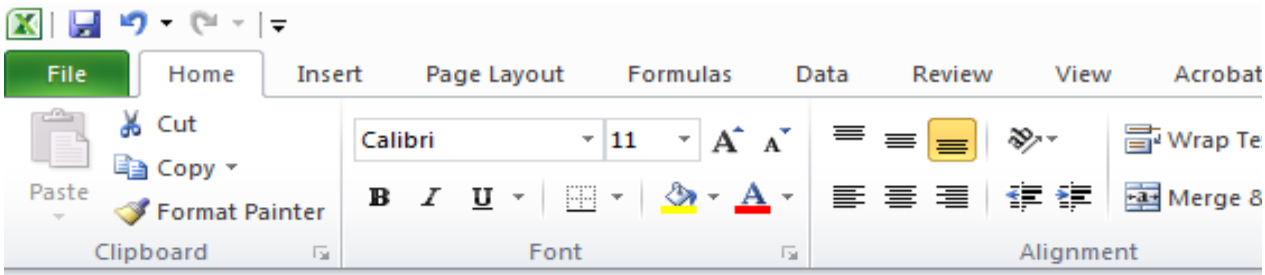
The LSL-100 was tripped during a automated MH-3 pump cycle. The data logger indicated that the LSL-100 was toggling on/off during the MH-3 Pump cycle until it latched long enough (10 minute set point) in the off position to trigger the alarm.

Corrective Action:

TMC logged in remotely on 1/28/2014 at 15:15 to review alarm condition. The alarm condition was confirmed to be identical to the previous alarm conditions. The alarm condition was NOT cleared.

The most recent corrective actions have been unsuccessful at mitigating this nuisance alarm. As noted in the last alarm response log for this alarm condition, the alternate option to address the process 32 nuisance alarm would be to disable or change the high air stripper sump alarm LA-101 to non-fatal/increasing the time delay, and then adjust the damper to reduce the blower back pressure in the air stripper sump, which would allow the water level to operate at a slightly higher level above the low level switch.

Following discussions with engineering team members, ARCADIS will be onsite 1/29/2014 to implement these changes, which will include adjustment to the blower damper to decrease the avg. operational sump pressure below 32-33 in.W.C., and increased the high level alarm delay setpoint from 15 seconds to 5 minutes. Following these adjustments ARCADIS will monitor the system remotely to ensure the modifications don't negatively affect the operation of the system. If any modifications are required they'll be addressed during the quarterly OM&M event scheduled for the week of 2/3/2014.



	A	B	C	D	E	F	G	H
1	EOS Research ProView Analog Data File							
2	The ARCADIS GCTS System in UTICA_NEW YORK							
3								
4	Date & Time	FT_101	FT_102	FT_103	FT_105	PT_106	TT_400	PT_400
671	1/28/14 4:20	-0.15	-0.07	-0.1	-0.18	0	83.8	-
672	1/28/14 4:30	-0.12	-0.07	-0.07	-0.21	0	86.1	-
673	1/28/14 4:40	-0.15	-0.07	15.19	14.04	31.26	93.2	1
674	1/28/14 4:50	-0.15	-0.07	14.53	14.26	31.5	99.7	1
675	1/28/14 5:00	-0.12	-0.1	13.92	13.55	31.5	100.6	1
676	1/28/14 5:10	-0.15	-0.07	-0.07	-0.18	31.17	99.3	
677	1/28/14 5:20	-0.12	-0.07	-0.07	-0.18	0.37	130.5	-
678	1/28/14 5:30	-0.12	-0.07	-0.1	-0.21	0	142.7	-
679	1/28/14 5:40	-0.12	-0.07	-0.1	-0.21	0	128.5	-
680	1/28/14 5:50	-0.15	-0.07	-0.07	-0.21	0	119	-
681	1/28/14 6:00	-0.12	-0.07	-0.07	-0.18	0	112.9	-
682	1/28/14 6:10	-0.12	-0.07	-0.07	-0.18	0	109.2	-
683	1/28/14 6:20	-0.12	-0.07	-0.07	-0.18	0.03	107.1	-
684	1/28/14 6:30	-0.12	-0.07	-0.07	-0.18	0.03	105.5	-
685	1/28/14 6:40	-0.12	-0.07	-0.07	-0.21	0.03	104.7	-
686	1/28/14 6:50	-0.12	-0.07	-0.07	-0.18	0.06	104.2	-
687	1/28/14 7:00	37.41	-0.07	-0.07	38.03	32.57	85	
688	1/28/14 7:10	37.14	-0.07	-0.07	37.64	32.94	101	
689	1/28/14 7:20	36.73	-0.07	-0.07	37.61	33.06	98.4	
690	1/28/14 7:30	36.65	-0.07	-0.07	37.52	32.97	97.2	
691	1/28/14 7:40	35.95	-0.07	-0.1	38.64	33.03	96.8	
692	1/28/14 7:50	36.34	-0.07	-0.07	37.3	33.06	97.1	
693	1/28/14 8:00	-0.12	-0.07	-0.07	-0.18	30.8	96.4	1
694	1/28/14 8:10	-0.12	-0.07	-0.07	-0.21	0.09	138.4	-
695	1/28/14 8:20	-0.12	-0.1	-0.07	-0.18	0	141.7	-
696	1/28/14 8:30	-0.12	-0.07	-0.1	-0.18	0.03	128.5	-
697	1/28/14 8:40	-0.12	-0.07	-0.07	-0.18	0	120.1	-
698	1/28/14 8:50	-0.12	-0.07	-0.07	-0.18	0.06	114.6	-
699	1/28/14 9:00	-0.12	-0.07	-0.07	-0.18	0.06	107.7	-

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Tuesday, January 28, 2014 5:05 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 05:03:08 on 01/28/2014
ALARM was triggered by PROCESS 32. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #32.
This system last shut down at 09:52:23 on 01/03/2014 and the cause was LSL100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	OFF
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	ON	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	ON
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_400	OFF	LSH200	OFF		

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	59387417	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10529851	GAL	10.00	80.00	0.00	20.00
FT_103	13.63	GPM	4046841	GAL	10.00	80.00	0.00	20.00
FT_105	12.64	GPM	14017651	GAL	3.00	80.00	0.00	20.00
PT_106	31.41	IWC			8.00	35.00	0.00	20.00
TT_400	100.5	DEG			60.0	110.0	0.0	20.0
PT_400	11.0	IWC			1.0	25.0	0.0	20.0
TT_100	61.4	DEG			40.0	110.0	0.0	20.0
FT_106	845.6	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	1.9%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/12/2014
Time: 0930
Technician: R. Mahoney

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 3/10/14 Time: 0632

Alarm Condition:

On Sunday 03/09/14 the GCTS daily email status report did not contain the attachments that are normally included; however the system parameters and operation appeared normal.

On Monday 03/10/14, the system failed to send a daily email status report.

Cause of Alarm:

On the morning of Monday 03/10/14 Stantec logged in to the system (approx. 0500) to check system status; operation apeared normal). Stantec also logged in at approx 0800 hrs. and system parameters and operation appeared normal. However, connection with the PLC was then lost and additional attempt to connect generated error messages relative to a problem with the Serial Port connection. Several additional attempts to log in failed and communication with the PLC could not be re-established. EOS Research was contacted and they also could not access the PLC remotely.

Corrective Action:

Stantec traveled to the site, arriving at approx. 2000 hrs. The PLC was put through a power cycle to 're-boot' the unit. A test of the remote communication was successful; however communication was again lost and Serial Port error messages were received. A second re-boot reestablished connection and no further action was taken. Note that GCTS system operation was normal throughout the process.

A daily email status report was received on the morning of 03/11/14, however no attachments were included. System operation was normal.

On 03/11/14 EOS Research performed a check of the PLC setting and operation. Recent historical data indicated the likely cause of the failure to send a daily email status report on 3/10 was due to conflcit with a user login at the same time the daily report is normally sent. They system cannot perform two communication operations simultaneously.

The issue regarding lack of data attachments was corrected by resetting the frequency for attachments to "daily" status.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/17/2014
Time: 1600
Technician: R. Mahoney

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 3/16/14 Time: 0522

Alarm Condition:

No data files were attached to the daily email report.

Cause of Alarm:

R. Mahoney logged on to the system approximately 1315 hrs. Communicaiton and system operation parameters appeared normal. No reason for the lack of attachments was evident.

Corrective Action:

A similar issue was observed with the SSDS system. A plan was made to visi the site on Monday 3/17. However, communication appeared to have returned to normal on 3/16, and the daily email report contained the appropiate file attachments.

EOS research has been contacted and possible modifcations to the system software may be necessary because issues appear to be developing with Verizon.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 5/16/2014
Time: 0900
Technician:

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 5/6/2014 and 5/7/2014 Time: 05:00

Alarm Condition:

On 5/6/14 and 5/7/14 the GCTS did not send out daily status emails.

Cause of Alarm:

The GCTS PLC software was locked up and was not communicating with the network.

Corrective Action:

A site visit was performed on 5/7/14 where the PLC was rebooted to clear the software lock. System data indicate there was no interruption in operation during this time period.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/5/2014
Time: 1400
Technician: R. Mahoney

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 5, 10, 11, 12, 22, 28 May Time: na

Alarm Condition:

Daily Fax emails did not contain one or more attachments.

Cause of Alarm:

Some missing attachments may reflect a lack of data to report.

Corrective Action:

A summary of attachments by day has been provided to EOS research for review and comment relative to possible causes or corrective actions.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Date:	7/1/2014
Alarm Time:	17:59:33
Technician:	WA

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/3/14 Time: 1200

Alarm Condition:

Process 38 (Non-Fatal) - Manhole MH-2 Low Level alarm was generated at 18:02 on 7/1/2014.

Cause of Alarm:

Cause of alarm is unknown at this time. Note that a similar alarm for Mahole MH-2 was received at 18:02:00.

Corrective Action:

A remote system check was performed showing the system was operating normally. The low-level float was active indicating the water level in the manhole was at a normal level. Stantec will follow up by checking the floats during the upcoming quarterly OM&M visit the week of 7/7/2014.

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Tuesday, July 01, 2014 6:05 PM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 18:02:00 on 07/01/2014
ALARM was triggered by PROCESS 38. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #40.
This system last shut down at 10:01:28 on 06/29/2014 and the cause was LSH100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	ON	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	OFF	DH_300	OFF
LA_MH1	ON	FA_101	OFF	LA_MH2	ON	FA_102	OFF
LA_MH3	ON	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	60958990	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10753276	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	4688606	GAL	10.00	80.00	0.00	20.00
FT_105	0.00	GPM	16420621	GAL	3.00	80.00	0.00	20.00
PT_106	0.24	IWC			8.00	35.00	0.00	20.00
TT_400	78.2	DEG			53.3	110.0	0.0	20.0
PT_400	0.0	IWC			1.0	25.0	0.0	20.0
TT_100	77.7	DEG			40.0	110.0	0.0	20.0
FT_106	68.3	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	0.0%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Date:	7/1/2014
Alarm Time:	18:02:00
Technician:	WA

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/3/14 Time: 1200

Alarm Condition:

Process 36 (Non Fatal) - Manhole MH-1 Low Level alarm was generated at 18:02:00 on 7/1/2014.

Cause of Alarm:

Cause of alarm is unknown at this time. Note that a similar alarm was received two minutes prior for Manhole MH-1.

Corrective Action:

A remote system check was performed showing the system was operating normally. The low-level float was active indicating the water level in the manhole was operating at a normal level. Stantec will follow up by checking the floats during the upcoming quarterly OM&M visit the week of 7/7/2014.

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Tuesday, July 01, 2014 6:02 PM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 17:59:33 on 07/01/2014
ALARM was triggered by PROCESS 36. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #40.
This system last shut down at 10:01:28 on 06/29/2014 and the cause was LSH100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	ON	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	OFF	DH_300	OFF
LA_MH1	ON	FA_101	OFF	LA_MH2	ON	FA_102	OFF
LA_MH3	ON	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	60958990	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10753276	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	4688606	GAL	10.00	80.00	0.00	20.00
FT_105	0.00	GPM	16420621	GAL	3.00	80.00	0.00	20.00
PT_106	0.24	IWC			8.00	35.00	0.00	20.00
TT_400	78.0	DEG			53.3	110.0	0.0	20.0
PT_400	0.0	IWC			1.0	25.0	0.0	20.0
TT_100	77.7	DEG			40.0	110.0	0.0	20.0
FT_106	66.9	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	0.0%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Date:	7/5/2014
Alarm Time:	04:02:34
Technician:	R. Mahoney

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/5/14 Time: 1000

Alarm Condition:

Process 32 (Non-Fatal) - Air Stripper Low Liquid Level

Cause of Alarm:

The liquid level in the air stripper sump varied significantly depending on inflow rates. The low level alarm is frequently tripped during normal operation as the sump level varies. These events typically last only a few seconds at the most. As such, the alarm has been set with a 10-minute delay to avoid unnecessary "nuisance" alarms. The alarm received on 7/5 indicates the liquid level must have remained below the low-level set point for greater than 10 minutes; however overall operation of the sytem does not appear to be impacted. This is likely related to the adjustment recently made to one of the carbon manifold valves.

Corrective Action:

Logged onto system approximately 0700. Operation appeared normal - no indication of any problems with air stripper. Stantec will continue to monitor the system's performance and make adjustments as needed during this week's Quarterly OMM event.

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Saturday, July 05, 2014 4:05 AM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 04:02:34 on 07/05/2014
ALARM was triggered by PROCESS 32. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #32.
This system last shut down at 20:13:58 on 07/01/2014 and the cause was PT_106.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	OFF	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	ON	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	ON
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	60995170	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10758010	GAL	10.00	80.00	0.00	20.00
FT_103	18.27	GPM	4705600	GAL	10.00	80.00	0.00	20.00
FT_105	16.15	GPM	16475503	GAL	3.00	80.00	0.00	20.00
PT_106	31.72	IWC			8.00	35.00	0.00	20.00
TT_400	61.2	DEG			53.3	110.0	0.0	20.0
PT_400	15.8	IWC			1.0	25.0	0.0	20.0
TT_100	66.4	DEG			40.0	110.0	0.0	20.0
FT_106	571.0	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	2.4%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Date:	7/24/2014
Alarm Time:	04:24:38
Technician:	R. Mahoney

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/24/14 Time: 0930

Alarm Condition:

Process 30: Manhole MH-2 Low flowrate

Cause of Alarm:

Based on a review of logged data, it appears that the pumps in Manhole MH-2 are functioning properly, however the flow being recorded by flow transmitter FT-102 appears to have stopped sometime before the warning alarm was gnerated. This is demonstrated by the attached log (7/21-7/24) of flows from all three manholes which also shows total combined flow recorded at transmitter FT-105. At the time of the alarm, manholes MH-1 and-3 are inactive, and no flow is indicated in MH-2, however FT-5 shows flow is occurring. This indicates the flow meter at FT-102 is not functioning properly.

Corrective Action:

None taken so far; system operation appears otherwise normal. Periodic checks of the flow parameters will continue to be made remotely to see if conditions change. Flow meter change-out may be required to correct this condition.

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Thursday, July 24, 2014 4:28 AM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 04:24:38 on 07/24/2014
ALARM was triggered by PROCESS 30. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #30.
This system last shut down at 11:15:07 on 07/10/2014 and the cause was REMOTE.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	ON
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	ON	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	ON
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	ON
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	61121293	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10776459	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	4771105	GAL	10.00	80.00	0.00	20.00
FT_105	14.22	GPM	16674028	GAL	3.00	80.00	0.00	20.00
PT_106	28.85	IWC			8.00	35.00	0.00	20.00
TT_400	73.4	DEG			60.0	110.0	0.0	20.0
PT_400	12.0	IWC			1.0	25.0	0.0	20.0
TT_100	72.4	DEG			40.0	110.0	0.0	20.0
FT_106	639.3	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	2.1%	Open Loop Proportional			

Date & Time	FT_101	FT_102	FT_103	FT_105
7/21/14 12:10 AM	-0.15	-0.07	-0.07	-0.21
7/21/14 12:20 AM	-0.15	-0.07	-0.1	-0.18
7/21/14 12:30 AM	-0.12	-0.07	-0.07	-0.21
7/21/14 12:40 AM	-0.12	-0.07	-0.07	-0.21
7/21/14 12:50 AM	-0.12	-0.07	-0.07	-0.18
7/21/14 1:00 AM	-0.12	-0.07	-0.07	-0.21
7/21/14 1:10 AM	-0.15	-0.07	-0.07	-0.21
7/21/14 1:20 AM	-0.12	-0.07	-0.07	-0.21
7/21/14 1:30 AM	-0.12	-0.07	19.17	16.85
7/21/14 1:40 AM	-0.12	-0.07	17.88	15.78
7/21/14 1:50 AM	-0.12	-0.07	17.22	15.23
7/21/14 2:00 AM	-0.12	-0.07	-0.07	-0.21
7/21/14 2:10 AM	-0.12	-0.07	-0.1	-0.18
7/21/14 2:20 AM	-0.12	-0.07	-0.1	-0.21
7/21/14 2:30 AM	-0.12	-0.07	-0.07	-0.18
7/21/14 2:40 AM	-0.12	-0.07	-0.07	-0.21
7/21/14 2:50 AM	-0.12	-0.07	-0.1	-0.18
7/21/14 3:00 AM	-0.12	-0.07	-0.07	-0.18
7/21/14 3:10 AM	-0.12	-0.07	-0.07	-0.21
7/21/14 3:20 AM	-0.12	-0.07	-0.07	-0.18
7/21/14 3:30 AM	-0.12	-0.07	-0.1	-0.21
7/21/14 3:40 AM	-0.15	-0.07	-0.07	-0.21
7/21/14 3:50 AM	-0.12	-0.07	-0.07	-0.21
7/21/14 4:00 AM	-0.12	-0.07	-0.1	-0.21
7/21/14 4:10 AM	-0.12	-0.07	-0.07	-0.21
7/21/14 4:20 AM	36.9	-0.07	-0.1	36.78
7/21/14 4:30 AM	36.85	-0.07	-0.07	36.39
7/21/14 4:40 AM	37.22	-0.07	-0.1	36.11
7/21/14 4:50 AM	36.68	-0.07	-0.07	36.08
7/21/14 5:00 AM	36.24	-0.07	-0.07	35.9
7/21/14 5:10 AM	35.8	-0.07	-0.07	36.32
7/21/14 5:20 AM	-0.12	-0.07	-0.07	-0.18
7/21/14 5:30 AM	-0.12	-0.07	-0.1	-0.21
7/21/14 5:40 AM	-0.15	-0.07	-0.07	-0.21
7/21/14 5:50 AM	-0.15	-0.07	-0.1	-0.21
7/21/14 6:00 AM	-0.15	-0.1	-0.1	-0.18
7/21/14 6:10 AM	-0.15	-0.07	-0.07	-0.21
7/21/14 6:20 AM	-0.12	-0.1	-0.1	-0.21
7/21/14 6:30 AM	-0.15	-0.07	-0.07	-0.21
7/21/14 6:40 AM	-0.15	-0.07	19.56	17.55
7/21/14 6:50 AM	-0.12	-0.07	18.58	16.48
7/21/14 7:00 AM	-0.12	-0.1	17.58	15.23
7/21/14 7:10 AM	-0.1	-0.07	-0.07	0.49
7/21/14 7:20 AM	-0.15	-0.07	-0.07	-0.21
7/21/14 7:30 AM	-0.12	-0.07	-0.1	-0.21
7/21/14 7:40 AM	-0.12	-0.07	-0.1	-0.21
7/21/14 7:50 AM	-0.12	-0.07	-0.1	-0.21
7/21/14 8:00 AM	-0.12	-0.07	-0.1	13.37
7/21/14 8:10 AM	-0.15	15.19	-0.1	15.26
7/21/14 8:20 AM	-0.12	14.95	-0.07	14.62
7/21/14 8:30 AM	-0.12	14.82	-0.07	14.47
7/21/14 8:40 AM	-0.12	14.65	-0.07	13.86
7/21/14 8:50 AM	-0.12	14.65	-0.1	14.29
7/21/14 9:00 AM	-0.12	14.48	-0.07	14.47
7/21/14 9:10 AM	-0.15	14.04	-0.07	14.16
7/21/14 9:20 AM	-0.12	14.99	-0.07	13.95
7/21/14 9:30 AM	-0.12	14.38	-0.07	13.58
7/21/14 9:40 AM	-0.12	14.51	-0.1	13.71
7/21/14 9:50 AM	-0.12	14.87	-0.07	13.43
7/21/14 10:00 AM	-0.12	14.58	-0.07	12.58
7/21/14 10:10 AM	-0.15	14.33	-0.1	13.13
7/21/14 10:20 AM	-0.12	14.41	-0.1	12.48
7/21/14 10:30 AM	-0.12	14.11	-0.1	13.52
7/21/14 10:40 AM	-0.12	-0.07	-0.1	-0.21
7/21/14 10:50 AM	-0.12	-0.07	-0.07	-0.21
7/21/14 11:00 AM	-0.12	-0.07	-0.07	-0.21
7/21/14 11:10 AM	-0.12	-0.07	-0.07	-0.18
7/21/14 11:20 AM	-0.12	-0.07	-0.07	-0.18
7/21/14 11:30 AM	-0.12	-0.07	-0.07	-0.18

7/21/14 11:40 AM	-0.12	-0.07	-0.07	-0.18
7/21/14 11:50 AM	-0.1	-0.07	-0.07	-0.21
7/21/14 12:00 PM	-0.12	-0.05	-0.07	-0.18
7/21/14 12:10 PM	-0.12	-0.07	19.19	16.61
7/21/14 12:20 PM	-0.12	-0.05	17.51	15.54
7/21/14 12:30 PM	-0.12	-0.07	16.51	15.29
7/21/14 12:40 PM	-0.1	-0.07	-0.07	-0.18
7/21/14 12:50 PM	-0.1	-0.07	-0.07	-0.21
7/21/14 1:00 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 1:10 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 1:20 PM	-0.15	-0.07	-0.07	-0.21
7/21/14 1:30 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 1:40 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 1:50 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 2:00 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 2:10 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 2:20 PM	-0.12	-0.05	-0.05	-0.21
7/21/14 2:30 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 2:40 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 2:50 PM	-0.15	-0.07	-0.07	-0.18
7/21/14 3:00 PM	-0.1	-0.07	-0.07	-0.21
7/21/14 3:10 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 3:20 PM	-0.15	-0.07	-0.07	-0.21
7/21/14 3:30 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 3:40 PM	36.29	-0.07	-0.07	34.68
7/21/14 3:50 PM	35.7	-0.07	-0.07	35.23
7/21/14 4:00 PM	35.41	-0.07	-0.07	35.16
7/21/14 4:10 PM	36.02	-0.07	-0.07	34.46
7/21/14 4:20 PM	36.12	-0.05	-0.07	35.65
7/21/14 4:30 PM	35.19	-0.07	-0.07	34.83
7/21/14 4:40 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 4:50 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 5:00 PM	-0.1	-0.07	-0.07	-0.18
7/21/14 5:10 PM	-0.12	-0.05	-0.07	-0.21
7/21/14 5:20 PM	-0.1	-0.05	19.49	17.86
7/21/14 5:30 PM	-0.12	-0.07	18.56	16.94
7/21/14 5:40 PM	-0.12	-0.07	17.73	15.9
7/21/14 5:50 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 6:00 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 6:10 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 6:20 PM	-0.1	-0.05	-0.05	-0.21
7/21/14 6:30 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 6:40 PM	-0.15	-0.07	-0.07	-0.18
7/21/14 6:50 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 7:00 PM	-0.15	-0.07	-0.07	-0.21
7/21/14 7:10 PM	-0.12	-0.05	-0.05	-0.21
7/21/14 7:20 PM	-0.12	-0.05	-0.07	-0.21
7/21/14 7:30 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 7:40 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 7:50 PM	-0.12	-0.05	-0.07	-0.18
7/21/14 8:00 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 8:10 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 8:20 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 8:30 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 8:40 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 8:50 PM	-0.12	-0.07	-0.05	-0.18
7/21/14 9:00 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 9:10 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 9:20 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 9:30 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 9:40 PM	-0.15	-0.07	-0.07	-0.18
7/21/14 9:50 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 10:00 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 10:10 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 10:20 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 10:30 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 10:40 PM	-0.1	-0.07	-0.07	-0.18
7/21/14 10:50 PM	-0.12	-0.07	18.93	16.24
7/21/14 11:00 PM	-0.12	-0.07	17.73	15.81
7/21/14 11:10 PM	-0.12	-0.07	16.7	14.84
7/21/14 11:20 PM	-0.12	-0.07	-0.07	-0.18
7/21/14 11:30 PM	-0.12	-0.07	-0.07	-0.21

7/21/14 11:40 PM	-0.12	-0.07	-0.07	-0.21
7/21/14 11:50 PM	-0.12	-0.07	-0.1	-0.21
7/22/14 12:00 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 12:10 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 12:20 AM	-0.12	-0.07	-0.1	-0.21
7/22/14 12:30 AM	-0.12	-0.07	-0.1	-0.21
7/22/14 12:40 AM	-0.12	-0.07	-0.07	-0.18
7/22/14 12:50 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 1:00 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 1:10 AM	-0.1	-0.07	-0.07	-0.18
7/22/14 1:20 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 1:30 AM	-0.12	-0.07	-0.07	-0.18
7/22/14 1:40 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 1:50 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 2:00 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 2:10 AM	-0.15	-0.1	-0.07	-0.21
7/22/14 2:20 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 2:30 AM	-0.12	-0.07	-0.07	-0.18
7/22/14 2:40 AM	-0.12	-0.07	-0.1	-0.18
7/22/14 2:50 AM	-0.12	-0.07	-0.07	-0.18
7/22/14 3:00 AM	-0.12	-0.07	-0.1	-0.18
7/22/14 3:10 AM	37.83	-0.07	-0.07	37.27
7/22/14 3:20 AM	37.29	-0.07	-0.1	36.39
7/22/14 3:30 AM	37.46	-0.07	-0.1	37.06
7/22/14 3:40 AM	36.8	-0.07	-0.07	36.42
7/22/14 3:50 AM	36.34	-0.07	-0.07	35.87
7/22/14 4:00 AM	35.97	-0.07	-0.07	35.99
7/22/14 4:10 AM	-0.12	-0.07	19.63	17.98
7/22/14 4:20 AM	-0.15	-0.07	18.44	16.18
7/22/14 4:30 AM	-0.12	-0.07	17.46	15.05
7/22/14 4:40 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 4:50 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 5:00 AM	-0.12	-0.07	-0.1	-0.21
7/22/14 5:10 AM	-0.12	-0.07	-0.07	-0.18
7/22/14 5:20 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 5:30 AM	-0.12	-0.07	-0.1	-0.21
7/22/14 5:40 AM	-0.12	-0.07	-0.07	-0.18
7/22/14 5:50 AM	-0.12	-0.07	-0.1	-0.18
7/22/14 6:00 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 6:10 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 6:20 AM	-0.12	-0.07	-0.1	-0.21
7/22/14 6:30 AM	-0.12	-0.07	-0.1	-0.21
7/22/14 6:40 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 6:50 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 7:00 AM	-0.15	-0.07	-0.07	-0.21
7/22/14 7:10 AM	-0.15	-0.07	-0.1	-0.21
7/22/14 7:20 AM	-0.12	-0.07	-0.1	-0.18
7/22/14 7:30 AM	-0.12	-0.07	-0.1	-0.21
7/22/14 7:40 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 7:50 AM	-0.12	-0.07	-0.07	-0.18
7/22/14 8:00 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 8:10 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 8:20 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 8:30 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 8:40 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 8:50 AM	-0.15	-0.07	-0.07	-0.21
7/22/14 9:00 AM	-0.15	-0.07	-0.07	-0.18
7/22/14 9:10 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 9:20 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 9:30 AM	-0.12	-0.07	19.05	17.03
7/22/14 9:40 AM	-0.12	-0.07	18.56	16.7
7/22/14 9:50 AM	-0.12	-0.07	17.53	15.29
7/22/14 10:00 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 10:10 AM	-0.1	-0.07	-0.07	-0.21
7/22/14 10:20 AM	-0.12	-0.07	-0.07	-0.18
7/22/14 10:30 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 10:40 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 10:50 AM	-0.15	-0.07	-0.07	-0.21
7/22/14 11:00 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 11:10 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 11:20 AM	-0.12	-0.05	-0.07	-0.21
7/22/14 11:30 AM	-0.15	-0.07	-0.07	-0.21

7/22/14 11:40 AM	-0.12	-0.07	-0.07	-0.21
7/22/14 11:50 AM	-0.15	-0.07	-0.07	-0.18
7/22/14 12:00 PM	-0.15	-0.07	-0.07	-0.21
7/22/14 12:10 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 12:20 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 12:30 PM	-0.12	-0.05	-0.07	-0.21
7/22/14 12:40 PM	-0.12	-0.05	-0.07	-0.21
7/22/14 12:50 PM	-0.15	-0.05	-0.07	-0.21
7/22/14 1:00 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 1:10 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 1:20 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 1:30 PM	-0.15	-0.07	-0.07	-0.21
7/22/14 1:40 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 1:50 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 2:00 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 2:10 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 2:20 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 2:30 PM	-0.15	-0.07	-0.07	-0.21
7/22/14 2:40 PM	35.87	-0.07	-0.07	35.65
7/22/14 2:50 PM	35.68	-0.07	-0.07	35.41
7/22/14 3:00 PM	37	-0.07	20.17	51.5
7/22/14 3:10 PM	37.07	-0.07	19.24	50.92
7/22/14 3:20 PM	37.14	-0.07	18.02	49.97
7/22/14 3:30 PM	37.02	-0.07	-0.07	36.45
7/22/14 3:40 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 3:50 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 4:00 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 4:10 PM	-0.12	-0.05	-0.07	-0.18
7/22/14 4:20 PM	-0.12	-0.05	-0.07	-0.18
7/22/14 4:30 PM	-0.12	-0.07	-0.05	-0.18
7/22/14 4:40 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 4:50 PM	-0.15	-0.07	-0.07	-0.18
7/22/14 5:00 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 5:10 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 5:20 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 5:30 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 5:40 PM	-0.1	-0.07	-0.07	-0.18
7/22/14 5:50 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 6:00 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 6:10 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 6:20 PM	-0.1	-0.07	-0.07	-0.21
7/22/14 6:30 PM	-0.12	-0.05	-0.05	-0.18
7/22/14 6:40 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 6:50 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 7:00 PM	-0.12	-0.05	-0.07	-0.21
7/22/14 7:10 PM	-0.12	-0.07	-0.05	-0.18
7/22/14 7:20 PM	-0.12	-0.07	-0.05	-0.18
7/22/14 7:30 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 7:40 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 7:50 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 8:00 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 8:10 PM	-0.15	-0.07	-0.07	-0.21
7/22/14 8:20 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 8:30 PM	-0.12	-0.07	19	16.12
7/22/14 8:40 PM	-0.12	-0.07	18.19	14.93
7/22/14 8:50 PM	-0.15	-0.07	16.92	14.65
7/22/14 9:00 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 9:10 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 9:20 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 9:30 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 9:40 PM	-0.1	-0.07	-0.07	-0.21
7/22/14 9:50 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 10:00 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 10:10 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 10:20 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 10:30 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 10:40 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 10:50 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 11:00 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 11:10 PM	-0.12	-0.07	-0.07	-0.18
7/22/14 11:20 PM	-0.12	-0.05	-0.05	-0.21
7/22/14 11:30 PM	-0.12	-0.07	-0.07	-0.18

7/22/14 11:40 PM	-0.12	-0.07	-0.07	-0.21
7/22/14 11:50 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 12:00 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 12:10 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 12:20 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 12:30 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 12:40 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 12:50 AM	-0.15	-0.07	-0.07	-0.18
7/23/14 1:00 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 1:10 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 1:20 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 1:30 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 1:40 AM	-0.12	-0.05	-0.07	-0.21
7/23/14 1:50 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 2:00 AM	-0.12	-0.07	19.1	16.42
7/23/14 2:10 AM	-0.12	-0.07	18.14	15.9
7/23/14 2:20 AM	-0.12	-0.07	17	15.17
7/23/14 2:30 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 2:40 AM	37.83	-0.07	-0.07	36.72
7/23/14 2:50 AM	37.85	-0.07	-0.07	37.64
7/23/14 3:00 AM	36.9	-0.07	-0.07	36.42
7/23/14 3:10 AM	36.65	-0.07	-0.07	36.72
7/23/14 3:20 AM	37.31	-0.07	-0.07	34.98
7/23/14 3:30 AM	35.92	-0.07	-0.07	35.23
7/23/14 3:40 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 3:50 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 4:00 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 4:10 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 4:20 AM	-0.15	-0.07	-0.07	-0.21
7/23/14 4:30 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 4:40 AM	-0.12	-0.05	-0.07	-0.21
7/23/14 4:50 AM	-0.15	-0.07	-0.07	-0.21
7/23/14 5:00 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 5:10 AM	-0.15	-0.07	-0.07	-0.21
7/23/14 5:20 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 5:30 AM	-0.12	-0.05	-0.07	-0.21
7/23/14 5:40 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 5:50 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 6:00 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 6:10 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 6:20 AM	-0.15	-0.07	-0.07	-0.21
7/23/14 6:30 AM	-0.15	-0.07	-0.07	-0.21
7/23/14 6:40 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 6:50 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 7:00 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 7:10 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 7:20 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 7:30 AM	-0.12	-0.07	19.19	18.04
7/23/14 7:40 AM	-0.15	-0.07	18.71	16.18
7/23/14 7:50 AM	-0.12	-0.07	17.46	14.99
7/23/14 8:00 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 8:10 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 8:20 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 8:30 AM	-0.15	-0.07	-0.07	-0.21
7/23/14 8:40 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 8:50 AM	-0.15	-0.07	-0.07	-0.21
7/23/14 9:00 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 9:10 AM	-0.15	-0.07	-0.07	-0.21
7/23/14 9:20 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 9:30 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 9:40 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 9:50 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 10:00 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 10:10 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 10:20 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 10:30 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 10:40 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 10:50 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 11:00 AM	-0.15	-0.07	-0.07	-0.21
7/23/14 11:10 AM	-0.12	-0.07	-0.07	-0.18
7/23/14 11:20 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 11:30 AM	-0.12	-0.07	-0.07	-0.21

7/23/14 11:40 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 11:50 AM	-0.12	-0.07	-0.07	-0.21
7/23/14 12:00 PM	-0.12	-0.05	-0.07	-0.21
7/23/14 12:10 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 12:20 PM	-0.15	-0.07	-0.07	-0.21
7/23/14 12:30 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 12:40 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 12:50 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 1:00 PM	-0.12	-0.07	19.61	18.25
7/23/14 1:10 PM	-0.12	-0.07	19.1	16.94
7/23/14 1:20 PM	-0.12	-0.07	18.05	15.38
7/23/14 1:30 PM	-0.12	-0.07	-0.05	-0.12
7/23/14 1:40 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 1:50 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 2:00 PM	-0.12	-0.05	-0.07	-0.18
7/23/14 2:10 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 2:20 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 2:30 PM	36.07	-0.07	-0.07	35.47
7/23/14 2:40 PM	36.7	-0.07	-0.07	36.11
7/23/14 2:50 PM	36.31	-0.07	-0.07	35.93
7/23/14 3:00 PM	35.97	-0.05	-0.07	36.08
7/23/14 3:10 PM	35.68	-0.05	-0.07	35.35
7/23/14 3:20 PM	35.21	-0.07	-0.07	35.32
7/23/14 3:30 PM	34.99	-0.05	-0.07	34.95
7/23/14 3:40 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 3:50 PM	-0.12	-0.05	-0.07	-0.18
7/23/14 4:00 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 4:10 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 4:20 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 4:30 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 4:40 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 4:50 PM	-0.15	-0.07	-0.07	-0.21
7/23/14 5:00 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 5:10 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 5:20 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 5:30 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 5:40 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 5:50 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 6:00 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 6:10 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 6:20 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 6:30 PM	-0.12	-0.07	19.19	18.16
7/23/14 6:40 PM	-0.12	-0.07	18.61	16.12
7/23/14 6:50 PM	-0.12	-0.07	17.31	15.11
7/23/14 7:00 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 7:10 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 7:20 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 7:30 PM	-0.15	-0.07	-0.07	-0.21
7/23/14 7:40 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 7:50 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 8:00 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 8:10 PM	-0.15	-0.07	-0.07	-0.21
7/23/14 8:20 PM	-0.12	-0.07	-0.1	-0.21
7/23/14 8:30 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 8:40 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 8:50 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 9:00 PM	-0.1	-0.07	-0.07	-0.21
7/23/14 9:10 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 9:20 PM	-0.12	-0.07	-0.1	-0.21
7/23/14 9:30 PM	-0.12	-0.07	-0.1	-0.21
7/23/14 9:40 PM	-0.15	-0.07	-0.1	-0.21
7/23/14 9:50 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 10:00 PM	-0.15	-0.07	-0.07	-0.21
7/23/14 10:10 PM	-0.12	-0.07	-0.1	-0.21
7/23/14 10:20 PM	-0.15	-0.07	-0.07	-0.21
7/23/14 10:30 PM	-0.12	-0.07	-0.07	-0.18
7/23/14 10:40 PM	-0.12	-0.07	-0.07	-0.21
7/23/14 10:50 PM	-0.12	-0.07	19.51	16.51
7/23/14 11:00 PM	-0.12	-0.07	18.24	15.84
7/23/14 11:10 PM	-0.12	-0.07	17.26	14.29
7/23/14 11:20 PM	-0.12	-0.07	-0.1	-0.21
7/23/14 11:30 PM	-0.12	-0.07	-0.07	-0.21

7/23/14 11:40 PM	37.78	-0.07	-0.07	37.3	
7/23/14 11:50 PM	37.44	-0.07	-0.07	36.42	
7/24/14 12:00 AM	36.8	-0.07	-0.1	35.65	
7/24/14 12:10 AM	36.83	-0.07	-0.1	35.38	
7/24/14 12:20 AM	36.36	-0.07	-0.07	35.71	
7/24/14 12:30 AM	36.19	-0.07	-0.1	35.71	
7/24/14 12:40 AM	-0.12	-0.07	-0.07	-0.18	
7/24/14 12:50 AM	-0.12	-0.07	-0.07	-0.18	
7/24/14 1:00 AM	-0.12	-0.07	-0.07	-0.18	
7/24/14 1:10 AM	-0.12	-0.07	-0.07	-0.21	
7/24/14 1:20 AM	-0.15	-0.07	-0.07	-0.21	
7/24/14 1:30 AM	-0.12	-0.07	-0.07	-0.21	
7/24/14 1:40 AM	-0.15	-0.07	-0.07	-0.21	
7/24/14 1:50 AM	-0.12	-0.07	-0.07	-0.21	
7/24/14 2:00 AM	-0.12	-0.07	-0.07	-0.21	
7/24/14 2:10 AM	-0.12	-0.07	-0.07	-0.21	
7/24/14 2:20 AM	-0.15	-0.07	-0.1	-0.21	
7/24/14 2:30 AM	-0.12	-0.07	-0.1	-0.21	
7/24/14 2:40 AM	-0.15	-0.07	-0.1	-0.21	
7/24/14 2:50 AM	-0.12	-0.07	-0.07	-0.21	
7/24/14 3:00 AM	-0.15	-0.07	-0.07	-0.21	
7/24/14 3:10 AM	-0.12	-0.07	-0.07	-0.21	
7/24/14 3:20 AM	-0.15	-0.07	-0.07	-0.21	
7/24/14 3:30 AM	-0.12	-0.1	19.46	16.18	
7/24/14 3:40 AM	-0.1	-0.1	18.49	16.03	
7/24/14 3:50 AM	-0.12	-0.07	17.02	14.41	
7/24/14 4:00 AM	-0.12	-0.07	-0.07	-0.21	
7/24/14 4:10 AM	-0.12	-0.07	-0.07	-0.18	
7/24/14 4:20 AM	-0.12	-0.07	-0.07	-0.18	**Alarm at 0424**
7/24/14 4:30 AM	-0.12	-0.07	-0.07	13.68	
7/24/14 4:40 AM	-0.15	-0.07	-0.1	13.52	
7/24/14 4:50 AM	-0.12	-0.07	-0.07	14.04	
7/24/14 5:00 AM	-0.12	-0.07	-0.07	13.64	
7/24/14 5:10 AM	-0.15	-0.07	-0.07	13.22	
7/24/14 5:20 AM	-0.12	-0.07	-0.07	13.58	
7/24/14 5:30 AM	-0.15	-0.07	-0.07	13.31	
7/24/14 5:40 AM	-0.12	-0.07	-0.1	13.68	
7/24/14 5:50 AM	-0.12	-0.07	-0.07	13.58	
7/24/14 6:00 AM	-0.15	-0.07	-0.07	12.55	
7/24/14 6:10 AM	-0.15	-0.07	-0.07	12.67	
7/24/14 6:20 AM	-0.12	-0.07	-0.07	12.82	
7/24/14 6:30 AM	-0.12	-0.07	-0.07	11.9	
7/24/14 6:40 AM	-0.12	-0.07	-0.07	12.12	
7/24/14 6:50 AM	-0.12	-0.07	-0.1	11.72	
7/24/14 7:00 AM	-0.12	-0.07	-0.07	-0.03	
7/24/14 7:10 AM	-0.12	-0.07	-0.07	-0.21	
7/24/14 7:20 AM	-0.15	-0.05	-0.07	-0.21	
7/24/14 7:30 AM	-0.12	-0.07	-0.1	-0.21	
7/24/14 7:40 AM	-0.15	-0.07	-0.1	-0.21	
7/24/14 7:50 AM	20.46	-0.07	-0.07	1.4	
7/24/14 8:00 AM	-0.12	-0.07	-0.07	-0.21	
7/24/14 8:10 AM	-0.12	-0.07	-0.07	-0.21	
7/24/14 8:20 AM	-0.12	-0.07	-0.07	-0.21	

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Date:	7/27/2014
Alarm Time:	06:56:01
Technician:	W. Armington

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/30/14 Time: 1000

Alarm Condition:

Process 30: Manhole MH-2 Low flowrate (non-fatal)

Cause of Alarm:

Based on a review of logged data for this alarm and the same alarm receive on 7/24/14, it appears flow transmitter FT-102 is not functioning consistenly. The recorded values for flow from Manhole MH-2 do not appear to consistently represent actual flow conditions,i.e. it appears the flow meter at times is not functioning and at other times functions properly.

Corrective Action:

Stantec observed the flow meter began to operate normally at 0730 on 7/27/14 during the pump-down cycle of MH-2 after the alarm tripped. As of the morning of 7/30/14 the flow meter appears to function normally. Stantec will continue to monitor the operation remotely until the the next scheduled site visit on 8/7/14, at which time we will inspect the flow meter, wiring, and manhole. Replcement of the meter may be requred sometime in the near future.

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Sunday, July 27, 2014 6:59 AM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 06:56:01 on 07/27/2014
ALARM was triggered by PROCESS 30. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #30.
This system last shut down at 11:15:07 on 07/10/2014 and the cause was REMOTE.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	ON
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	OFF	MH3_LL	ON	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	ON	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	ON
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	ON
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	61134838	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10776459	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	4778365	GAL	10.00	80.00	0.00	20.00
FT_105	14.53	GPM	16695813	GAL	3.00	80.00	0.00	20.00
PT_106	28.57	IWC			8.00	35.00	0.00	20.00
TT_400	74.0	DEG			60.0	110.0	0.0	20.0
PT_400	11.5	IWC			1.0	25.0	0.0	20.0
TT_100	73.1	DEG			40.0	110.0	0.0	20.0
FT_106	624.3	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	2.2%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Date:	8/2/2014
Alarm Time:	07.29.14
Technician:	W. Armington

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 8.4.2014 Time: 1500

Alarm Condition:

Process 53 (Non-Fatal) - Sequestering agent low flow.
The system continues to function normally.

Cause of Alarm:

There is no indication of what cased the alarm. It is possible the sequestering agent pump became unprimed, which has reportedly happened in the past.

Corrective Action:

Stantec will inspect the sequestering agent pump on 8/7/14 during the August monthly OM&M visit.

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Saturday, August 02, 2014 7:32 AM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 07:29:06 on 08/02/2014
ALARM was triggered by PROCESS 53. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #53.
This system last shut down at 11:15:07 on 07/10/2014 and the cause was REMOTE.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	ON	FT_200	ON
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	ON	MH1_P2	OFF	MH2_P1	ON	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	ON	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	38.41	GPM	61183331	GAL	10.00	80.00	0.00	20.00
FT_102	15.63	GPM	10784363	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	4801291	GAL	10.00	80.00	0.00	20.00
FT_105	51.28	GPM	16770880	GAL	3.00	80.00	0.00	20.00
PT_106	30.65	IWC			8.00	35.00	0.00	20.00
TT_400	76.3	DEG			60.0	110.0	0.0	20.0
PT_400	10.0	IWC			1.0	25.0	0.0	20.0
TT_100	72.9	DEG			40.0	110.0	0.0	20.0
FT_106	571.0	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	7.7%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Date:	8/4/2014
Alarm Time:	18:52:30
Technician:	R. Mahoney

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 8/5/14 Time: 0800

Alarm Condition:

Process 30: Manhole MH-2 Low flowrate (non-fatal)

Cause of Alarm:

Based on a review of logged data this appears to be related to th eflow meter for Manhole 2, which is malfunctions intermittently. See the attached logged data retreieved f the system this morning. Highlighted values show times when Manhole 2 is producing flow. Note the red box (corresponding to the alarm time) where flow values should be recorded for MH-2, but values are zero.

Corrective Action:

Stantec will diagnose the flow meter during the August Monthly OMM visit scheduled for 8/7.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Date:	11/19/2014
Alarm Time:	05:04:28
Technician:	R. Mahoney

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 11/20/14 Time: 1015

(revised 12/16/14)

Alarm Condition:

Process 32 (Non-Fatal) - Air Stripper Low Liquid Level

Cause of Alarm:

The liquid level in the air stripper sump varies depending on inflow rates. The low level alarm is frequently tripped during normal operation as the sump level varies; these events typically do not last longer than the 10-minute delay that has been set to avoid unnecessary "nuisance" alarms. This alarm indicates the liquid level must have remained below the low-level set point for greater than 10 minutes; however overall operation of the sytem does not appear to be impacted.

This condition is suspected to be due to changes in air stripper sump pressure caused by seasonal changes in air temperature and density.

Corrective Action:

Logged onto system approximately 0715. Operation appeared normal with no indication of any problems with air stripper. Stantec will continue to monitor system performance today.

This condition was corrected on 12/3 by adjusting the air manifold valve to decrease sump pressure.

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Wednesday, November 19, 2014 4:09 AM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 05:04:28 on 11/19/2014
ALARM was triggered by PROCESS 32. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #32.
This system last shut down at 15:52:23 on 10/08/2014 and the cause was PT_106.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	OFF	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	ON	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	ON
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	ON	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	61883741	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10896590	GAL	10.00	80.00	0.00	20.00
FT_103	17.31	GPM	5146101	GAL	10.00	80.00	0.00	20.00
FT_105	16.15	GPM	17868929	GAL	3.00	80.00	0.00	20.00
PT_106	31.72	IWC			8.00	35.00	0.00	20.00
TT_400	88.6	DEG			60.0	110.0	0.0	20.0
PT_400	13.0	IWC			1.0	25.0	0.0	20.0
TT_100	65.3	DEG			40.0	110.0	0.0	20.0
FT_106	773.2	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	2.4%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Date:	11/21/2014
Alarm Time:	0441
Technician:	R. Mahoney

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date:11/21/14 Time: 1015

(revised 12/16/14)

Alarm Condition:

- Missing Fax e-mail (no reporting today - not an alarm condition))
- Process 32 (Non-Fatal) - Air Stripper Low Liquid Level

Cause of Alarm:

Uncertain coause for missing fax.

When logged into system observed the sump low level alarm was activated.

This condition is suspected to be due to changes in air stripper sump pressure caused by seasonal changes in air temperature and density.

Corrective Action:

Logged onto system approximately 0700. Operation appeared normal, but a stripper sump low level alarm was showing. The alarm was cleared. Stantec will continue to monitor system operation.

This condition was corrected on 12/3 by adjusting the air manifold valve to decrease sump pressure.

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Friday, November 21, 2014 3:47 AM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 04:41:47 on 11/21/2014
ALARM was triggered by PROCESS 32. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #32.
This system last shut down at 15:52:23 on 10/08/2014 and the cause was PT_106.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	OFF	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	ON	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	ON
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	61899419	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10898852	GAL	10.00	80.00	0.00	20.00
FT_103	16.07	GPM	5152673	GAL	10.00	80.00	0.00	20.00
FT_105	14.22	GPM	17893522	GAL	3.00	80.00	0.00	20.00
PT_106	31.59	IWC			8.00	35.00	0.00	20.00
TT_400	86.9	DEG			60.0	110.0	0.0	20.0
PT_400	13.0	IWC			1.0	25.0	0.0	20.0
TT_100	65.5	DEG			40.0	110.0	0.0	20.0
FT_106	765.0	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	2.1%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Date:	11/21/2014
Alarm Time:	17:28:16
Technician:	W. Armington

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

(revised 12/16/14)

Date: 11/22/14 Time: 1100

Alarm Condition:

Process 32 (Non-Fatal) - Air Stripper Low Liquid Level

Cause of Alarm:

This alarm indicates the liquid level in the air stripper sump remained below the low-level set point for greater than 10 minutes; however overall operation of the sytem does not appear to be impacted.

This condition is suspected to be due to changes in air stripper sump pressure caused by seasonal changes in air temperature and density.

Corrective Action:

Logged onto system approximately 1000. Operation appeared normal with no indication of any problems with air stripper. Stantec will continue to monitor system performance.

This condition was corrected on 12/3 by adjusting the air manifold valve to decrease sump pressure.

Mahoney, Robert

From: The LMC GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Friday, November 21, 2014 5:29 PM
To: Nielsen, Peter; Mahoney, Robert; Armington, William; zigmontjh@cdmsmith.com; Haravitch, Ben
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 17:28:16 on 11/21/2014
ALARM was triggered by PROCESS 32. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #32.
This system last shut down at 15:52:23 on 10/08/2014 and the cause was PT_106.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
LSH106	OFF	LSH100	OFF	LSL100	OFF	FT_200	OFF
LSH200	OFF						

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	ON	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	ON
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	TAH400	OFF	TAL400	OFF
PA_400	OFF	LSH200	OFF				

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	61901634	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10898852	GAL	10.00	80.00	0.00	20.00
FT_103	17.07	GPM	5154116	GAL	10.00	80.00	0.00	20.00
FT_105	15.69	GPM	17897183	GAL	3.00	80.00	0.00	20.00
PT_106	31.93	IWC			8.00	35.00	0.00	20.00
TT_400	96.5	DEG			60.0	110.0	0.0	20.0
PT_400	12.9	IWC			1.0	25.0	0.0	20.0
TT_100	64.2	DEG			40.0	110.0	0.0	20.0
FT_106	756.8	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	2.3%	Open Loop Proportional			