

**Charles Gibson Site
Site No. 932063
Periodic Review Report**

March 8, 2016

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I. INTRODUCTION

Brief Summary, Nature and Extent, Remedial History:

The Stipulation and Consent Judgment Approving Settlement Agreement was signed in 1985. Construction of the remedy on the Charles Gibson Site concluded in 1990. The remedy consisted of rerouting Cayuga Creek around and away from the waste, installation of a fully circumscribed soil-bentonite slurry wall barrier and installation of a double flexible membrane liner cap with a perimeter collection drain system. The first year of operations and maintenance (O&M) of the containment remedy for the site and the groundwater monitoring program began in 1993. Waters collected in the site perimeter collection drain system are managed by direct discharge to the City of Niagara Falls Wastewater Treatment Facility. The Charles Gibson site is classified as a commercial/small industrial/residential user (CSIRU) and does not require a permit.

Effectiveness of Remedial Program:

Groundwater monitoring indicates there are no increased concentrations of the Site compounds being monitored. Evaluation of the groundwater indicates that the containment remedy is effective. An evaluation of data from the piezometer pairs at the Site indicates that an inward hydraulic gradient has been established in the containment area of the site. Since 2003, concentrations of site compounds being monitored have been undetected or estimated at concentrations below the detection levels in all monitor wells. The remedial program is achieving the objectives of containing groundwater flow and maintaining groundwater quality standards.

Compliance:

There are no areas of non-compliance.

Recommendations:

The Operation and Maintenance program has shown that the conditions at the site are stable and consistent.

II. SITE OVERVIEW

Site Description and Nature/Extent Prior to Remediation:

The Site as now defined incorporates approximately two acres bounded to the east and north by Cayuga Creek, to the west by Tuscarora Road and to the south by Niagara Mohawk Power Corporation right-of-way and the Auto Zone Incorporated auto parts store and parking lot. The Site cap is slightly mounded with the center of the capped area essentially flat. The capped area is enclosed by a chain link fence. A wooden privacy fence is immediately next to and outside of the chain link fence on portions of the perimeter.

Remediation Chronology:

The Agreement includes a provision in the event that after seven years following the delivery of a Release of Liability (issued December 15, 1992), Olin demonstrates that conditions at the Site are such that the stated frequency or duration of the requirements are no longer necessary to determine whether the remediation is effective, Olin may reduce the

frequency and duration of such monitoring or inspections. Olin has submitted annual reports and has conducted the required monitoring for the duration of the remediation.

III. REMEDY PERFORMANCE, EFFECTIVENESS, AND PROTECTIVENESS

The work performed for the Site during 2015 was reviewed and found to be in accordance with the approved O&M Manual (Revised 2009) as well as the NYSDEC approved reduction in annual sampling dated April 25, 2013. Groundwater monitoring indicates there are no increased concentrations of the Site compounds being monitored. Evaluation of the groundwater data generated during the 2015 monitoring year indicates that the containment remedy is effective. Drawdown in both manholes was effectively maintained at specified levels throughout the year.

IV. IC/EC PLAN

IC/EC Requirements:

Fence is in place around the landfill, effectively restricting access

Clean soil cover is in place on the landfill, restricting infiltration and promoting runoff

A hydraulic control system is in place, effectively controlling groundwater flow direction

Certification:

Attachment A

V. MONITORING PLAN COMPLIANCE REPORT

Components of Site Monitoring Plan:

The operation, maintenance, and monitoring (OM&M) activities to be performed include:

- Performance of a groundwater monitoring program to monitor ground water quality at the Site and to verify the inward hydraulic gradient within the capped area.
- The current groundwater level monitoring system for the Site consists of six piezometers (P-1 through P-6) and two manholes (A and B). Piezometers P-1, P-2 and Manhole A are located in the northeast section of the Site; P-3, P-4, and Manhole B are located in the southeast section; and P-5 and P-6 are located toward the southwest (see *Attachment B*). All piezometers are constructed of Schedule 80 PVC and are 2 inches in diameter. Each piezometer has been constructed with 5 feet of screen and was screened at the water table.
- The construction of the piezometer screens at the water table allows for continued monitoring of the water table elevation inside and outside of the containment area during periods of water level fluctuations. Piezometers P-1, P-3, and P-5 are located outside of the slurry wall that runs along the perimeter of the Site. Piezometers P-2, P-4, and P-6 are inside the slurry wall and paired opposite the three piezometers inside the slurry wall.
- Water level elevations will be measured quarterly at the Site. Manholes A and B and piezometers P-1 through P-6 will be measured. Water level elevations are measured by

means of an acoustical sounder or electronic water level probe. The sounder or probe is lowered into the manhole or piezometer until it makes contact with the free water surface. The depth from the top of the piezometer riser pipe or manhole rim to the water surface is measured to an accuracy of 0.01 ft. Depth to water measurements are converted into mean sea level elevations by referring to the surveyed elevation of the top of the piezometer riser pipe or manhole rim provided on the Groundwater Elevation Form. The depth to water measurements for Manholes A and B are checked to see that they are not greater than 10.27 feet and 12.41 feet, respectively to ensure that the automatic sump pump is functioning.

Summary and Comparison to Remedial Objectives:

The isolation of groundwater within the capped area has been established and is being maintained by current operation and maintenance activities. Since 2003, concentrations of Site compounds being monitored have been undetected or estimated at concentrations below the detection levels, in all monitor wells and Manhole B (*Table 1 & Table 2*). The groundwater monitoring and sampling is performed on an annual basis in rotating quarters to help assess seasonal variability with Groundwater Sampling Field Parameters presented in *Attachment C*.

Currently two locations, immediately upstream and downstream of the Site and the adjacent remediated portion of the Cayuga Creek bed, are sampled once per year, in the Fall or 'low water' period. Beginning with the October 2000 sample event, annual creek sediment samples have been analyzed for BHC isomers only. HCB results are undetected (U) for all sampling events since 1993. Sample collection and analysis of creek sediments are performed annually during the second half of the calendar year. The 2012 data show a decrease in all sediment parameters, both upstream and downstream (*Table 3*).

The water elevation data collected from the piezometers and ground water wells was used to determine whether an inward hydraulic gradient exists was made by comparing water level measurements within the capped area to those measured outside the capped area. The groundwater elevation data indicate that ground water within the capped area is consistent with historical data. An evaluation of data from the piezometer pairs at the Site indicates that in piezometer pairs P3/P4 and P5/P6, slight outward gradients occurred in the third quarter but returned back to inward gradients by the fourth quarter. The third piezometer pair (P1/P2) had outward gradients during the third and fourth quarters. Drawdown in both manholes was effectively maintained at specified levels throughout the year with exception of Manhole A during the first quarter. *Table 4* shows the most recent tables for piezometric data demonstrating that inward gradient.

Deficiencies:

None

Recommendations for Changes:

The Operation and Maintenance program has shown that the conditions at the site are stable and consistent.

VI. O&M PLAN COMPLIANCE REPORT

Components of the O&M Plan:

Site remediation requirements have been met by Olin through rerouting of Cayuga Creek around and away from the waste, by constructing a fully circumscribing soil-bentonite slurry wall barrier, and through installing a double flexible membrane liner cap as part of the final cover with a perimeter collection drain system. The O&M Plan safeguards that remedy and provide for monitoring of the Gibson Site in compliance with the Settlement Agreement.

Inspections, on at least a quarterly basis, of the Site are conducted to identify any potential problems with physical deterioration of structures, possible malfunctions of the slurry wall or of the perforated CPVC drain system, and to ensure that all site remedial measures components are operating effectively, in accordance with the Settlement Agreement.

The Environmental Inspector conducts the inspections to ensure that the remedial measures at the Site will remain operative in a manner that will minimize the need for extra maintenance. Additionally, the inspections address the safeguards to control, minimize or eliminate threats to human health and the environment. The potential post-remediation threats include the release of HCB, BHC, or contaminated leachate to the groundwater, and/or the creek.

Operation, maintenance, and monitoring activities are conducted to identify proposed changes to the O&M Manual or site procedures which would provide a safer and/or more efficient and cost-effective operation.

Recordkeeping is conducted for each site visit and inspection.

Operation & Monitoring (O&M) Summary:

The groundwater collection system is inspected semi-annually for the buildup of hard or soft scale-like deposits. The inspection is performed concurrently with inspection of the capped area. If a component of the groundwater collection system is found to be damaged or malfunctioning, it is repaired or replaced.

The capped area is mowed on a regular basis to prevent establishment of woody vegetation during this reporting period. The capped area functions as designed and complies with the O&M Plan.

Inspections are conducted using the items listed on the Site Inspection Form presented in *Attachment D*. Information to be entered on these forms includes the inspector's name, date, and time of inspection, item inspected and any comments. The inspector indicates on the forms whether the condition of each item was acceptable or unacceptable to ensure that the requirements of this O&M Plan are fulfilled. The scheduled Site monitoring inspections are performed by a qualified individual assigned to inspect the items and systems noted on the Site Inspection Form. The completed Site Inspection Forms are maintained at Olin Environmental Remediation offices in Cleveland, TN. Inspections are performed, at a minimum, on a quarterly basis.

Evaluation of Remedial Systems:

All components are performing as designed.

O&M deficiencies:

None

Conclusions:

The O&M system is being run and maintained properly and does not require additions or modifications at this time.

VII. OVERALL PRR CONCLUSIONS AND RECOMMENDATIONS

Compliance with SMP:

Based on the operations and maintenance documentation listed above, the system requirements are being met. There are no new exposure pathways. Additional plans and modifications are not necessary.

Remedy Effectiveness:

Based on the data developed to date, the remedy has been effective in attaining the remedial objectives.

The isolation of ground water within the capped area has been established and is being maintained by current operation and maintenance activities.

Review of the groundwater elevation data indicate that inward hydraulic gradients were observed between piezometers within the capped area and piezometers outside of the capped area with one previously noted exception. Fluctuations of groundwater elevations indicate that minor outward hydraulic gradients occur, but typically revert back to inward gradients by the next quarter.

Currently two locations, immediately upstream and downstream of the Site and the adjacent remediated portion of the Cayuga Creek bed, are sampled once per year, in the Fall or 'low water' period. A sample is collected downstream of the Site to monitor changes in levels of contaminants in creek sediments, if any. The other sample, immediately upstream of the Site is used to monitor potential upstream contaminant sources or potential 'backwash' effects caused by the changing level of the Niagara River. Beginning with the October 2000 sample event, annual creek sediment samples have been analyzed for BHC isomers only. HCB results are undetected (U) for all sampling events since 1993.

Future Submittals:

Future submittals of this report will be done on an annual basis.

Attachment A

Institutional & Engineering Certification Form



Enclosure 2
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form



Site Details

Box 1

Site No. 932063

Site Name Charles Gibson Site

Site Address: N.E. Cnr. of Niagara Falls Blvd. & Tuscarora Rd. Zip Code: 14304
City/Town: Niagara Falls
County: Niagara
Site Acreage: 2.0

Reporting Period: January 31, 2015 to January 31, 2016

- | | YES | NO |
|---|-------------------------------------|-------------------------------------|
| 1. Is the information above correct? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| If NO, include handwritten above or on a separate sheet. | | |
| 2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form. | | |
| 5. Is the site currently undergoing development? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Box 2

- | | YES | NO |
|--|-------------------------------------|--------------------------|
| 6. Is the current site use consistent with the use(s) listed below?
Closed Landfill | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Are all ICs/ECs in place and functioning as designed? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and
DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

SITE NO. 932063

Box 3

Description of Institutional Controls

<u>Parcel</u>	<u>Owner</u>	<u>Institutional Control</u>
161.05-3-7	Olin Corporation	Monitoring Plan O&M Plan

Consent Judgement 3/12/85 including IC stipulations p. 23 Permits and Easements, sections 11-24.
Operation and Maintenance Manual; September 30, 2009

- Groundwater Quality Monitoring.
- Leachate Monitoring.
- Creek Sediment Monitoring.

161.05-5-12	Olin Corporation	Monitoring Plan O&M Plan
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Consent Judgment 3/12/85 including IC stipulations p. 23 Permits and Easements, sections 11-24.

- Groundwater Quality Monitoring.
- Leachate Monitoring.
- Creek Sediment Monitoring.

Box 4

Description of Engineering Controls

<u>Parcel</u>	<u>Engineering Control</u>
161.05-3-7	Cover System Groundwater Containment Leachate Collection Fencing/Access Control

- Realignment of Cayuga Creek from the waste.
- Fully circumscribed soil-bentonite slurry wall barrier.
- Double flexible membrane liner cap.
- Perimeter Leachate Collection System with discharge to NFWWTP.
- Final cover soil cap.
- Perimeter Fence.

161.05-5-12	Cover System Groundwater Containment Leachate Collection Fencing/Access Control
-------------	--

- Realignment of Cayuga Creek away from the waste.
- Fully circumscribed soil-bentonite slurry barrier wall.
- Double flexible membrane liner cap.
- Perimeter leachate collection system with discharge to the NFWWTP.
- Final soil cover cap.
- Perimeter Fence.

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and complete.

YES NO



2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

(a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

(b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

(c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

(d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

(e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES NO



IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and
DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. 932063

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1, 2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I David M. Share at 3855 N. Ocoee St., Cleveland TN 37312
print name print business address

am certifying as Olin Corporation (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

David M. Share
Signature of Owner, Remedial Party, or Designated Representative
Rendering Certification

3/1/2016
Date

IC/EC CERTIFICATIONS

Box 7

Professional Engineer Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I David M. Share at 3855 N. Ocoee St, Cleveland TN 37312
print name print business address

am certifying as a Professional Engineer for the Olin Corporation
(Owner or Remedial Party)

David M. Share

Signature of Professional Engineer, for the Owner or Remedial Party, Rendering Certification



Stamp
(Required for PE)

3/1/2016
Date

Attachment B

**Site Features Map
Figure 1**

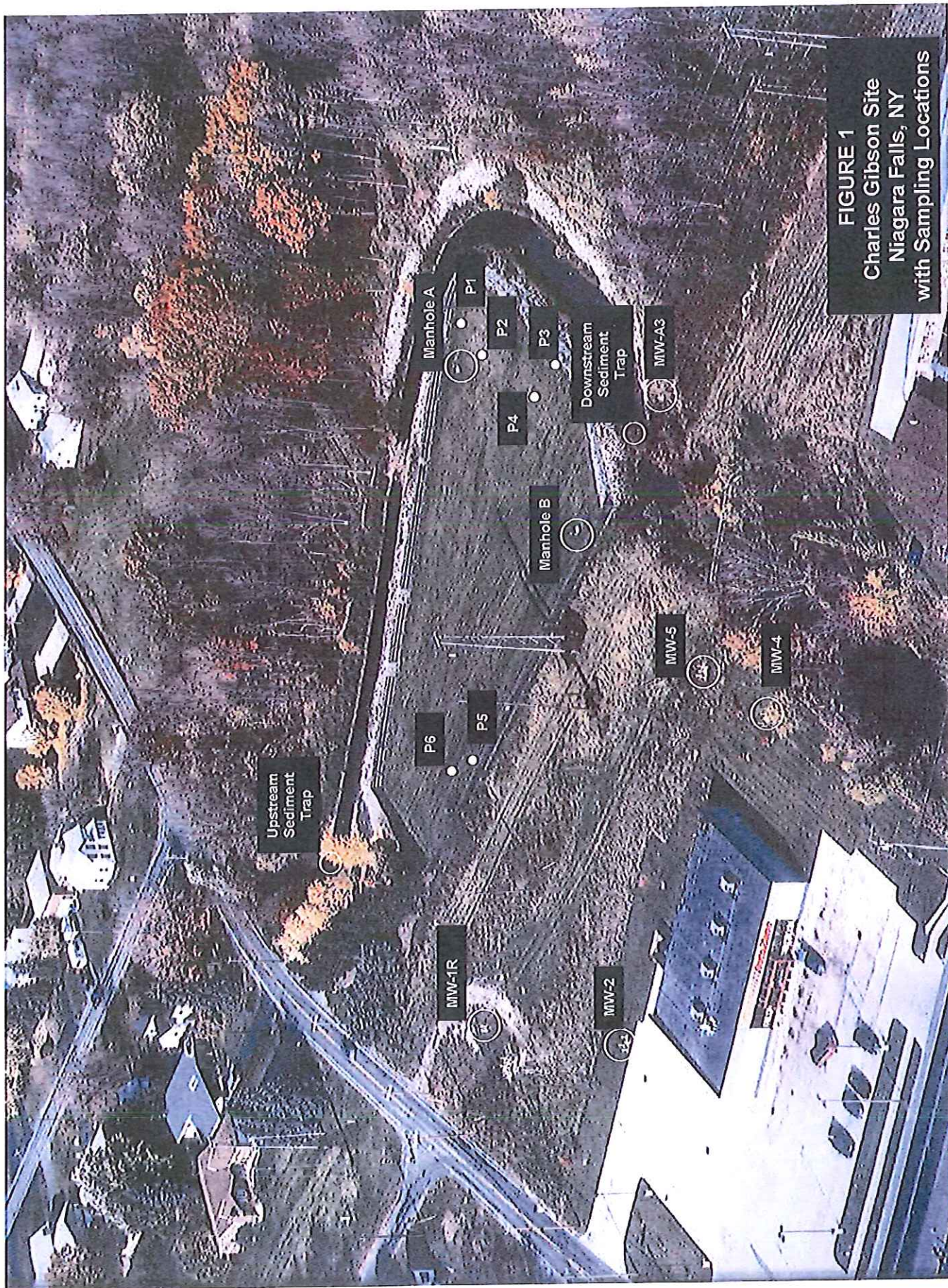
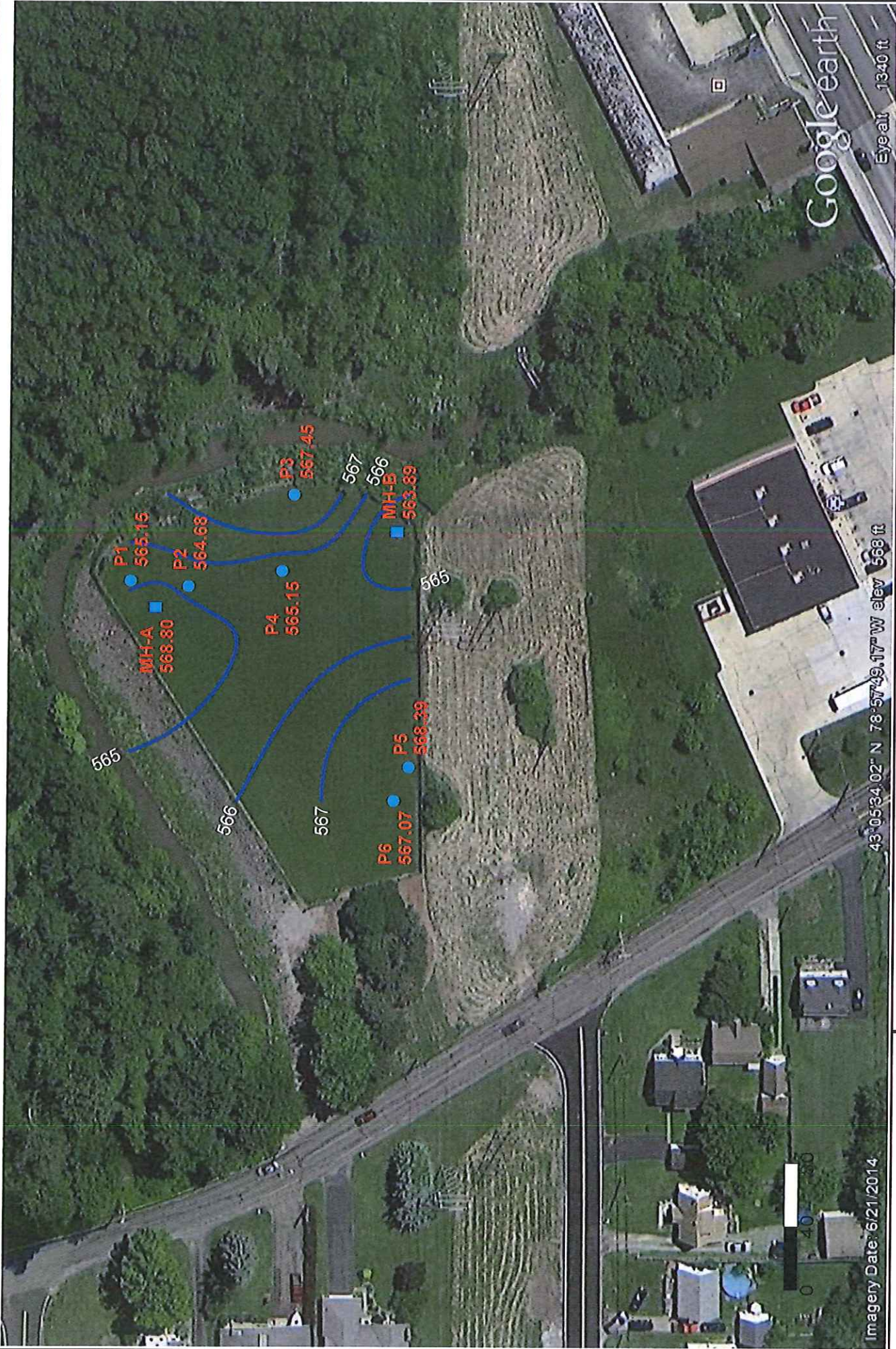


FIGURE 1
Charles Gibson Site
Niagara Falls, NY
with Sampling Locations



Imagery Date: 6/21/2014



OLIN CORPORATION

Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, Tennessee 37312
423/336-4000

SCALE: 0.5 IN = 40 FT.	DRAWN BY: JRH	DATE: 3-10-2016
	CHKD. BY: ABC	DATE: 3-10-2016

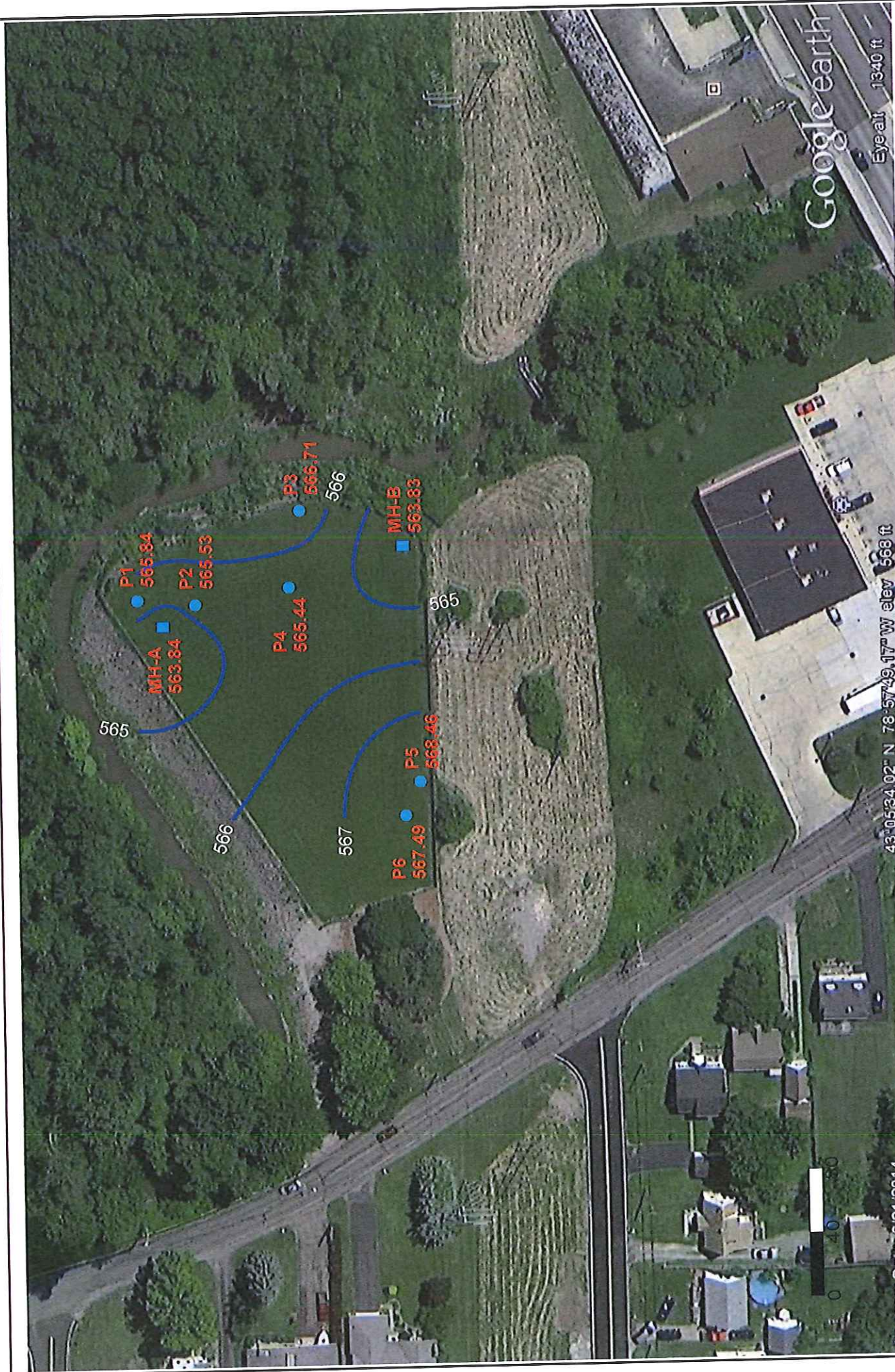
CHARLES GIBSON SITE
NIAGRA FALLS, NY

GROUNDWATER CONTOUR MAP
PIEZOMETER/MANHOLE LEVELS
SAMPLING EVENT
MARCH 11, 2015

FIG. NO. **2**

- MANHOLE
 - PIEZOMETER
- MANHOLES ARE TO MAINTAIN A
WATER LEVEL BELOW 565 FT (AMSL)

Google earth
Eye alt 1340 ft



Imagery Date: 6/21/2014



OLIN CORPORATION

Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, Tennessee 37312
423/336-4000

SCALE: 0.5 IN = 40 FT.
DRAWN BY: JRH
CHKD. BY: ABC
DATE: 3-10-2016
DATE: 3-10-2016

CHARLES GIBSON SITE
NIAGRA FALLS, NY

GROUNDWATER CONTOUR MAP
PIEZOMETER/MANHOLE LEVELS
SAMPLING EVENT
MAY 27, 2015



FIG. NO.

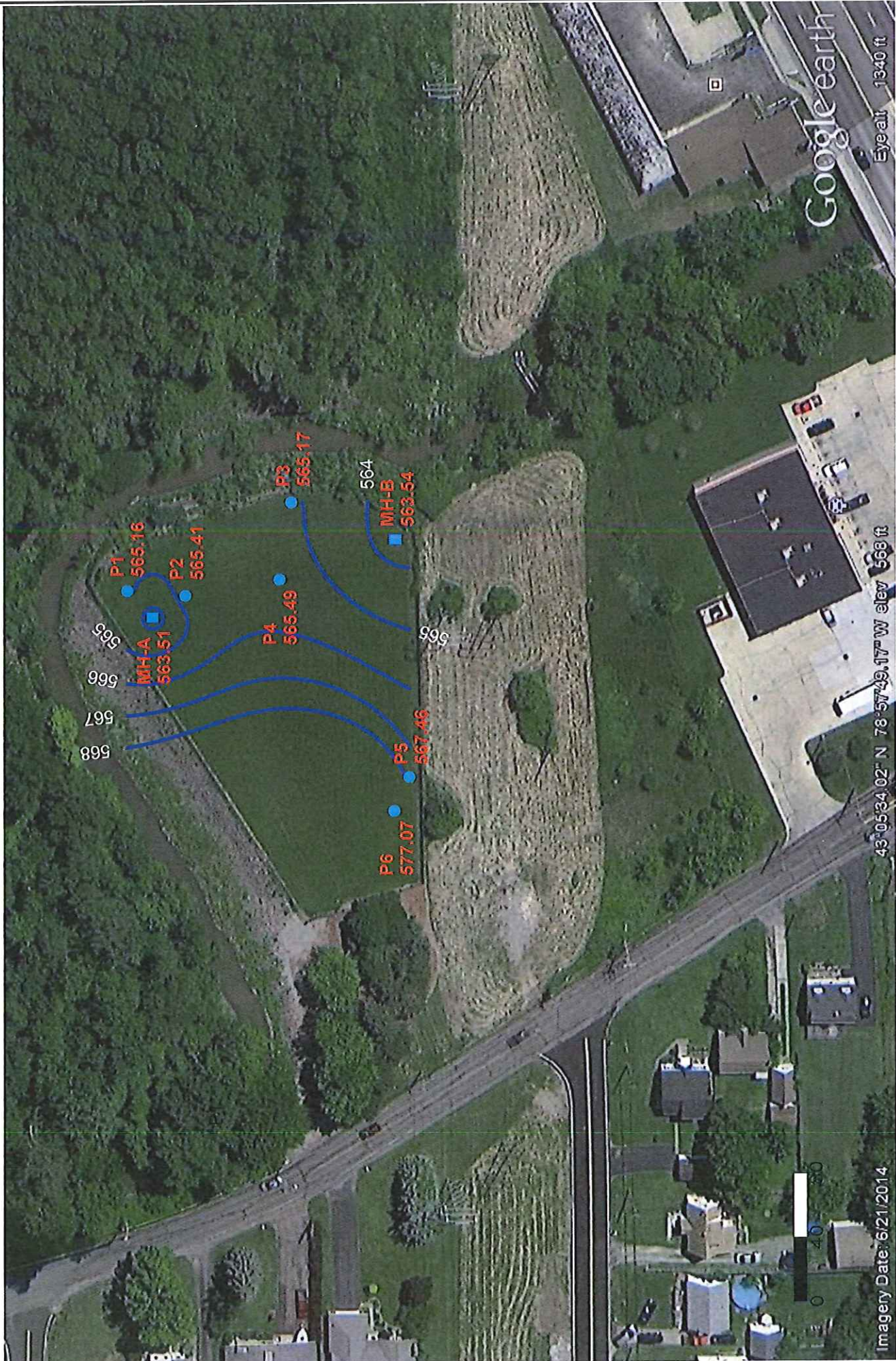
3


- MANHOLE
- PIEZOMETER

MANHOLES ARE TO MAINTAIN A
WATER LEVEL BELOW 565 FT (AMSL)

Google earth

Eye alt 1340 ft





OLIN CORPORATION
Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, Tennessee 37312
423/336-4000

CHARLES GIBSON SITE
NIAGARA FALLS, NY

GROUNDWATER CONTOUR MAP
PIEZOMETER/MANHOLE LEVELS
SAMPLING EVENT
SEPTEMBER 1, 2015

SCALE: 0.5 IN = 40 FT.

DRAWN BY: JRH

CHKD. BY: ABC

DATE: 3-10-2016

DATE: 3-10-2016

MANHOLE (Blue Square)

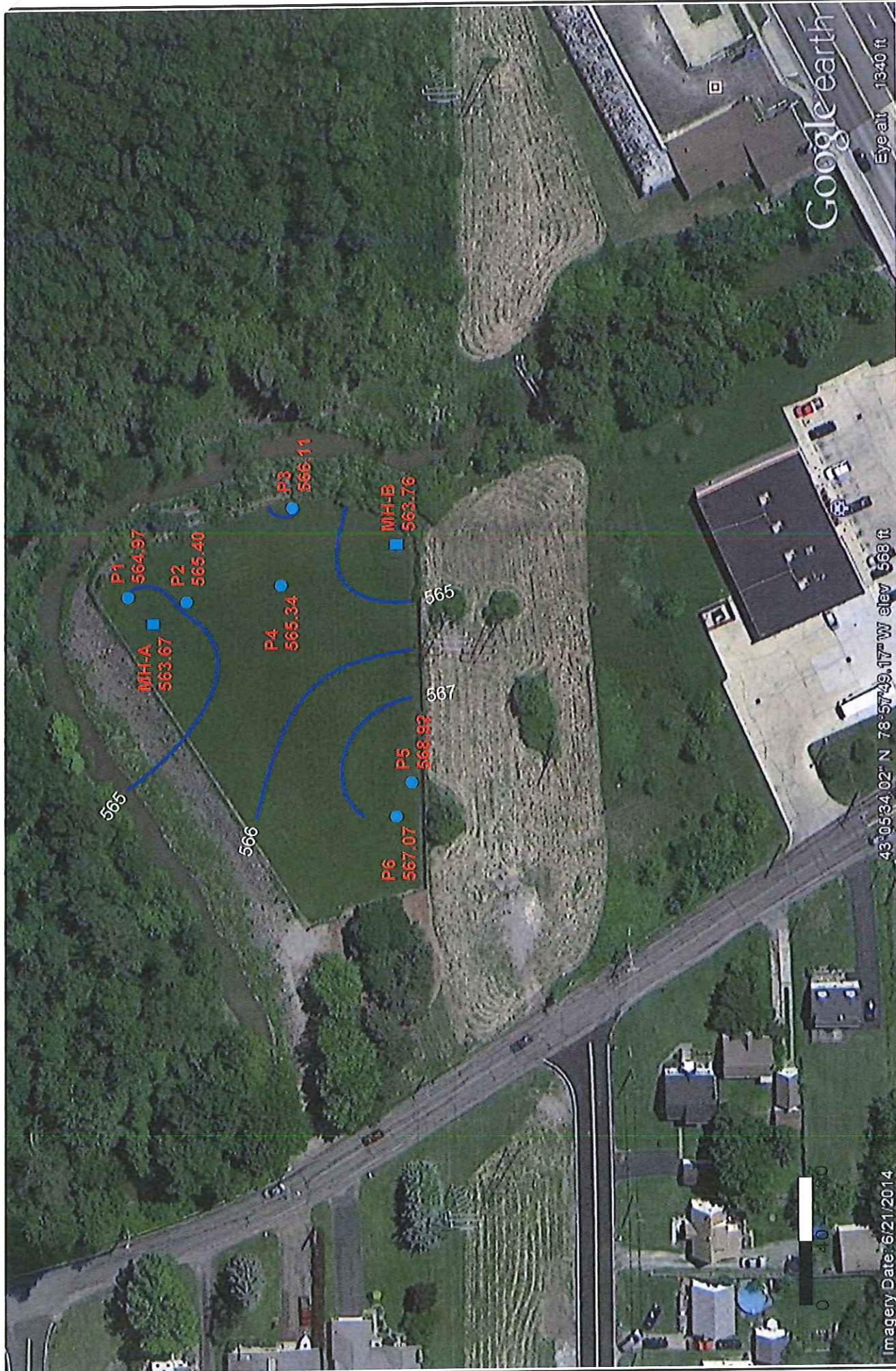
PIEZOMETER (Blue Circle)




MANHOLES ARE TO MAINTAIN A WATER LEVEL BELOW 565 FT (AMSL)

FIG. NO. **4**

Google earth

Eye alt 1340 ft



<div> OLIN CORPORATION</div>			<div>OLIN CORPORATION Environmental Remediation Group 3855 N. Ocoee St., Ste. 200 Cleveland, Tennessee 37312 423/536-4000</div>			<div>CHARLES GIBSON SITE NIAGRA FALLS, NY</div> <div>GROUNDWATER CONTOUR MAP PIEZOMETER/MANHOLE LEVELS SAMPLING EVENT NOVEMBER 10, 2015</div>		<div> MANHOLE</div> <div> PIEZOMETER</div> <div>MANHOLES ARE TO MAINTAIN A WATER LEVEL BELOW 565 FT (AMSL)</div>	
SCALE:			DRAWN BY: JRH		DATE: 3-10-2016		FIG. NO.		
0.5 IN = 40 FT.			CHKD. BY: ABC		DATE: 3-10-2016		5		

Attachment C

Field Sampling Forms

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER SAMPLING FIELD PARAMETERS
FIELD INSTRUMENTATION CALIBRATION FORM

DATE: 5/27/15 SEMI-ANNUAL SAMPLING EVENT: MAY 2015

PERSON CALIBRATING METERS: C. JONES

pH METER USED: MANUFACTURER: oakton
MODEL: pH tester 3
IDENTIFICATION/CONTROL NUMBER: 1220148

CALIBRATION STANDARDS USED:

STANDARD 7.00 METER READ: 7.02

STANDARD 4.00 METER READ: 4.04

STANDARD 10.00 METER READ: 10.01

METER CALIBRATION COMMENTS: CALIBRATED on 5/27/15 AT 0815

SPECIFIC CONDUCTIVITY METER USED: Oakton

MANUFACTURER: Oakton
MODEL: 35607-10
IDENTIFICATION/CONTROL NUMBER: WD 35607-10 (E-700)

CALIBRATION STANDARDS USED:

STANDARD 0 READ: _____
(STANDARD 0 USED: _____ AIR, X WATER)

STANDARD _____ 8974 _____

STANDARD _____ 1413 1415

METER CALIBRATION COMMENTS: CALIBRATED on 5/27/15 AT 0820

THERMOMETER USED: TYPE: Digital

MANUFACTURER: Fischer

IDENTIFICATION/CONTROL NUMBER: 117321

COMMENTS: (DOES THERMOMETER TEMPERATURE AGREE WITH
SPECIFIC CONDUCTIVITY METER TEMPERATURE ?) yes

OTHER: _____

OTHER INSTRUMENTS USED: TYPE: _____

MANUFACTURER: _____

IDENTIFICATION/CONTROL NUMBER: _____

CALIBRATIONS PERFORMED: _____

OTHER CALIBRATION COMMENTS: _____

CHARLES GIBSON SITE
 NIAGARA FALLS, NEW YORK
 NYSDEC REGISTRY NO. 9-32-063
 GROUNDWATER AND SEDIMENT
 SAMPLING FIELD FORM

RECORDED BY: <u>C. JONES</u>		SAMPLE ID: <u>MW-5-052715</u>	
SAMPLED BY: <u>C. JONES</u>		SAMPLING EVENT/DATE: <u>MAY 27 2015</u>	
COMPANY: <u>SEVENSON</u>		MONITORING WELL: <u>MW-5</u>	
		CONDITION: <u>GOOD</u>	

GROUNDWATER PURGE DATA		PURGE DATE: <u>5/27/15</u>	NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAIN-LESS STEEL. WELL DEPTHS: MW-1R 12.10' MW-2 12.13' MW-A3 11.95' MW-4 13.75' MW-5 15.28'
DEPTH TO BOTTOM FROM TOP OF RISER:	<u>15.28</u> (FT.)		
DEPTH TO WATER FROM TOP OF RISER:	<u>5.78</u> (FT.)		
WATER COLUMN:	<u>9.50</u> (FT.)		
2" DIA. WELL CONSTANT:	<u>0.16</u>		
ONE WELL VOLUME=	<u>1.50</u> (GALS)		

PURGE METHOD: PERASTATIC PUMP
 BOTTOM OF WELL/SILT BUILDUP: NONE
 PURGE START TIME: 835 STOP TIME: 855
 PURGE OBSERVATIONS: SL TURBID TO CLEAR

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm	TEMP. (C) OR (F)	NOTES:
<u>1</u> 1	<u>7.68</u>	<u>1106</u>	<u>10.1</u>	<u>SL TURBID</u>
<u>1.50</u> 2	<u>7.40</u>	<u>1245</u>	<u>10.3</u>	<u>SL TURBID</u>
<u>3.00</u> 3	<u>7.34</u>	<u>1253</u>	<u>10.3</u>	<u>CLEAR</u>
<u>4.50</u> 4	<u>7.31</u>	<u>1269</u>	<u>10.4</u>	<u>CLEAR</u>
5				

TOTAL VOLUME PURGED: 5 gallons

GROUNDWATER OR SEDIMENT SAMPLING DATA:		SAMPLE DATE: <u>5/27/15</u>
MEDIA: GROUNDWATER <u>X</u>	CREEK SEDIMENT	SAMPLE TIME: <u>900</u>
LOCATION: <u>NE OF AUTO ZONE</u>		
SAMPLE METHOD: <u>PERASTATIC PUMP / DEDICATED TUBING</u>		
SAMPLING OBSERVATIONS: <u>CLEAR / NO ODO</u>		
QC SAMPLES TAKEN: <u>MS/MSD TAKEN HERE</u>		
OTHER OBSERVATIONS/COMMENTS:		

Note: specific conductivity formula to 25 degrees Celcius: $SC(25) = \frac{SC \text{ measured}}{((T-25)(0.02))} + 1$

CHARLES GIBSON SITE
 NIAGARA FALLS, NEW YORK
 NYSDEC REGISTRY NO. 9-32-063
 GROUNDWATER AND SEDIMENT
 SAMPLING FIELD FORM

RECORDED BY: C. JONES SAMPLE ID: MW-4-052715
 SAMPLED BY: C. JONES SAMPLING EVENT/DATE: MAY 27 2015
 COMPANY: SEVENSON MONITORING WELL: MW-4
 CONDITION: GOOD

GROUNDWATER PURGE DATA PURGE DATE: 5/27/15 NOTE: ALL GIBSON SITE
 DEPTH TO BOTTOM FROM TOP OF RISER: 13.75 (FT.) MONITORING WELLS ARE
 DEPTH TO WATER FROM TOP OF RISER: 4.98 (FT.) 2-INCH DIAMETER STAIN-
 WATER COLUMN: 8.77 (FT.) LESS STEEL. WELL DEPTHS:
 2" DIA. WELL CONSTANT: 0.16 MW-1R 12.10'
 ONE WELL VOLUME= 1.40 (GALS) MW-2 12.13'
 MW-A3 11.95'
 MW-4 13.75'
 MW-5 15.28'
 PURGE METHOD: PERASTATIC PUMP
 BOTTOM OF WELL/SILT BUILDUP: NONE
 PURGE START TIME: 925 STOP TIME: 945
 PURGE OBSERVATIONS: SLIGHT ODOR / SL. TURBID

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm	TEMP. (C OR F)	NOTES:
0 1	7.12	946	9.7	SL ODOR / SL. TURBID
1.50 2	7.34	1006	9.9	SL ODOR / CLEAR
3.00 3	7.39	1042	9.9	SL ODOR / CLEAR
4.50 4	7.44	1058	10.0	SL ODOR / CLEAR
5				

TOTAL VOLUME PURGED: 5 gallons

GROUNDWATER OR SEDIMENT SAMPLING DATA:

SAMPLE DATE: 5/27/15

MEDIA: GROUNDWATER X
 CREEK SEDIMENT

SAMPLE TIME: 950

LOCATION: E OF AUTO ZONE

SAMPLE METHOD: PERASTATIC PUMP / DEDICATING TUBING

SAMPLING OBSERVATIONS: CLEAR / SL. ODOR

QC SAMPLES TAKEN: BLIND DUP "MW-7" TAKEN HERE ; FIELD DUP LABELED "MW-8"
1300 IN C.C. ON C.C.

OTHER OBSERVATIONS/COMMENTS: (JUST DI WATER)
1350 ON C.C.

Note: specific conductivity formula to 25 degrees Celcius: $SC(25) = \frac{SC \text{ measured}}{\{(T-25)(0.02)\}+1}$

CHARLES GIBSON SITE
 NIAGARA FALLS, NEW YORK
 NYSDEC REGISTRY NO. 9-32-063
 GROUNDWATER AND SEDIMENT
 SAMPLING FIELD FORM

RECORDED BY: <u>C. JONES</u>		SAMPLE ID: <u>MW-A3-052715</u>	
SAMPLED BY: <u>C. JONES</u>		SAMPLING EVENT/DATE: <u>MAY 27 2015</u>	
COMPANY: <u>SEVENSON</u>		MONITORING WELL: <u>MW-A3</u>	
		CONDITION: <u>GOOD</u>	

GROUNDWATER PURGE DATA	PURGE DATE: <u>5/27/15</u>	NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAIN-LESS STEEL. WELL DEPTHS:
DEPTH TO BOTTOM FROM TOP OF RISER: <u>11.95</u> (FT.)		MW-1R 12.10'
DEPTH TO WATER FROM TOP OF RISER: <u>7.23</u> (FT.)		MW-2 12.13'
WATER COLUMN: <u>4.72</u> (FT.)		<u>MW-A3 11.95'</u>
2" DIA. WELL CONSTANT: <u>0.16</u>		MW-4 13.76'
ONE WELL VOLUME= <u>0.75</u> (GALS)		MW-5 15.28'

PURGE METHOD: PERASTATIC PUMP
 BOTTOM OF WELL/SILT BUILDUP: NONE
 PURGE START TIME: 1040 STOP TIME: 1100
 PURGE OBSERVATIONS: CLEAR

FIELD PARAMETER MEASUREMENTS:				
WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm	TEMP. (C OR F)	NOTES:
0 1	<u>7.78</u>	<u>898</u>	<u>10.2</u>	<u>CLEAR</u>
1 2	<u>7.69</u>	<u>950</u>	<u>10.3</u>	<u>CLEAR</u>
2 3	<u>7.65</u>	<u>992</u>	<u>10.2</u>	<u>CLEAR</u>
3 4	<u>WELL STARTED TO GIVE DRY - PULSED SAMPLE</u>			
5				

TOTAL VOLUME PURGED: 2.5 gallons

GROUNDWATER OR SEDIMENT SAMPLING DATA:	SAMPLE DATE: <u>1105 5/27/15</u>
MEDIA: GROUNDWATER <input checked="" type="checkbox"/> CREEK SEDIMENT <input type="checkbox"/>	SAMPLE TIME: <u>1105</u>
LOCATION: <u>SE OF LANDFILL ACROSS CREEK</u>	
SAMPLE METHOD: <u>PERASTATIC PUMP / POLICATED TUBING</u>	
SAMPLING OBSERVATIONS: <u>CLEAR</u>	
QC SAMPLES TAKEN: <u>NONE</u>	
OTHER OBSERVATIONS/COMMENTS:	

Note: specific conductivity formula to 25 degrees Celcius: $SC(25) = \frac{SC \text{ measured}}{((T-25)(0.02))+1}$

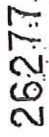
CHARLES GIBSON SITE
 NIAGARA FALLS, NEW YORK
 NYSDEC REGISTRY NO. 9-32-063
 GROUNDWATER AND SEDIMENT
 SAMPLING FIELD FORM

RECORDED BY: <u>C. Jones</u>		SAMPLE ID: <u>MMB-052715</u>	
SAMPLED BY: <u>C. Jones</u>		SAMPLING EVENT/DATE: <u>May 27 2015</u>	
COMPANY: <u>SEVENSON</u>		MONITORING WELL: <u>MANHOLE B</u>	
CONDITION: <u>Good</u>			

GROUNDWATER PURGE DATA		PURGE DATE:	
DEPTH TO BOTTOM FROM TOP OF RISER:	(FT.)	NOTE: ALL GIBSON-SITE MONITORING WELLS ARE 2-INCH DIAMETER STAIN-LESS STEEL. WELL DEPTHS: MW-1R 12.10' MW-2 12.13' MW-A3 11.95' MW-4 13.75' MW-5 15.28'	
DEPTH TO WATER FROM TOP OF RISER:	(FT.)		
WATER COLUMN:	(FT.)		
2" DIA. WELL CONSTANT:	<u>0.16</u>		
ONE WELL VOLUME=	(GALS)		
PURGE METHOD:			
BOTTOM OF WELL/SILT BUILDUP:			
PURGE START TIME:		STOP TIME:	
PURGE OBSERVATIONS:			
FIELD PARAMETER MEASUREMENTS:			
WELL VOLUME	pH	SPECIFIC CONDUCTIVITY <u>umhos/cm</u>	TEMP. <u>(C OR F)</u>
1			
2			
3			
4			
5			
TOTAL VOLUME PURGED:			

GROUNDWATER OR SEDIMENT SAMPLING DATA:		SAMPLE DATE: <u>5/27/15</u>	
MEDIA:	GROUNDWATER <input checked="" type="checkbox"/> CREEK SEDIMENT <input type="checkbox"/>	SAMPLE TIME: <u>1145</u>	
LOCATION: <u>ON LANDFILL</u>			
SAMPLE METHOD: <u>PERISTALTIC PUMP / DEDICATED TUBING</u>			
SAMPLING OBSERVATIONS: <u>CLEAR</u>			
QC SAMPLES TAKEN: <u>NONE</u>			
OTHER OBSERVATIONS/COMMENTS:			

Note: specific conductivity formula to 25 degrees Celcius: $SC(25) = \frac{SC \text{ measured}}{((T-25)(0.02))+1}$



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[illegible]

Return to Originator

Attachment D

Site Inspection Forms

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
SITE INSPECTION FORM

THIS FORM TO BE USED FOR QUARTERLY AND ALL OTHER SITE INSPECTIONS

DATE: 3/11/15 TIME: 0800

INSPECTOR: C. JONES COMPANY: SEVENSON

WEATHER: 32° CLOUDY

REASON FOR INSPECTION (QUARTERLY OR OTHER): QUARTERLY

GENERAL SITE CONDITIONS:

U=UNACCEPTABLE A=ACCEPTABLE

(Note: For general site conditions note existence of bare areas (number, size), cracks, subsidence (sinking), ponded water, stressed vegetation, soil discoloration or seeps, and rodent burrows. For site security, note absence of locks, gates open or damaged, missing signs or evidence of vandalism. Note any other unusual occurrences.)

COMMENTS

ACCESS ROAD	<u>A</u>	<u>SNOW CUMULED</u>
COVER VEGETATION	<u>N/A</u>	
TREES	<u>A</u>	
LITTER	<u>A</u>	
EROSION (CAP)	<u>A</u>	
EROSION (BANK)	<u>A</u>	

SECURITY:

FENCE/LOCKS	<u>A</u>	
PIEZOMETERS/LOCKS	<u>A</u>	
MONITORING WELLS/LOCKS	<u>A</u>	
MANHOLES/LIDS/LOCKS	<u>A</u>	
ELECTRICAL PANEL	<u>A</u>	

ADDITIONAL COMMENTS:

WELLS P-4, P-5 HAVE SHIFTED

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
SITE INSPECTION FORM

THIS FORM TO BE USED FOR QUARTERLY AND ALL OTHER SITE INSPECTIONS

DATE: 4.29.15 TIME: 0800

INSPECTOR: M. WALKER COMPANY: SEVENSON

WEATHER: SUNNY 65°

REASON FOR INSPECTION (QUARTERLY OR OTHER): Repair well casings on cap

GENERAL SITE CONDITIONS: U=UNACCEPTABLE A=ACCEPTABLE
(Note: For general site conditions note existence of bare areas (number, size), cracks, subsidence (sinking), ponded water, stressed vegetation, soil discoloration or seeps, and rodent burrows. For site security, note absence of locks, gates open or damaged, missing signs or evidence of vandalism. Note any other unusual occurrences.)

		COMMENTS
ACCESS ROAD	<u>A</u>	
COVER VEGETATION	<u>A</u>	
TREES	<u>A</u>	
LITTER	<u>A</u>	
EROSION (CAP)	<u>A</u>	
EROSION (BANK)	<u>A</u>	

SECURITY:

FENCE/LOCKS	<u>A</u>	
PIEZOMETERS/LOCKS	<u>A</u>	
MONITORING WELLS/LOCKS	<u>A</u>	
MANHOLES/LIDS/LOCKS	<u>A</u>	
ELECTRICAL PANEL	<u>A</u>	

ADDITIONAL COMMENTS: Mike Walker and Chris Jones on site

To Repair + Reset the well casings that had sunk due to exceptionally cold winter weather. Also fixed damaged fence panels, straightened front gate, picked up trash.

After the casings were reset to the correct height, top soil was added and grass seed was raked in to re-establish cover.

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
SITE INSPECTION FORM

THIS FORM TO BE USED FOR QUARTERLY AND ALL OTHER SITE INSPECTIONS

DATE: 5/12/2015 TIME: 830

INSPECTOR: M. Walker COMPANY: Sevenson

WEATHER: Sunny, cool breezy. 57F.

REASON FOR INSPECTION (QUARTERLY OR OTHER): Site visit by NYSDEC and David Share

GENERAL SITE CONDITIONS: U=UNACCEPTABLE A=ACCEPTABLE

(Note: For general site conditions note existence of bare areas (number,size), cracks, subsidence (sinking), ponded water, stressed vegetation, soil discoloration or seeps, and rodent burrows. For site security, note absence of locks, gates open or damaged, missing signs or evidence of vandalism. Note any other unusual occurrences.)

COMMENTS

ACCESS ROAD	<u>A</u>	<u></u>
COVER VEGETATION	<u>A</u>	<u></u>
TREES	<u>A</u>	<u></u>
LITTER	<u>A</u>	<u></u>
EROSION (CAP)	<u>A</u>	<u></u>
EROSION (BANK)	<u>A</u>	<u></u>

SECURITY:

FENCE/LOCKS	<u>A</u>	<u></u>
PIEZOMETERS/LOCKS	<u>A</u>	<u></u>
MONITORING WELLS/LOCKS	<u>A</u>	<u></u>
MANHOLES/LIDS/LOCKS	<u>A</u>	<u></u>
ELECTRICAL PANEL	<u>A</u>	<u></u>

ADDITIONAL COMMENTS: Mike Walker met on site with Brian Sydowski of the NYSDEC and

David Share of Olin for a site inspection.

Charles Walker

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
SITE INSPECTION FORM

THIS FORM TO BE USED FOR QUARTERLY AND ALL OTHER SITE INSPECTIONS

DATE: 5/27/15 TIME: 0800

INSPECTOR: C. JONES COMPANY: SEVENSON

WEATHER: 70° Cloudy

REASON FOR INSPECTION (QUARTERLY OR OTHER): 2nd QUARTER

GENERAL SITE CONDITIONS: U=UNACCEPTABLE A=ACCEPTABLE
(Note: For general site conditions note existence of bare areas (number,size), cracks, subsidence (sinking), ponded water, stressed vegetation, soil discoloration or seeps, and rodent burrows. For site security, note absence of locks, gates open or damaged, missing signs or evidence of vandalism. Note any other unusual occurrences.)

COMMENTS

ACCESS ROAD	<u>A</u>	<u>VEGETATION ON LANDFILL 6"-12"</u>
COVER VEGETATION	<u>A</u>	
TREES	<u>A</u>	
LITTER	<u>A</u>	<u>MINIMAL GARBAGE WAS PICKED UP</u>
EROSION (CAP)	<u>A</u>	
EROSION (BANK)	<u>A</u>	

SECURITY:

FENCE/LOCKS	<u>A</u>	
PIEZOMETERS/LOCKS	<u>A</u>	
MONITORING WELLS/LOCKS	<u>A</u>	
MANHOLES/LIDS/LOCKS	<u>A</u>	
ELECTRICAL PANEL	<u>A</u>	

ADDITIONAL COMMENTS: _____

gj

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
SITE INSPECTION FORM

THIS FORM TO BE USED FOR QUARTERLY AND ALL OTHER SITE INSPECTIONS

DATE: 9/1/15 TIME: 12.30

INSPECTOR: CHRIS JONES COMPANY: SEVENSON

WEATHER: 85° SUNNY

REASON FOR INSPECTION (QUARTERLY OR OTHER): 3rd QUARTER

GENERAL SITE CONDITIONS:

U=UNACCEPTABLE A=ACCEPTABLE

(Note: For general site conditions note existence of bare areas (number, size), cracks, subsidence (sinking), ponded water, stressed vegetation, soil discoloration or seeps, and rodent burrows. For site security, note absence of locks, gates open or damaged, missing signs or evidence of vandalism. Note any other unusual occurrences.)

COMMENTS

ACCESS ROAD	<u>A</u>	
COVER VEGETATION	<u>A</u>	
TREES	<u>A</u>	
LITTER	<u>A</u>	
EROSION (CAP)	<u>A</u>	
EROSION (BANK)	<u>A</u>	

SECURITY:

FENCE/LOCKS	<u>A</u>	
PIEZOMETERS/LOCKS	<u>A</u>	
MONITORING WELLS/LOCKS	<u>A</u>	
MANHOLES/LIDS/LOCKS	<u>A</u>	
ELECTRICAL PANEL	<u>A</u>	

ADDITIONAL COMMENTS:

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: <u>C. JONES</u>	SAMPLE ID: <u>US - 09015</u>
SAMPLED BY: <u>C. JONES</u>	SAMPLING EVENT/DATE: <u>3rd QUARTER 9/1/15</u>
COMPANY: <u>SEVENSON</u>	MONITORING WELL: <u>UPSTREAM SED TRAP</u>
CONDITION:	

GROUNDWATER PURGE DATA		PURGE DATE:	NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAIN-LESS STEEL. WELL DEPTHS:
DEPTH TO BOTTOM FROM TOP OF RISER:	(FT.)		
DEPTH TO WATER FROM TOP OF RISER:	(FT.)		
WATER COLUMN:	(FT.)		
2" DIA. WELL CONSTANT:	<u>0.16</u>		MW-1R 12.10'
ONE WELL VOLUME=	(GALS)		MW-2 12.13'
			MW-A3 11.95'
			MW-4 13.75'
			MW-5 15.28'

PURGE METHOD:		STOP TIME:
BOTTOM OF WELL/SILT BUILDUP:		
PURGE START TIME:		
PURGE OBSERVATIONS:		

FIELD PARAMETER MEASUREMENTS:		
WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm
1		TEMP. (C OR F)
2		NOTES:
3		
4		
5		

TOTAL VOLUME PURGED:	

GROUNDWATER OR SEDIMENT SAMPLING DATA:		SAMPLE DATE: <u>9/1/15</u>
MEDIA: GROUNDWATER		SAMPLE TIME:
CREEK SEDIMENT	<u>X</u>	
LOCATION: <u>UPSTREAM SED TRAP, upstream of the landfill cap.</u>		
SAMPLE METHOD: <u>DISPOSABLE SPUN-</u>		
SAMPLING OBSERVATIONS: <u>NO SAMPLE TAKEN. TRAP WAS FOUND ON ITS SIDE</u>		
QC SAMPLES TAKEN: <u>0</u>		
OTHER OBSERVATIONS/COMMENTS: <u>High Current on debris must have turned this Sediment Trap on its side at some point this year. No sediment was collected.</u>		
Note: specific conductivity formula to 25 degrees Celcius: $SC(25) = \frac{SC \text{ measured}}{((T-25)(0.02))} + 1$		

CHARLES GIBSON SITE
 NIAGARA FALLS, NEW YORK
 NYSDEC REGISTRY NO. 9-32-063
 GROUNDWATER AND SEDIMENT
 SAMPLING FIELD FORM

RECORDED BY: <u>C. JONES</u>		SAMPLE ID: <u>D31-090115</u>	
SAMPLED BY: <u>C. JONES</u>		SAMPLING EVENT/DATE: <u>3rd quarter / 9/1/15</u>	
COMPANY: <u>SEVENSON</u>		MONITORING WELL: <u>DOWNSTREAM SED TRAP</u>	
CONDITION: _____			

GROUNDWATER PURGE DATA	PURGE DATE: _____	NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAIN-LESS STEEL. WELL DEPTHS:
DEPTH TO BOTTOM FROM TOP OF RISER: _____ (FT.)		MW-1R 12.10'
DEPTH TO WATER FROM TOP OF RISER: _____ (FT.)		MW-2 12.13'
WATER COLUMN: _____ (FT.)		MW-A3 11.95'
2" DIA. WELL CONSTANT: <u>0.16</u>		MW-4 13.75'
ONE WELL VOLUME= _____ (GALS)		MW-5 15.28'

PURGE METHOD: _____
 BOTTOM OF WELL/SILT BUILDUP: _____
 PURGE START TIME: _____ STOP TIME: _____
 PURGE OBSERVATIONS: _____

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY (umhos/cm)	TEMP. (C OR F)	NOTES:
1				
2				
3				
4				
5				

TOTAL VOLUME PURGED: _____

GROUNDWATER OR SEDIMENT SAMPLING DATA:	SAMPLE DATE: <u>9/1/15</u>
MEDIA: GROUNDWATER _____ CREEK SEDIMENT <u>X</u>	SAMPLE TIME: <u>1445</u>

LOCATION: DOWNSTREAM SED TRAP, DOWNSTREAM FROM THE LANDFILL C.P.

SAMPLE METHOD: DISPOSABLE SPOON, Decant water from Sediment trap and Create a Homogeneous Mixture of Sediments for Split sample for a Blind duplicate.

SAMPLING OBSERVATIONS: _____

QC SAMPLES TAKEN: "MS-1" WAS TAKEN HERE AS A BLIND DUPE 1500 WAS USED AS

OTHER OBSERVATIONS/COMMENTS: trap was flushed and replaced at the same time
Bottom OS was found.

Note: specific conductivity formula to 25 degrees Celcius: $SC(25) = \frac{SC \text{ measured}}{((T-25)(0.02))} + 1$

2015 Schedule of Tasks
Olin Corp. Charles Gibson Site

March 10, 2015 Perform 1st quarter site inspection.

May 20, 2015 Perform 2nd quarter site inspection. Perform annual Ground Water Monitoring/Sampling (MW-A3, MW4, MW5, for BHC Only)
Perform Annual leachate sampling and analysis for MH-B.
(Manhole B, for BHC and HCB, every 5 yrs.)

We had requested that the sampling at MW-A3 be eliminated from the sampling protocol due to consistent lack of water in the well; however we had not been given the permission to do so. Has there been any news regarding this issue?

September 2, 2015 Perform 3rd quarter site inspection.
Perform Annual Creek bed sediment sampling. (BHC), duplicate sampling.

November 10, 2015 Perform 4th quarter site inspection.

Note: In 2009 NYSDEC granted a request to reduce ground water sampling frequency from Semi-Annually to Annually with rotating spring/fall events.

On going grounds maintenance includes lawn cutting and weed wacking near fence and weed and feed applications to lawn on cap (beginning and end of season).

Monthly flow reports e-mailed to Adam Carringer at ABCarringer@Olin.com

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
SITE INSPECTION FORM

THIS FORM TO BE USED FOR QUARTERLY AND ALL OTHER SITE INSPECTIONS

DATE: 11/10/2015 TIME: 830

INSPECTOR: C Jones COMPANY: Sevenson

WEATHER 45 sunny

REASON FOR INSPECTION (QUARTERLY OR OTHER) quarterly

GENERAL SITE CONDITIONS: U=UNACCEPTABLE A=ACCEPTABLE
(Note: For general site conditions note existence of bare areas (number,size), cracks, subsidence (sinking), ponded water, stressed vegetation, soil discoloration or seeps, and rodent burrows. For site security, note absence of locks, gates open or damaged, missing signs or evidence of vandalism. Note any other unusual occurrences.)

COMMENTS

ACCESS ROAD	<u>A</u>	<u></u>
COVER VEGETATION	<u>A</u>	<u></u>
TREES	<u>A</u>	<u></u>
LITTER	<u>A</u>	<u>small amount of garbage was picked up</u>
EROSION (CAP)	<u>A</u>	<u></u>
EROSION (BANK)	<u>A</u>	<u></u>

SECURITY:

FENCE/LOCKS	<u>A</u>	<u></u>
PIEZOMETERS/LOCKS	<u>A</u>	<u></u>
MONITORING WELLS/LOCKS	<u>A</u>	<u></u>
MANHOLES/LIDS/LOCKS	<u>A</u>	<u></u>
ELECTRICAL PANEL	<u>A</u>	<u></u>

ADDITIONAL COMMENTS:

TABLE 1
CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK

ANALYTICAL SUMMARY
GROUND WATER SAMPLING 2009-2015

MONITOR WELL: MW-A3

Parameter	2009		2010		2011		2012		2013		2014		2015	
	April	September	April	September	April	September	April	September	May	September	April	September	May	September
Alpha-BHC	.049U	NR	NR	.034J	.053U	NR	NR	0.050U	0.047U	NR	NR	0.047U	0.047U	NR
Beta-BHC	.049U	NR	NR	.050U	.053U	NR	NR	0.050U	0.047U	NR	NR	0.047U	0.047U	NR
Gamma-BHC	.049U	NR	NR	.029J	.053U	NR	NR	0.050U	0.047U	NR	NR	0.047U	0.047U	NR
Delta-BHC	.049U	NR	NR	.050U	.053U	NR	NR	0.050U	0.047U	NR	NR	0.047U	0.047U	NR
Hexachlorobenzene	NR	NR	NR	NR	NR	NR	NR	20U	NR	NR	NR	9.4U	NR	NR

MONITOR WELL: MW-4

Parameter	2009		2010		2011		2012		2013		2014		2015	
	April	September	April	September	April	September	April	September	May	September	April	September	May	September
Alpha-BHC	.047U	NR	NR	.49U	.076	NR	NR	0.047U	0.047U	NR	NR	0.047U	0.047U	NR
Beta-BHC	.047U	NR	NR	.49U	.048U	NR	NR	0.047U	0.047U	NR	NR	0.047U	0.047U	NR
Gamma-BHC	.047U	NR	NR	.49U	.0247J	NR	NR	0.047U	0.047U	NR	NR	0.047U	0.047U	NR
Delta-BHC	.047U	NR	NR	.49U	.048U	NR	NR	0.047U	0.047U	NR	NR	0.047U	0.047U	NR
Hexachlorobenzene	NR	NR	NR	4.9U	NR	NR	NR	9.4U	NR	NR	NR	9.4U	NR	NR

MONITOR WELL: MW-5

Parameter	2009		2010		2011		2012		2013		2014		2015	
	April	September	April	September	April	September	April	September	May	September	April	September	May	September
Alpha-BHC	.048U	NR	NR	.030J	.047U	NR	NR	0.047U	0.047U	NR	NR	0.050U	0.047U	NR
Beta-BHC	.048U	NR	NR	.049U	.047U	NR	NR	0.047U	0.047U	NR	NR	0.050U	0.047U	NR
Gamma-BHC	.048U	NR	NR	.025J	.017J	NR	NR	0.047U	0.047U	NR	NR	0.050U	0.047U	NR
Delta-BHC	.048U	NR	NR	.049U	.047U	NR	NR	0.047U	0.047U	NR	NR	0.050U	0.047U	NR
Hexachlorobenzene	NR	NR	NR	4.7U	NR	NR	NR	9.4U	NR	NR	NR	9.4U	NR	NR

Notes: Concentration in ug/l

- insufficient sample
- U Undetected
- J Estimated value
- NR Not required

Table 2
Annual Manhole B Sampling

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK

ANALYTICAL RESULTS SUMMARY
ANNUAL LEACHATE SAMPLING

May 27, 2015

	MANHOLE B (MHB)
PARAMETER	
alpha-BHC	0.047U
beta-BHC	0.047U
delta-BHC	0.047U
gamma-BHC	0.047U
Hexachlorobenzene	9.4U

Notes:

U Undetected

J Estimated value

NR Not Required

Concentration in ug/l

Field blank was non-detect for all parameters of interest.

Data has been validated and judged acceptable as qualified.

Next hexachlorobenzene (HCB) sampling scheduled for Fall 2016

TABLE 3
Charles Gibson Site
Niagara Falls, New York
ANALYTICAL SUMMARY

Annual Cayuga Creek Sediment Sampling 2005 - 2015

UPSTREAM

Parameter	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Alpha-BHC	23J	13	40	77	240	94	200J	17	170J	120	NS
Beta-BHC	36	34	4.8	69	260	97	120J	48	190J	280	NS
Gamma-BHC	15J	13	4.6	17J	18J	33J	190U	5.5U	28U	49U	NS
Delta-BHC	26U	3.9J	3.7	26U	39J	52J	140J	23	28U	49U	NS

DOWNSTREAM

Parameter	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Alpha-BHC	23J	8.3	NS	5200	210	53J	230J	9.8	29U	55	52U
Beta-BHC	36	22	NS	1000	73	62J	130J	37	89	100	76
Gamma-BHC	15J	11	NS	66J	60U	63U	220U	5.9U	29U	52U	52U
Delta-BHC	26U	3.7J	NS	82J	32	56J	170J	18	29U	52U	52U

Notes:

Concentration in microgram per kilogram (ug/kg)

U Not Detected

J Estimated value

NS No sample in trap

Table 4
2015 Quarterly Groundwater Elevations Summary

Piezometer Pair	3/11/2015	Inward gradient	5/27/2015	Inward gradient	9/1/2015	Inward gradient	11/10/2015	Inward gradient
P1 outside P2 inside	565.15 564.68	Inward	565.84 565.53	Inward	565.16 565.41	Outward	564.97 565.40	Outward
P3 outside P4 inside	567.45 565.15	Inward	566.71 565.44	Inward	565.17 565.49	Outward	566.11 565.34	Inward
P5 outside P6 inside	568.39 567.07	Inward	568.46 567.49	Inward	567.46 577.07	Outward	568.92 567.07	Inward
Manhole A Manhole B	568.80 563.89	Below 565 ft msl No Yes	563.84 563.83	Below 565 ft msl Yes Yes	563.51 563.54	Below 565 ft msl Yes Yes	563.67 563.76	Below 565 ft msl Yes Yes

Notes: Measurement units are in feet above MSL.
 Piezometers P1, P3, P5 are outside the slurry wall.
 Piezometers P2, P4, P6 are located within the containment area.
 NA – Not Available
Manhole monitoring:
 • Maintain water level below 565 feet to prevent hydrostatic pressure buildup under concrete slab.
 • Pump Manhole B as required to maintain an inward gradient.

Table 5
Olin Corp. Gibson Site
Discharge Volumes

Summary of Yearly Discharge Volumes

Date	Volume (gallons)
2005	51,115
2006	52,891
2007	22,958
2008	40,223
2009	40,187
2010	28,118
2011	40,625
2012	29,623
2013	46,766
2014	33,564
2015	18,537
TOTALS	335,864

Monthly Discharge Volumes
2015

Month	Volume (gallons)
Jan	0
Feb	2,096
Mar	2,671
Apr	7,395
May	0
Jun	3,419
Jul	1
Aug	2,955
Sep	0
Oct	0
Nov	0
Dec	0
Total	18,537

CHARLES GIBSON SITE
 NIAGARA FALLS, NEW YORK
 NYSDEC REGISTRY NO. 9-32-063
 GROUNDWATER ELEVATION FORM

THIS FORM TO BE USED FOR ALL QUARTERLY PIEZOMETER AND MANHOLE GROUND-
 WATER ELEVATION MEASURING EVENTS

DATE: 3/1/15 TIME: 0800
 INSPECTOR: C. JONES COMPANY: SEVENSON
 WEATHER: 32° Cloudy

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	<u>7.57</u>	<u>565.15</u>	
P-2	574.89	<u>10.21</u>	<u>564.68</u>	
P-3	574.16	<u>6.71</u>	<u>567.45</u>	
P-4	576.14	<u>10.99</u>	<u>565.15</u>	
P-5	575.05	<u>6.66</u>	<u>568.39</u>	
P-6	578.28	<u>11.21</u>	<u>567.07</u>	
MANHOLE A	575.22	<u>11.42</u>	<u>563.80</u>	
MANHOLE B	577.34	<u>13.45</u>	<u>563.89</u>	

(Note: Manhole A empties into Manhole B by gravity feed and Manhole B is pumped automatically to the Town of Niagara Tuscarora Road sanitary sewer line by a float controlled sump pump which maintains groundwater elevations in Manhole B (and by extension Manhole A) below an elevation of 565 ft. above mean sea level. Therefore, Depth to water distance from the manhole rim should not be less than 12.41 ft. at Manhole B and 10.22 ft. at Manhole A.
 (Note: riser elevations (re)surveyed September, 1999 by Wendel Surveyors)

ADDITIONAL COMMENTS/OBSERVATIONS:

CHARLES GIBSON SITE
 NIAGARA FALLS, NEW YORK
 NYSDEC REGISTRY NO. 9-32-063
 GROUNDWATER ELEVATION FORM

THIS FORM TO BE USED FOR ALL QUARTERLY PIEZOMETER AND MANHOLE GROUND-WATER ELEVATION MEASURING EVENTS

DATE: 5/27/15 TIME: 0800
 INSPECTOR: C. JONES COMPANY: SEVENSON
 WEATHER: 70° Cloudy

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	<u>6.88</u>	<u>565.84</u>	
P-2	574.89	<u>9.36</u>	<u>565.53</u>	
P-3	574.16	<u>7.45</u>	<u>566.71</u>	
P-4	576.14	<u>10.70</u>	<u>565.44</u>	
P-5	575.05	<u>6.59</u>	<u>568.46</u>	
P-6	578.28	<u>10.71</u>	<u>567.49</u>	
MANHOLE A	575.22	<u>11.38</u>	<u>563.84</u>	
MANHOLE B	577.34	<u>13.51</u>	<u>563.83</u>	

(Note: Manhole A empties into Manhole B by gravity feed and Manhole B is pumped automatically to the Town of Niagara Tuscarora Road sanitary sewer line by a float controlled sump pump which maintains groundwater elevations in Manhole B (and by extension Manhole A) below an elevation of 565 ft. above mean sea level. Therefore, Depth to water distance from the manhole rim should not be less than 12.41 ft. at Manhole B and 10.22 ft. at Manhole A.
 (Note: riser elevations (re)surveyed September, 1999 by Wendel Surveyors)

ADDITIONAL COMMENTS/OBSERVATIONS: _____

CJ

CHARLES GIBSON SITE
 NIAGARA FALLS, NEW YORK
 NYSDEC REGISTRY NO. 9-32-063
 GROUNDWATER ELEVATION FORM

THIS FORM TO BE USED FOR ALL QUARTERLY PIEZOMETER AND MANHOLE GROUND-
 WATER ELEVATION MEASURING EVENTS

DATE: 9/1/15 TIME: 1230
 INSPECTOR: C. Jones COMPANY: SEVENSON
 WEATHER: 85° SUNNY

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	<u>7.56</u>	<u>565.16</u>	
P-2	574.89	<u>9.48</u>	<u>565.41</u>	
P-3	574.16	<u>8.99</u>	<u>565.17</u>	
P-4	576.14	<u>10.65</u>	<u>565.49</u>	
P-5	575.05	<u>7.59</u>	<u>567.46</u>	
P-6	578.28	<u>11.21</u>	<u>577.07</u>	
MANHOLE A	575.22	<u>11.71</u>	<u>563.51</u>	
MANHOLE B	577.34	<u>13.80</u>	<u>563.54</u>	

(Note: Manhole A empties into Manhole B by gravity feed and Manhole B is pumped automatically to the Town of Niagara Tuscarora Road sanitary sewer line by a float controlled sump pump which maintains groundwater elevations in Manhole B (and by extension Manhole A) below an elevation of 565 ft. above mean sea level. Therefore, Depth to water distance from the manhole rim should not be less than 12.41 ft. at Manhole B and 10.22 ft. at Manhole A.
 (Note: riser elevations (re)surveyed September, 1999 by Wendel Surveyors)

ADDITIONAL COMMENTS/OBSERVATIONS: _____

CP

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER ELEVATION FORM

THIS FORM TO BE USED FOR ALL QUARTERLY PIEZOMETER AND MANHOLE GROUND-WATER ELEVATION MEASURING EVENTS

DATE: 11/10/2015 TIME: 830

INSPECTOR: C. Jones COMPANY: Severson

WEATHER 45 sunny

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	7.75	564.97	
P-2	574.89	9.49	565.4	
P-3	574.16	8.05	566.11	
P-4	576.14	10.8	565.34	
P-5	575.05	6.13	568.92	
P-6	578.28	11.21	567.07	
MANHOLE A	575.22	11.55	563.67	
MANHOLE B	577.34	13.58	563.76	

(Note: Manhole A empties into Manhole B by gravity feed and Manhole B is pumped automatically to the Town of Niagara Tuscarora Road sanitary sewer line by a float controlled sump pump which maintains groundwater elevations in Manhole B (and by extension Manhole A) below an elevation of 565 ft. above mean sea level. Therefore, Depth to water distance from the manhole rim should not be less than 12.41 ft. at Manhole B and 10.22 ft. at Manhole A. (Note: riser elevations (re)surveyed September, 1999 by Wendel Surveyors)

ADDITIONAL COMMENTS/OBSERVATIONS: Site was clean and secure