

Consulting  
Engineers and  
Scientists

December 21, 2016

VIA EMAIL: [john.miller@dec.ny.gov](mailto:john.miller@dec.ny.gov)

Mr. John B. Miller, P.E.  
New York State Department of Environmental Conservation  
Remedial Bureau C  
625 Broadway, 11<sup>th</sup> Floor  
Albany, NY 12233-7014

**Re: Groundwater Sampling Results  
Former Safety Kleen Dry Cleaners Site (336078)  
Vails Gate, Orange County, NY**

Dear Mr. Miller,

GEI Consultants, Inc., P. C. has prepared this interim data report to present the results of the recent groundwater sampling completed at the Former Safety Kleen Dry Cleaners Site located in Vails Gate, New York (**Figure 1**). The groundwater sampling was conducted in accordance with the New York State Department of Environmental Conservation (NYSDEC) approved Additional Investigation Work Plan, dated August 3, 2016. In accordance with our discussion on November 10, 2016, we are providing this interim data report and evaluation to determine the most effective course of action for completing the feasibility study at this site.

### **Existing Monitoring Well Sampling**

The existing monitoring wells located on **Figure 1** were sampled on November 10, 2016 using low-flow groundwater sampling procedures, where possible. Two of the monitoring wells, MW-1 and MW-7, ran dry during the low flow sampling. The wells were allowed to recharge and a second attempt was made to collect the samples using low-flow groundwater sampling procedures. At both locations, the wells were unable to sustain a constant flow required for low-flow sampling and a grab sample was collected.

Groundwater samples were analyzed for the following:

- Volatile Organic Compounds (VOCs) via United States Environmental Protection Agency (USEPA) Method 8260C
- Semi-Volatile Organic Compounds (SVOCs) via USEPA Method 8270D
- Total Analyte List (TAL) metals via USEPA Method 6010 and USEPA Method 7470A – unfiltered and filtered samples will be collected
- Chemical Oxygen Demand
- Dissolved Iron
- Dissolved Manganese

## Groundwater Analytical Results

The full analytical results of the 2016 groundwater sampling is included in **Table 1**. A comparison of the VOC detections in groundwater between the 2011 and 2016 data sets is included in **Table 2**.

Tetrachloroethene (PCE) was detected in perched water samples collected from three monitoring wells in 2011 (MW-7, MW-2, and MW-1R). The concentrations detected in 2016 at all three wells still exceed the New York State Ambient Water Quality Standards (AWQS) for GA groundwater of 5 micrograms per liter ( $\mu\text{g/L}$ ).

- The concentration of PCE detected in MW-7 decreased four orders of magnitude from 127,000  $\mu\text{g/L}$  to 45  $\mu\text{g/L}$ . This well is located immediately adjacent to the former dry cleaning operations and equipment.
- The concentration of PCE detected in MW-2 decreased two orders of magnitude from 1,650  $\mu\text{g/L}$  to 30  $\mu\text{g/L}$ . Based on the survey in the RI, this well is located downgradient of the former dry cleaner.
- The concentration of PCE detected in MW-1 increased from 22.8  $\mu\text{g/L}$  to 460 D  $\mu\text{g/L}$ . Based on the survey in the RI, this well is located upgradient of the former dry cleaner.

Trichloroethene (TCE) was detected at concentrations greater than the AWQS of 5  $\mu\text{g/L}$  in perched water samples collected from two monitoring wells in 2011 (MW-7 and MW-2). TCE was not detected at concentrations greater than the AWQS of 5  $\mu\text{g/L}$  in any of the wells in 2016.

- The concentration of TCE detected in MW-7 decreased from 151  $\mu\text{g/L}$  to non detect. This well is located immediately adjacent to the former dry cleaning operations and equipment.
- The concentration of TCE detected in MW-2 decreased from 25.1  $\mu\text{g/L}$  to 3.7  $\mu\text{g/L}$ . Based on the survey in the RI, this well is located downgradient of the former dry cleaner.

Cis-1,2-Dichloroethene (DCE) was detected at a concentration greater than the AWQS of 5  $\mu\text{g/L}$  in the perched water sample collected from monitoring well MW-2 in 2011. The concentrations detected in 2016 at all three wells (MW-1R, MW-2, and MW-7) exceed the AWQS of 5  $\mu\text{g/L}$ .

- The concentration of DCE detected in MW-2 remained consistent between 2011 (25.1  $\mu\text{g/L}$ ) and 2016 (46  $\mu\text{g/L}$ ). Based on the survey in the RI, this well is located downgradient of the former dry cleaner.
- The concentration of DCE detected in MW-7 increased from 1.39  $\mu\text{g/L}$  to 20  $\mu\text{g/L}$ . This well is located immediately adjacent to the former dry cleaning operations and equipment.
- The concentration of DCE detected in MW-1 increased from non-detect  $\mu\text{g/L}$  to 6.7  $\mu\text{g/L}$ . Based on the survey in the RI, this well is located upgradient of the former dry cleaner.

Vinyl Chloride (VC) was detected at a concentration greater than the AWQS of 5  $\mu\text{g/L}$  in the perched water sample collected from monitoring well MW-2 in 2011. The concentration of TCE detected in MW-2 remained consistent between 2011 (151  $\mu\text{g/L}$ ) and 2016 (150  $\mu\text{g/L}$ ). Based on the survey in the Remedial Investigation, this well is located downgradient of the former dry cleaner.

In addition to the chlorinated VOCs identified during the previous investigation, a number of petroleum-related compounds were detected at concentrations which exceed the AWQS at MW-7 in 2016. These compounds were either not detected or not analyzed in the previous sampling in 2011.

### **Preliminary In-Situ Chemical Oxidation (ISCO) Evaluation**

As noted in the approved work plan, the site conditions, restrictions, and lithology, described in the previous site documents indicate that ISCO may not be effective at addressing the contamination at the site.

The groundwater sampling included an assessment of natural organic matter and dissolved iron as these can interfere with the effectiveness of an ISCO remediation. The Chemical Oxygen Demand (COD) in the groundwater samples ranged from 49,000 µg/L to 1,400,000 µg/L. Dissolved iron analysis was run on both a filtered and unfiltered sample. The concentration of iron in the filtered sample ranged from 47 to µg/L to 346 µg/L. The unfiltered sample contained suspended solids from the soil matrix and the resulting concentrations were much higher ranging from 1,940 µg/L to 258,000 µg/L. This limited data set indicates that the COD of the soil will likely be higher than the COD of the groundwater.

As noted above, monitoring wells MW-7 and MW-1R did not have sufficient groundwater flow to sustain low flow sampling. These wells are set perched groundwater zone consisting of a sandy clay layer which was observed between 5 and 9 feet below ground surface (ft bgs). The lithology above and below this layer is a brown, silty clay with rock fragments to a depth of 17 ft bgs. These wells are located in the likely treatment area target zone. The lack of groundwater flow in this zone observed during sampling will be a severe detriment to the ability to inject sufficient oxidant into the formation and the limit the diffusion of oxidants in the groundwater. Based on this data, ISCO does not appear to be an applicable.

### **Conclusions**

In general, the high concentrations of chlorinated VOCs detected at the source area (MW-7) and area immediately downgradient (MW-2) in the 2011 were significantly lower in the samples collected in 2016. As noted in the FS, the Sub-Slab Depressurization System (SSDS), which has been in operation since 2013, has been effective at reducing the chlorinated VOC concentrations in soil vapor and indoor air. The soil vapor concentrations at the locations closest to the former dry cleaner release have decreased over 95% since the SSDS was implemented. The indoor air concentrations at the locations closest to the former dry cleaner release have decreased over 94% since the SSDS was implemented. The documented reductions in groundwater, soil vapor, and indoor air confirm that the SSDS has been effective in reducing the contamination at the site.

The concentration of chlorinated VOCs detected in the recent groundwater sampling do not appear significant enough to warrant an aggressive ISCO remediation. The SSDS that is in place has been effectively addressing the source area.

Based on the data collected from the groundwater monitoring wells and the preliminary evaluation of ISCO described above, GEI recommends the following:

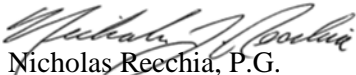
- GEI does not recommend continuing with the collection of additional data to evaluate the feasibility of an ISCO remedial alternative. The data collected is sufficient for completing a technology evaluation of ISCO. The data collected indicates that ISCO would not be an effective remedial technology for use at this site.


- The data collected to date will be included in a revised FS.
- An evaluation of ISCO will be presented in the technology screening section of the FS. Based on the data above, ISCO would not be an effective technology at this site and will be ruled out in this section of the revised FS.
- A remedial alternative including full scale ISCO will not be presented in the revised FS.

If you have any questions, please feel free to contact either Nicholas Recchia at 631-759-2973 ([nrecchia@geiconsultants.com](mailto:nrecchia@geiconsultants.com)) or Matt O'Neil at 401-533-5152 ([moneil@geiconsultants.com](mailto:moneil@geiconsultants.com)).

Sincerely,

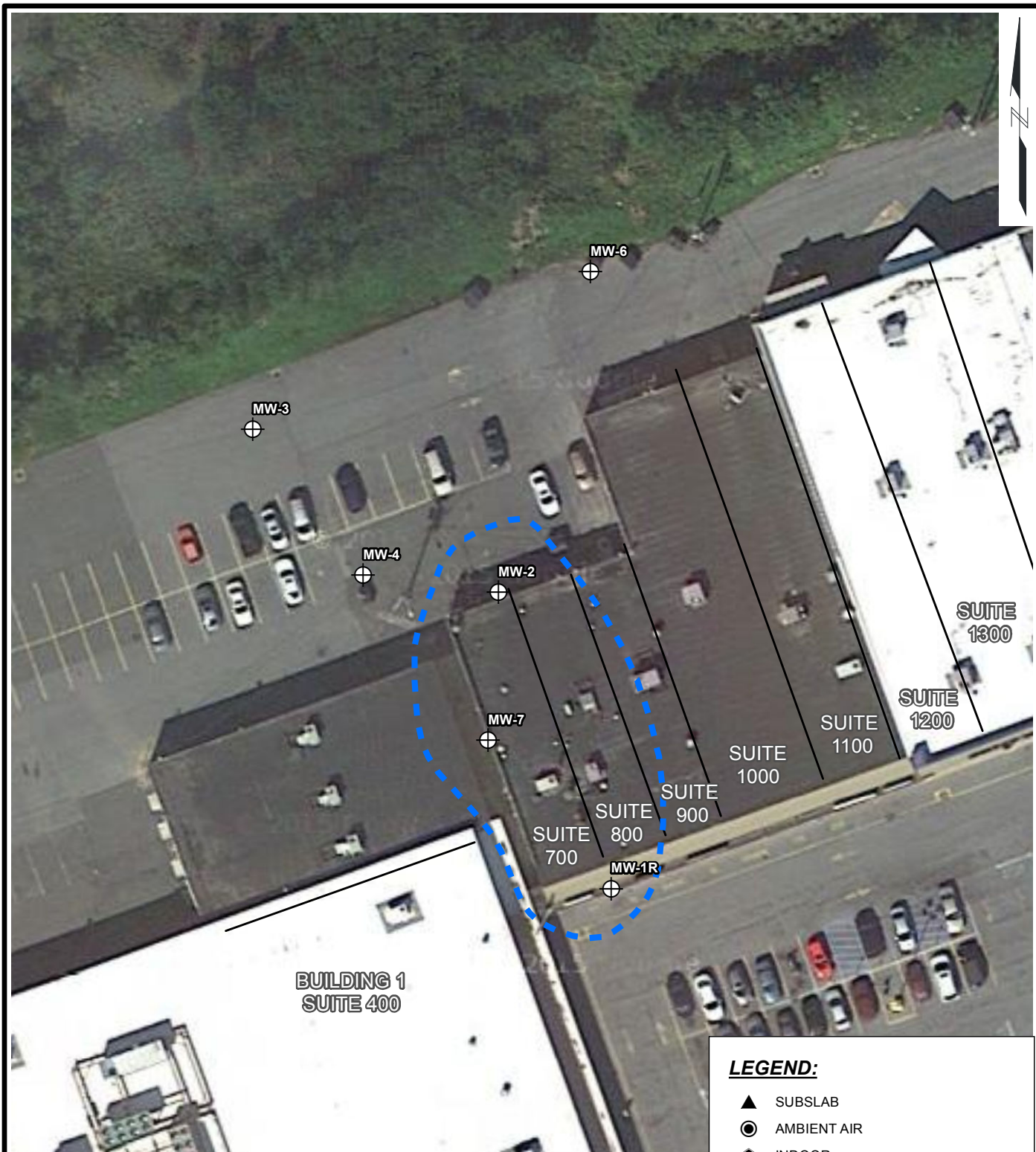
GEI CONSULTANTS, INC., P.C.

  
Nicholas Recchia, P.G.  
Environmental Practice Leader  
Hydrogeologist

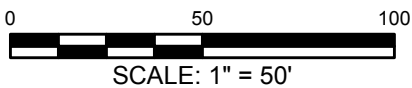
  
Matthew O'Neil, P.E.  
Project Engineer

MJO/NJR:gd  
Attachments

cc: K. Barrett, Rosen Group



**SOURCE:**  
 1. PLAN OBTAINED FROM SOLUTECH, INC, DATED JANUARY 2012.



**LEGEND:**

- ▲ SUBSLAB
- ⊙ AMBIENT AIR
- ◆ INDOOR
- SOIL BORING
- ⊕ MONITORING WELL
- ▭ APPROXIMATE EXTENT OF GROUNDWATER IMPACTS

Feasibility Study  
 Former Safety Kleen Dry Cleaner  
 115 Temple Hill Road  
 New Windsor, New York

The Rosen Group  
 Claymont, Delaware



Project 1602600

**EXTENT OF GROUNDWATER IMPACTS**

December 2016

Fig. 1

**Table 1. 2016 Groundwater Sample Analytical Results**  
**Groundwater Sampling Summary Report**  
**Former Safety Kleen Dry Cleaners**  
**Vails Gate, New York**

Sample ID Sampling Date Client Matrix	NYSDEC TOGS Standards and Guidance Values - GA	MW-1R 11/10/2016 Water		MW-2 11/10/2016 Water		MW-3 11/10/2016 Water		MW-4 11/10/2016 Water	
		Result	Q	Result	Q	Result	Q	Result	Q
<b>Compound</b>	<b>ug/L</b>	<b>ug/L</b>		<b>ug/L</b>		<b>ug/L</b>		<b>ug/L</b>	
<b>Volatiles Organics, 8260 - Comprehensive</b>									
<b>Dilution Factor</b>		10		1		1		1	
Tetrachloroethylene	5	460	D	30		0.98		0.91	
Trichloroethylene	5	3.20		3.70		0.37	J	0.20	U
cis-1,2-Dichloroethylene	5	6.70		46		0.24	J	0.23	J
trans-1,2-Dichloroethylene	5	0.20	U	3		0.20	U	0.20	U
1,1-Dichloroethane	5	0.20	U	0.20	U	0.20	U	0.20	U
Vinyl Chloride	2	0.20	U	150		0.20	U	0.64	
Chloroform	7	0.25	J	0.20	U	0.20	U	0.20	U
2-Butanone	50	1.10	B	0.20	U	1.60		0.20	U
Acetone	50	18	B	1.60	JB	6.60	B	1	U
1,1,1-Trichloroethane	5	0.20	U	0.20	U	0.20	U	0.20	U
1,1-Dichloroethylene	5	0.20	U	0.20	U	0.20	U	0.20	U
Carbon disulfide	~	0.20	U	0.20	U	0.20	U	0.20	U
Carbon tetrachloride	5	0.20	U	0.20	U	0.20	U	0.20	U
Chlorobenzene	5	0.20	U	0.20	U	0.20	U	0.20	U
Ethyl Benzene	5	0.20	U	0.20	U	0.20	U	0.20	U
Xylenes, Total	5	0.60	U	0.60	U	0.60	U	0.60	U
Toluene	5	0.20	U	0.20	U	0.20	U	0.20	U
1,2,4-Trimethylbenzene	5	0.20	U	0.20	U	0.20	U	0.20	U
1,3,5-Trimethylbenzene	5	0.20	U	0.20	U	0.20	U	0.20	U
Benzene	1	0.20	U	0.20	U	0.20	U	0.20	U
Isopropylbenzene	5	0.20	U	0.20	U	0.20	U	0.20	U
n-Butylbenzene	5	0.20	U	0.20	U	0.20	U	0.20	U
n-Propylbenzene	5	0.20	U	0.20	U	0.20	U	0.20	U
o-Xylene	5	0.20	U	0.20	U	0.20	U	0.20	U
p- & m- Xylenes	5	0.50	U	0.50	U	0.50	U	0.50	U
p-Isopropyltoluene	5	0.20	U	0.20	U	0.20	U	0.20	U
sec-Butylbenzene	5	0.20	U	0.20	U	0.20	U	0.20	U
1,1,1,2-Tetrachloroethane	5	0.20	U	0.20	U	0.20	U	0.20	U
1,1,2,2-Tetrachloroethane	5	0.20	U	0.20	U	0.20	U	0.20	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	5	0.20	U	0.20	U	0.20	U	0.20	U
1,1,2-Trichloroethane	1	0.20	U	0.20	U	0.20	U	0.20	U
1,2,3-Trichlorobenzene	5	0.20	U	0.20	U	0.20	U	0.20	U
1,2,3-Trichloropropane	0.04	0.20	U	0.20	U	0.20	U	0.20	U
1,2,4-Trichlorobenzene	5	0.20	U	0.20	U	0.20	U	0.20	U
1,2-Dibromo-3-chloropropane	0.04	0.20	U	0.20	U	0.20	U	0.20	U
1,2-Dibromoethane	5	0.20	U	0.20	U	0.20	U	0.20	U
1,2-Dichlorobenzene	3	0.20	U	0.20	U	0.20	U	0.20	U
1,2-Dichloroethane	0.6	0.20	U	0.20	U	0.20	U	0.20	U
1,2-Dichloropropane	1	0.20	U	0.20	U	0.20	U	0.20	U
1,3-Dichlorobenzene	3	0.20	U	0.20	U	0.20	U	0.20	U
1,4-Dichlorobenzene	3	0.20	U	0.20	U	0.20	U	0.20	U
1,4-Dioxane	~	40	U	40	U	40	U	40	U
2-Hexanone	50	0.20	U	0.20	U	0.20	U	0.20	U
4-Methyl-2-pentanone	~	0.20	U	0.20	U	1.20		0.20	U
Acrolein	~	0.20	U	0.20	U	0.20	U	0.20	U
Acrylonitrile	~	0.20	U	0.20	U	0.20	U	0.20	U

**Table 1. 2016 Groundwater Sample Analytical Results**  
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		Result	Q	Result	Q	Result	Q	Result	Q
<b>Compound</b>	<b>GA</b>	<b>Result</b>	<b>Q</b>	<b>Result</b>	<b>Q</b>	<b>Result</b>	<b>Q</b>	<b>Result</b>	<b>Q</b>
Bromochloromethane	5	0.20	U	0.20	U	0.20	U	0.20	U
Bromodichloromethane	50	0.20	U	0.20	U	0.20	U	0.20	U
Bromoform	50	0.20	U	0.20	U	0.20	U	0.20	U
Bromomethane	5	0.20	U	0.20	U	0.20	U	0.20	U
Chloroethane	5	0.20	U	0.20	U	0.20	U	0.20	U
Chloromethane	5	0.20	U	0.20	U	0.20	U	0.20	U
cis-1,3-Dichloropropylene	0.4	0.20	U	0.20	U	0.20	U	0.20	U
Cyclohexane	~	0.20	U	0.40	J	0.20	U	0.20	U
Dibromochloromethane	50	0.20	U	0.20	U	0.20	U	0.20	U
Dibromomethane	~	0.20	U	0.20	U	0.20	U	0.20	U
Dichlorodifluoromethane	5	0.20	U	0.20	U	0.20	U	0.20	U
Hexachlorobutadiene	0.5	0.20	U	0.20	U	0.20	U	0.20	U
Methyl acetate	~	0.20	U	0.20	U	0.20	U	0.20	U
Methyl tert-butyl ether (MTBE)	10	0.20	U	0.20	U	0.20	U	0.20	U
Methylcyclohexane	~	0.20	U	0.20	U	0.20	U	0.20	U
Methylene chloride	5	1	U	1	U	1	U	1	U
Styrene	5	0.20	U	0.20	U	0.20	U	0.20	U
tert-Butyl alcohol (TBA)	~	1.80	J	2.90	J	2	J	2.60	J
tert-Butylbenzene	5	0.20	U	0.20	U	0.20	U	0.20	U
trans-1,3-Dichloropropylene	0.4	0.20	U	0.20	U	0.20	U	0.20	U
Trichlorofluoromethane	5	0.20	U	0.20	U	0.20	U	0.20	U
<b>Semi-Volatiles, 8270 - Comprehensive</b>	<b>ug/L</b>	<b>ug/L</b>		<b>ug/L</b>		<b>ug/L</b>		<b>ug/L</b>	
<b>Dilution Factor</b>		<b>1</b>		<b>1</b>		<b>1</b>		<b>1</b>	
1,1'-Biphenyl	~	3.12	U	2.86	U	2.86	U	2.78	U
1,2,4,5-Tetrachlorobenzene	~	3.12	U	2.86	U	2.86	U	2.78	U
1,2,4-Trichlorobenzene	5	3.12	U	2.86	U	2.86	U	2.78	U
1,2-Dichlorobenzene	3	3.12	U	2.86	U	2.86	U	2.78	U
1,2-Diphenylhydrazine (as Azobenzene)	~	3.12	U	2.86	U	2.86	U	2.78	U
1,3-Dichlorobenzene	3	3.12	U	2.86	U	2.86	U	2.78	U
1,4-Dichlorobenzene	3	3.12	U	2.86	U	2.86	U	2.78	U
2,3,4,6-Tetrachlorophenol	~	3.12	U	2.86	U	2.86	U	2.78	U
2,4,5-Trichlorophenol	1	3.12	U	2.86	U	2.86	U	2.78	U
2,4,6-Trichlorophenol	1	3.12	U	2.86	U	2.86	U	2.78	U
2,4-Dichlorophenol	5	3.12	U	2.86	U	2.86	U	2.78	U
2,4-Dimethylphenol	50	3.12	U	2.86	U	2.86	U	2.78	U
2,4-Dinitrophenol	10	3.12	U	2.86	U	2.86	U	2.78	U
2,4-Dinitrotoluene	5	3.12	U	2.86	U	2.86	U	2.78	U
2,6-Dinitrotoluene	5	3.12	U	2.86	U	2.86	U	2.78	U
2-Chloronaphthalene	10	3.12	U	2.86	U	2.86	U	2.78	U
2-Chlorophenol	1	3.12	U	2.86	U	2.86	U	2.78	U
2-Methylnaphthalene	~	3.12	U	2.86	U	2.86	U	2.78	U
2-Methylphenol	1	3.12	U	2.86	U	2.86	U	2.78	U
2-Nitroaniline	5	3.12	U	2.86	U	2.86	U	2.78	U
2-Nitrophenol	1	3.12	U	2.86	U	2.86	U	2.78	U
3- & 4-Methylphenols	~	3.12	U	2.86	U	2.86	U	2.78	U
3,3'-Dichlorobenzidine	5	3.12	U	2.86	U	2.86	U	2.78	U
3-Nitroaniline	5	3.12	U	2.86	U	2.86	U	2.78	U

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		Result	Q	Result	Q	Result	Q	Result	Q
4,6-Dinitro-2-methylphenol	~	3.12	U	2.86	U	2.86	U	2.78	U
4-Bromophenyl phenyl ether	~	3.12	U	2.86	U	2.86	U	2.78	U
4-Chloro-3-methylphenol	1	3.12	U	2.86	U	2.86	U	2.78	U
4-Chloroaniline	5	3.12	U	2.86	U	2.86	U	2.78	U
4-Chlorophenyl phenyl ether	~	3.12	U	2.86	U	2.86	U	2.78	U
4-Nitroaniline	5	3.12	U	2.86	U	2.86	U	2.78	U
4-Nitrophenol	1	3.12	U	2.86	U	2.86	U	2.78	U
Acenaphthene	20	0.063	U	0.057	U	0.057	U	0.056	U
Acenaphthylene	~	0.063	U	0.057	U	0.057	U	0.056	U
Acetophenone	~	3.12	U	2.86	U	2.86	U	2.78	U
Aniline	5	3.12	U	2.86	U	2.86	U	2.78	U
Anthracene	50	0.063	U	0.057	U	0.057	U	0.056	U
Atrazine	~	0.63	U	0.57	U	0.57	U	0.56	U
Benzaldehyde	~	3.12	U	2.86	U	2.86	U	2.78	U
Benzenidine	~	12.50	U	11.40	U	11.40	U	11.10	U
Benzo(a)anthracene	0.002	0.063	U	0.057	U	0.057	U	0.056	U
Benzo(a)pyrene	0.002	0.063	U	0.057	U	0.057	U	0.056	U
Benzo(b)fluoranthene	0.002	0.063	U	0.057	U	0.057	U	0.056	U
Benzo(g,h,i)perylene	~	0.063	U	0.057	U	0.057	U	0.056	U
Benzo(k)fluoranthene	0.002	0.063	U	0.057	U	0.057	U	0.056	U
Benzoic acid	~	31.20	U	28.60	U	28.60	U	27.80	U
Benzyl alcohol	~	3.12	U	2.86	U	2.86	U	2.78	U
Benzyl butyl phthalate	50	3.12	U	2.86	U	2.86	U	2.78	U
Bis(2-chloroethoxy)methane	5	3.12	U	2.86	U	2.86	U	2.78	U
Bis(2-chloroethyl)ether	1	3.12	U	2.86	U	2.86	U	2.78	U
Bis(2-chloroisopropyl)ether	5	3.12	U	2.86	U	2.86	U	2.78	U
Bis(2-ethylhexyl)phthalate	5	0.63	U	0.57	U	13	U	0.56	U
Caprolactam	~	3.12	U	2.86	U	2.86	U	2.78	U
Carbazole	~	3.12	U	2.86	U	2.86	U	2.78	U
Chrysene	0.002	0.063	U	0.057	U	0.057	U	0.056	U
Dibenzo(a,h)anthracene	~	0.063	U	0.057	U	0.057	U	0.056	U
Dibenzofuran	~	3.12	U	2.86	U	2.86	U	2.78	U
Diethyl phthalate	50	3.12	U	2.86	U	2.86	U	2.78	U
Dimethyl phthalate	50	3.12	U	2.86	U	2.86	U	2.78	U
Di-n-butyl phthalate	50	3.12	U	2.86	U	2.86	U	2.78	U
Di-n-octyl phthalate	50	3.12	U	2.86	U	2.86	U	2.78	U
Fluoranthene	50	0.063	U	0.057	U	0.057	U	0.056	U
Fluorene	50	0.063	U	0.057	U	0.59	U	0.056	U
Hexachlorobenzene	0.04	0.025	U	0.023	U	0.023	U	0.022	U
Hexachlorobutadiene	0.5	0.63	U	0.57	U	0.57	U	0.56	U
Hexachlorocyclopentadiene	5	3.12	U	2.86	U	2.86	U	2.78	U
Hexachloroethane	5	0.63	U	0.57	U	0.57	U	0.56	U
Indeno(1,2,3-cd)pyrene	0.002	0.063	U	0.057	U	0.057	U	0.056	U
Isophorone	50	3.12	U	2.86	U	2.86	U	2.78	U
Naphthalene	10	0.063	U	0.057	U	0.057	U	0.056	U
Nitrobenzene	0.4	0.31	U	0.29	U	0.29	U	0.28	U
N-Nitrosodimethylamine	~	0.63	U	0.57	U	0.57	U	0.56	U



**Table 1. 2016 Groundwater Sample Analytical Results**  
**Groundwater Sampling Summary Report**  
**Former Safety Kleen Dry Cleaners**  
**Vails Gate, New York**

Sample ID Sampling Date Client Matrix	NYSDEC TOGS Standards and Guidance Values - GA	MW-1R 11/10/2016 Water		MW-2 11/10/2016 Water		MW-3 11/10/2016 Water		MW-4 11/10/2016 Water	
		Result	Q	Result	Q	Result	Q	Result	Q
Compound									
N-nitroso-di-n-propylamine	~	3.12	U	2.86	U	2.86	U	2.78	U
N-Nitrosodiphenylamine	50	3.12	U	2.86	U	2.86	U	2.78	U
Pentachlorophenol	1	0.31	U	0.29	U	0.29	U	0.28	U
Phenanthrene	50	0.063	U	0.057	U	0.057	U	0.056	U
Phenol	1	3.12	U	2.86	U	2.86	U	2.78	U
Pyrene	50	0.063	U	0.057	U	0.057	U	0.056	U
<b>Metals, Target Analyte</b>	ug/L	ug/L		ug/L		ug/L		ug/L	
<b>Dilution Factor</b>		100		1		1		1000	
Aluminum	~	14,600		783		4,180		15,900	
Antimony	3	6	U	6	U	6	U	6	U
Arsenic	25	12		4	U	4	U	10	
Barium	1000	234		13		25		533	
Beryllium	3	1		1	U	1	U	1	U
Cadmium	5	3	U	3	U	3	U	3	U
Calcium	~	123,000		25,700		18,200		682,000	
Chromium	50	26		6	U	13		15	
Cobalt	~	9		6	U	6	U	7	
Copper	200	58		27		44		51	
Iron	~	12,000		1,940		5,870		9,990	
Lead	25	54		3	U	9		11	
Magnesium	35000	30,700		3,570		7,560		107,000	
Manganese	300	1,320		527		163		10,500	
Nickel	100	20		7		10		13	
Potassium	~	4,760		1,630		3,330		6,820	
Selenium	10	11	U	11	U	11	U	11	U
Silver	50	6	U	6	U	6	U	6	U
Sodium	20000	725,000	D	154,000		23,600		2,830,000	D
Thallium	~	6		6	U	6	U	16	
Vanadium	~	15		11	U	18		13	
Zinc	2000	882		37		130		363	
<b>Metals, Target Analyte, Dissolved</b>	ug/L	ug/L		ug/L		ug/L		ug/L	
<b>Dilution Factor</b>		100		1		1		1000	
Aluminum	~	56	U	56	U	56	U	56	U
Antimony	3	6	U	6	U	6	U	6	U
Arsenic	25	4	U	4	U	4	U	4	U
Barium	1000	80		11	U	11	U	524	
Beryllium	3	1	U	1	U	1	U	1	U
Cadmium	5	3	U	3	U	3	U	3	U
Calcium	~	116,000		28,600		13,000		725,000	
Chromium	50	6	U	6	U	6	U	6	U
Cobalt	~	6	U	6	U	6	U	6	U
Copper	200	44		38		30		55	
Iron	~	88		183		346		254	
Lead	25	3	U	3	U	3	U	5	
Magnesium	35000	24,900		3,900		4,240		110,000	
Manganese	300	111		598		67		10,900	
Nickel	100	6		6	U	7		6	U

**Table 1. 2016 Groundwater Sample Analytical Results**  
**Groundwater Sampling Summary Report**  
**Former Safety Kleen Dry Cleaners**  
**Vails Gate, New York**

Sample ID	NYSDEC TOGS Standards and Guidance Values - GA	MW-1R 11/10/2016 Water		MW-2 11/10/2016 Water		MW-3 11/10/2016 Water		MW-4 11/10/2016 Water	
Sampling Date		Result	Q	Result	Q	Result	Q	Result	Q
Client Matrix	Compound								
	Potassium	~	2,660		1,380		1,580		4,440
	Selenium	10	11	U	11	U	11	U	11
	Silver	50	6	U	6	U	6	U	6
	Sodium	20000	775,000	D	154,000		20,600		2,690,000
	Thallium	~	6	U	6	U	6		21
	Vanadium	~	11	U	11	U	11	U	11
	Zinc	2000	64		11	U	11	U	167
	Mercury by 7473	ug/L	ug/L		ug/L		ug/L		ug/L
	Dilution Factor		1		1		1		1
	Mercury	0.7	0.20	U	0.20	U	0.20	U	0.20
	Mercury by 7473, Dissolved	ug/L	ug/L		ug/L		ug/L		ug/L
	Dilution Factor		1		1		1		1
	Mercury	0.7	0.20	U	0.20	U	0.20	U	0.20
	Chemical Oxygen Demand (COD)		ug/L		ug/L		ug/L		ug/L
	Dilution Factor		10		1		1		10
	Chemical Oxygen Demand (COD)	~	1,400,000	D	120,000		170,000		1,200,000

**Table 1. 2016 Groundwater Sample Analytical Results**  
**Groundwater Sampling Summary Report**  
**Former Safety Kleen Dry Cleaners**  
**Vails Gate, New York**

Sample ID Sampling Date Client Matrix	NYSDEC TOGS Standards and Guidance Values - GA	MW-7 11/10/2016 Water		MW-6 11/10/2016 Water		Trip Blank 11/10/2016 Water	
		Result	Q	Result	Q	Result	Q
<b>Compound</b>	<b>ug/L</b>	<b>ug/L</b>		<b>ug/L</b>		<b>ug/L</b>	
<b>Volatile Organics, 8260 - Comprehensive</b>							
<b>Dilution Factor</b>		50		1		1	
Tetrachloroethylene	5	45	D	0.41	J	0.20	U
Trichloroethylene	5	10	U	0.20	U	0.20	U
cis-1,2-Dichloroethylene	5	20	JD	0.20	U	0.20	U
trans-1,2-Dichloroethylene	5	10	U	0.20	U	0.20	U
1,1-Dichloroethane	5	10	U	0.20	U	0.20	U
Vinyl Chloride	2	10	U	0.35	J	0.20	U
Chloroform	7	10	U	0.20	U	0.20	U
2-Butanone	50	10	U	0.20	U	0.20	U
Acetone	50	69	JBD	1	U	1	U
1,1,1-Trichloroethane	5	10	U	0.20	U	0.20	U
1,1-Dichloroethylene	5	10	U	0.20	U	0.20	U
Carbon disulfide	~	10	U	0.20	U	0.20	U
Carbon tetrachloride	5	10	U	0.20	U	0.20	U
Chlorobenzene	5	10	U	0.20	U	0.20	U
Ethyl Benzene	5	230	D	0.20	U	0.20	U
Xylenes, Total	5	1,100	D	0.60	U	0.60	U
Toluene	5	360	D	0.20	U	0.20	U
1,2,4-Trimethylbenzene	5	710	D	0.20	U	0.20	U
1,3,5-Trimethylbenzene	5	280	D	0.20	U	0.20	U
Benzene	1	15	JD	0.20	U	0.20	U
Isopropylbenzene	5	56	D	0.20	U	0.20	U
n-Butylbenzene	5	88	D	0.20	U	0.20	U
n-Propylbenzene	5	160	D	0.20	U	0.20	U
o-Xylene	5	240	D	0.20	U	0.20	U
p- & m- Xylenes	5	900	D	0.50	U	0.50	U
p-Isopropyltoluene	5	16	JD	0.20	U	0.20	U
sec-Butylbenzene	5	22	JD	0.20	U	0.20	U
1,1,1,2-Tetrachloroethane	5	10	U	0.20	U	0.20	U
1,1,2,2-Tetrachloroethane	5	10	U	0.20	U	0.20	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	5	10	U	0.20	U	0.20	U
1,1,2-Trichloroethane	1	10	U	0.20	U	0.20	U
1,2,3-Trichlorobenzene	5	10	U	0.20	U	0.20	U
1,2,3-Trichloropropane	0.04	10	U	0.20	U	0.20	U
1,2,4-Trichlorobenzene	5	10	U	0.20	U	0.20	U
1,2-Dibromo-3-chloropropane	0.04	10	U	0.20	U	0.20	U
1,2-Dibromoethane	5	10	U	0.20	U	0.20	U
1,2-Dichlorobenzene	3	10	U	0.20	U	0.20	U
1,2-Dichloroethane	0.6	10	U	0.20	U	0.20	U
1,2-Dichloropropane	1	10	U	0.20	U	0.20	U
1,3-Dichlorobenzene	3	10	U	0.20	U	0.20	U
1,4-Dichlorobenzene	3	10	U	0.20	U	0.20	U
1,4-Dioxane	~	2,000	U	40	U	40	U
2-Hexanone	50	10	U	0.20	U	0.20	U
4-Methyl-2-pentanone	~	10	U	0.20	U	0.20	U
Acrolein	~	10	U	0.20	U	0.20	U
Acrylonitrile	~	10	U	0.20	U	0.20	U

**Table 1. 2016 Groundwater Sample Analytical Results**  
**Groundwater Sampling Summary Report**  
**Former Safety Kleen Dry Cleaners**  
**Vails Gate, New York**

Sample ID Sampling Date Client Matrix	NYSDEC TOGS Standards and Guidance Values - GA	MW-7 11/10/2016 Water		MW-6 11/10/2016 Water		Trip Blank 11/10/2016 Water	
		Result	Q	Result	Q	Result	Q
Compound	GA	Result	Q	Result	Q	Result	Q
Bromochloromethane	5	10	U	0.20	U	0.20	U
Bromodichloromethane	50	10	U	0.20	U	0.20	U
Bromoform	50	10	U	0.20	U	0.20	U
Bromomethane	5	10	U	0.20	U	0.20	U
Chloroethane	5	10	U	0.20	U	0.20	U
Chloromethane	5	10	U	0.20	U	0.20	U
cis-1,3-Dichloropropylene	0.4	10	U	0.20	U	0.20	U
Cyclohexane	~	10	U	0.20	U	0.20	U
Dibromochloromethane	50	10	U	0.20	U	0.20	U
Dibromomethane	~	10	U	0.20	U	0.20	U
Dichlorodifluoromethane	5	10	U	0.20	U	0.20	U
Hexachlorobutadiene	0.5	10	U	0.20	U	0.20	U
Methyl acetate	~	10	U	0.20	U	0.20	U
Methyl tert-butyl ether (MTBE)	10	10	U	0.20	U	0.20	U
Methylcyclohexane	~	26	D	0.20	U	0.20	U
Methylene chloride	5	50	U	1	U	1	U
Styrene	5	10	U	0.20	U	0.20	U
tert-Butyl alcohol (TBA)	~	25	U	2.10	U	0.50	U
tert-Butylbenzene	5	10	U	0.20	U	0.20	U
trans-1,3-Dichloropropylene	0.4	10	U	0.20	U	0.20	U
Trichlorofluoromethane	5	10	U	0.20	U	0.20	U
<b>Semi-Volatiles, 8270 - Comprehensive</b>	ug/L	ug/L		ug/L			
<b>Dilution Factor</b>		1		1			
1,1'-Biphenyl	~	2.78	U	2.78	U	NT	
1,2,4,5-Tetrachlorobenzene	~	2.78	U	2.78	U	NT	
1,2,4-Trichlorobenzene	5	2.78	U	2.78	U	NT	
1,2-Dichlorobenzene	3	2.78	U	2.78	U	NT	
1,2-Diphenylhydrazine (as Azobenzene)	~	2.78	U	2.78	U	NT	
1,3-Dichlorobenzene	3	2.78	U	2.78	U	NT	
1,4-Dichlorobenzene	3	2.78	U	2.78	U	NT	
2,3,4,6-Tetrachlorophenol	~	2.78	U	2.78	U	NT	
2,4,5-Trichlorophenol	1	2.78	U	2.78	U	NT	
2,4,6-Trichlorophenol	1	2.78	U	2.78	U	NT	
2,4-Dichlorophenol	5	2.78	U	2.78	U	NT	
2,4-Dimethylphenol	50	2.78	U	2.78	U	NT	
2,4-Dinitrophenol	10	2.78	U	2.78	U	NT	
2,4-Dinitrotoluene	5	2.78	U	2.78	U	NT	
2,6-Dinitrotoluene	5	2.78	U	2.78	U	NT	
2-Chloronaphthalene	10	2.78	U	2.78	U	NT	
2-Chlorophenol	1	2.78	U	2.78	U	NT	
2-Methylnaphthalene	~	2.78	U	2.78	U	NT	
2-Methylphenol	1	2.78	U	2.78	U	NT	
2-Nitroaniline	5	2.78	U	2.78	U	NT	
2-Nitrophenol	1	2.78	U	2.78	U	NT	
3- & 4-Methylphenols	~	2.78	U	2.78	U	NT	
3,3'-Dichlorobenzidine	5	2.78	U	2.78	U	NT	
3-Nitroaniline	5	2.78	U	2.78	U	NT	

**Table 1. 2016 Groundwater Sample Analytical Results**  
**Groundwater Sampling Summary Report**  
**Former Safety Kleen Dry Cleaners**  
**Vails Gate, New York**

Sample ID Sampling Date Client Matrix	NYSDEC TOGS Standards and Guidance Values - GA	MW-7 11/10/2016 Water		MW-6 11/10/2016 Water		Trip Blank 11/10/2016 Water	
		Result	Q	Result	Q	Result	Q
4,6-Dinitro-2-methylphenol	~	2.78	U	2.78	U	NT	
4-Bromophenyl phenyl ether	~	2.78	U	2.78	U	NT	
4-Chloro-3-methylphenol	1	2.78	U	2.78	U	NT	
4-Chloroaniline	5	2.78	U	2.78	U	NT	
4-Chlorophenyl phenyl ether	~	2.78	U	2.78	U	NT	
4-Nitroaniline	5	2.78	U	2.78	U	NT	
4-Nitrophenol	1	2.78	U	2.78	U	NT	
Acenaphthene	20	0.056	U	0.056	U	NT	
Acenaphthylene	~	0.056	U	0.056	U	NT	
Acetophenone	~	2.78	U	2.78	U	NT	
Aniline	5	2.78	U	2.78	U	NT	
Anthracene	50	0.056	U	0.056	U	NT	
Atrazine	~	0.56	U	0.56	U	NT	
Benzaldehyde	~	2.78	U	2.78	U	NT	
Benzidine	~	11.10	U	11.10	U	NT	
Benzo(a)anthracene	0.002	0.056	U	0.056	U	NT	
Benzo(a)pyrene	0.002	0.056	U	0.056	U	NT	
Benzo(b)fluoranthene	0.002	0.056	U	0.056	U	NT	
Benzo(g,h,i)perylene	~	0.056	U	0.056	U	NT	
Benzo(k)fluoranthene	0.002	0.056	U	0.056	U	NT	
Benzoic acid	~	27.80	U	27.80	U	NT	
Benzyl alcohol	~	2.78	U	2.78	U	NT	
Benzyl butyl phthalate	50	2.78	U	2.78	U	NT	
Bis(2-chloroethoxy)methane	5	2.78	U	2.78	U	NT	
Bis(2-chloroethyl)ether	1	2.78	U	2.78	U	NT	
Bis(2-chloroisopropyl)ether	5	2.78	U	2.78	U	NT	
Bis(2-ethylhexyl)phthalate	5	0.90	U	0.56	U	NT	
Caprolactam	~	2.78	U	2.78	U	NT	
Carbazole	~	2.78	U	2.78	U	NT	
Chrysene	0.002	0.056	U	0.056	U	NT	
Dibenzo(a,h)anthracene	~	0.056	U	0.056	U	NT	
Dibenzofuran	~	2.78	U	2.78	U	NT	
Diethyl phthalate	50	2.78	U	2.78	U	NT	
Dimethyl phthalate	50	2.78	U	2.78	U	NT	
Di-n-butyl phthalate	50	2.78	U	2.78	U	NT	
Di-n-octyl phthalate	50	2.78	U	2.78	U	NT	
Fluoranthene	50	0.056	U	0.056	U	NT	
Fluorene	50	0.61	U	0.056	U	NT	
Hexachlorobenzene	0.04	0.022	U	0.022	U	NT	
Hexachlorobutadiene	0.5	0.56	U	0.56	U	NT	
Hexachlorocyclopentadiene	5	2.78	U	2.78	U	NT	
Hexachloroethane	5	0.56	U	0.56	U	NT	
Indeno(1,2,3-cd)pyrene	0.002	0.056	U	0.056	U	NT	
Isophorone	50	2.78	U	2.78	U	NT	
Naphthalene	10	0.089	U	0.056	U	NT	
Nitrobenzene	0.4	0.28	U	0.28	U	NT	
N-Nitrosodimethylamine	~	0.56	U	0.56	U	NT	

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**Former Safety Kleen Dry Cleaners**  
**Vails Gate, New York**

Sample ID Sampling Date Client Matrix	NYSDEC TOGS Standards and Guidance Values - GA	MW-7 11/10/2016 Water		MW-6 11/10/2016 Water		Trip Blank 11/10/2016 Water	
		Result	Q	Result	Q	Result	Q
Compound	GA	Result	Q	Result	Q	Result	Q
N-nitroso-di-n-propylamine	~	2.78	U	2.78	U	NT	
N-Nitrosodiphenylamine	50	2.78	U	2.78	U	NT	
Pentachlorophenol	1	0.28	U	0.28	U	NT	
Phenanthrene	50	0.056	U	0.056	U	NT	
Phenol	1	2.78	U	2.78	U	NT	
Pyrene	50	0.056	U	0.056	U	NT	
<b>Metals, Target Analyte</b>	ug/L	ug/L		ug/L			
<b>Dilution Factor</b>		1		1			
Aluminum	~	227,000		917		NT	
Antimony	3	6	U	6	U	NT	
Arsenic	25	68		9		NT	
Barium	1000	1,690		164		NT	
Beryllium	3	10		1	U	NT	
Cadmium	5	19		3	U	NT	
Calcium	~	149,000		138,000		NT	
Chromium	50	418		6	U	NT	
Cobalt	~	155		6	U	NT	
Copper	200	573		18		NT	
Iron	~	258,000		8,860		NT	
Lead	25	905		3	U	NT	
Magnesium	35000	67,300		13,800		NT	
Manganese	300	8,030		966		NT	
Nickel	100	332		6	U	NT	
Potassium	~	28,800		984		NT	
Selenium	10	13		11	U	NT	
Silver	50	6	U	6	U	NT	
Sodium	20000	287,000		20,700		NT	
Thallium	~	6	U	6	U	NT	
Vanadium	~	357		11	U	NT	
Zinc	2000	14,400		26		NT	
<b>Metals, Target Analyte, Dissolved</b>	ug/L	ug/L		ug/L			
<b>Dilution Factor</b>		1		1			
Aluminum	~	56	U	56	U	NT	
Antimony	3	6	U	6	U	NT	
Arsenic	25	4	U	5		NT	
Barium	1000	48		130		NT	
Beryllium	3	1	U	1	U	NT	
Cadmium	5	3	U	3	U	NT	
Calcium	~	64,200		135,000		NT	
Chromium	50	6	U	6	U	NT	
Cobalt	~	6	U	6	U	NT	
Copper	200	29		24		NT	
Iron	~	47		98		NT	
Lead	25	3	U	3	U	NT	
Magnesium	35000	12,000		13,200		NT	
Manganese	300	212		929		NT	
Nickel	100	8		6		NT	

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**Vails Gate, New York**

Sample ID Sampling Date Client Matrix	NYSDEC TOGS Standards and Guidance Values - GA	MW-7 11/10/2016 Water		MW-6 11/10/2016 Water		Trip Blank 11/10/2016 Water	
		Result	Q	Result	Q	Result	Q
Compound							
Potassium	~	3,000		675		NT	
Selenium	10	11	U	11	U	NT	
Silver	50	6	U	6	U	NT	
Sodium	20000	<b>304,000</b>		<b>27,000</b>		NT	
Thallium	~	6	U	7		NT	
Vanadium	~	11	U	11	U	NT	
Zinc	2000	11	U	11	U	NT	
<b>Mercury by 7473</b>	ug/L	ug/L		ug/L			
<b>Dilution Factor</b>		1		1			
Mercury	0.7	0.20	U	0.20	U	NT	
<b>Mercury by 7473, Dissolved</b>	ug/L	ug/L		ug/L			
<b>Dilution Factor</b>		1		1			
Mercury	0.7	0.20	U	0.20	U	NT	
<b>Chemical Oxygen Demand (COD)</b>		ug/L		ug/L			
<b>Dilution Factor</b>		1		1			
Chemical Oxygen Demand (COD)	~	67,000		49,000		NT	

**NOTES:**

ug/L = micrograms per liter

Any Regulatory Exceedences are bold and shaded

**Q is the Qualifier Column with definitions as follows:**

D=result is from an analysis that required a dilution

J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated

U=analyte not detected at or above the level indicated

B=analyte found in the analysis batch blank

NT=this indicates the analyte was not a target for this sample

~=this indicates that no regulatory limit has been established for this analyte

