

## FRANKLIN CLEANERS GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

Latitude 40.688°, Longitude 73.627°

### REPORT TITLE

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### CLIENT

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## NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation

625 Broadway, 12th Floor, Albany, New York 12233

### Site

**NYSDEC Site No. 130050**, Franklin Cleaners Site Groundwater Extraction and Treatment System Village of Rockville Centre, Town of Hempstead, Nassau County, New York



### Project Background and Site Description

The Franklin Cleaners groundwater extraction and treatment system (GWE&TS) was installed to recover and treat the “leading edge” of a chlorinated solvent-contaminated groundwater plume emanating from the former Franklin Cleaners dry cleaner site, located approximately one mile upgradient of the GWE&TS, in the Village of Hempstead, Nassau County, New York. The groundwater plume is primarily composed of tetrachloroethene (PCE). The Franklin Cleaners GWE&TS was put into operation in September 2004. Refer to [Figure 1](#) for a site location map depicting the treatment system location.

### Groundwater Extraction and Treatment System Overview



The GWE&TS consists of two 6-inch diameter wells screened approximately 75 to 90 feet below grade. Extracted groundwater is conveyed via underground piping to a low-profile stacked-tray air stripper located in the GWE&TS building. The treated groundwater is discharged from the air stripper to a wet well equipped with two series-configured submersible pumps, which convey the treated water via underground piping to a Nassau County Department of Public Works storm sewer manhole in accordance with all applicable discharge standards. Exhaust gas from the air stripper was treated utilizing two series-configured granular activated carbon (GAC) vessels; however, based on historic low contaminant concentrations detected in the air stripper exhaust gas, the air stripper exhaust piping was reconfigured to bypass the GAC vessels and

discharge exhaust gas directly to the atmosphere in June 2011, per the direction of the NYSDEC. The GWE&TS is equipped with instrumentation and controls which allow for automated startup and operation, and an auto dial alarm notification system. Refer to [Figure 2](#) for an “as-built” treatment system layout diagram. In accordance with recommendations in Site Management Quarterly Reports and the 2016 Periodic Review Report for the site the NYSDEC directed that the GWE&TS be shutdown in July 2017 to evaluate if continued operation of the GWE&TS is necessary. Refer to [Attachment A](#) for a memorandum regarding the prolonged system shutdown.

### Regulatory Requirements/Cleanup Goals

Site-specific remedial goals have been established through the remedy selection process as defined in 6 NYCRR Part 375-1.10, and are documented in the Record of Decision (ROD), dated March 1998. The site-specific remedial goals outlined in the March 1998 ROD are provided in [Attachment B](#). The overall goal is to meet all appropriate Standards, Criteria, and Guidance (SCGs) and to be protective of human health and the environment. Implementation of the GWE&TS is specifically focused on the following goals:



- Reduce, control, or eliminate contaminated media to the extent practicable.
- Eliminate the potential for exposure to contaminated groundwater.
- Provide for attainment of SCGs for groundwater, soil and indoor air within the limits of the affected area, to the extent practical.

### ***Treatment System Operational Status***

In accordance with recommendations in Site Management Quarterly Reports and the 2016 Periodic Review Report for the site, the NYSDEC directed that the GWE&TS be shutdown in July 2017 to evaluate if continued operation of the GWE&TS is necessary. Refer to [Attachment A](#) for a memorandum regarding the prolonged system shutdown.

### ***Treatment System Operation and Maintenance***

As the GWE&TS has been shutdown since July 17, 2017, to evaluate if continued operation of the GWE&TS is necessary, routine maintenance activities were not completed during this reporting period. Refer to [Attachment C](#) for site activities logs.

#### ***Non-Routine Maintenance***

On July 2, 2019, the NYSDEC Remedial Services Contractor was on-site to complete routine groundwater sampling. The technician on-site attempted to collect samples from extraction wells EW-1 and EW-2; however, was unsuccessful in restarting the GWE&TS. The NYSDEC Remedial Services Contractor returned to the Site on July 3, 2019 to complete groundwater sampling and attempt to collect extraction well samples from EW-1 and EW-2 again. Upon the technicians second attempt to restart the GWE&TS a ground fault error was displayed at each variable frequency drive (VFD). The NYSDEC Remedial Services Contractor returned on July 24, 2019, with the call-out electrician to complete troubleshooting activities and collect the extraction well samples.

#### ***Facility Maintenance***

Groundskeeping activities were completed on June 6 and 18, 2019, July 1, 16 and 30, 2019, and August 14 and 29, 2019 of this reporting period.

### ***Monitoring Summary***

As per the NYSDEC-approved sampling frequency, seven groundwater monitoring wells (ASMW-1 through ASMW-7) were sampled during this reporting period on July 2 and 3, 2019 and two extraction wells (EW-1 and EW-2) on July 24, 2019. These wells were sampled to determine groundwater quality at and in the vicinity of the leading edge of the groundwater contaminant plume associated with the Site. Groundwater samples were collected from three groundwater monitoring wells (ASMW-1 through ASMW-3) and two extraction wells (EW-1 and EW-2) located in close proximity to the leading edge of the Franklin Cleaners plume and four groundwater monitoring wells located downgradient of the leading edge of the plume (ASMW-4 through ASMW-7). In addition to being analyzed for volatile organic compounds, groundwater samples from these wells were also analyzed for 1,4 dioxane by USEPA method 8270 SIM and the 21 NYSDEC polyfluorinated alkyl substances (PFAS) by modified USEPA method 537. Refer to [Attachment D](#) for analytical data results.

Note that groundwater monitoring well ASMW-4 acts as an early warning or “sentinel” well for a cluster of Village of Rockville Centre public supply wells located downgradient of the treatment system building. The locations of the groundwater monitoring wells are depicted on [Figure 3](#).

#### ***Groundwater Monitoring Well Condition Summary:***

All groundwater monitoring wells were located as indicated on the site map and the concrete well pads (where applicable), protective casings, surface seals, well IDs, PVC well risers, well plugs and locks were observed to be present and in good condition, with the exception of the following:



- ASMW-1 was observed to be missing 3 bolts.
- ASMW-2 was observed to have stripped threads at the manhole tabs.
- ASMW-4 was observed to have a small crack in the manhole.
- ASMW-7 was observed to have a crack in the well cover.

Field inspection logs for groundwater monitoring wells assessed during this period are provided in [Attachment E](#). It should be noted that groundwater samples from extraction wells EW-1 and EW-2 are collected from sample taps located within the GWE&TS building; therefore, field inspection logs are not completed for these wells.

### Groundwater Monitoring Results Summary:

A headspace reading was collected at each of the sampled groundwater monitoring wells immediately after the removal of the well plugs utilizing a PID. VOC concentrations within the headspace of all monitoring wells were non-detect.

Below is a detailed summary of PCE concentrations in site groundwater. Refer to [Attachment D](#) for analytical data results. A figure depicting the current PCE concentrations in groundwater is provided as [Figure 4](#).

### Groundwater Monitoring Wells - PCE Concentrations

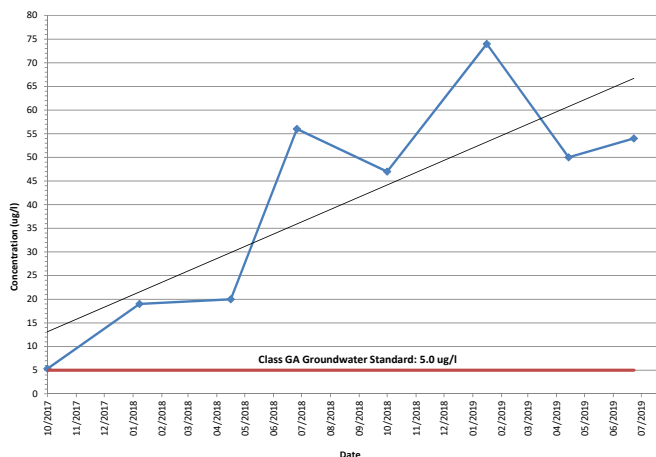
	Leading Edge Monitoring Wells			Sentinel Monitoring Wells				Extraction Wells		Class GA Groundwater Standard
Monitoring Well	ASMW-1	ASMW-2	ASMW-3	ASMW-4	ASMW-5	ASMW-6	ASMW-7	EW-1	EW-2	
Current Reporting Period	54 ug/l	15 ug/l	ND	ND	ND	ND	ND	1.1 ug/l	18 ug/l	5.0 ug/l
Previous Reporting Period	50 ug/l	15 ug/l	ND	ND	ND	ND	ND	1.4 ug/l	18 ug/l	5.0 ug/l
PCE Trend Analysis Since System Shutdown, July 2017 <sup>(1)</sup>	Increasing	Increasing	Stable	Stable	Stable	Stable	Stable	Stable	Decreasing	

ND: Constituent concentration below the analytical detection limit.

Red font denotes an exceedances of the Class GA Groundwater Standard.

1. Trend analysis is calculated based on an increase or decrease of 5.0 ug/l since the system shutdown in July 2017.

Monitoring Well ASMW-1 PCE Concentration Trend Line



Extraction Well EW-2 PCE Concentration Trend Line



Site-specific PCE concentrations in wells sampled during this reporting period were generally lower, or consistent with those detected during the previous reporting period, with the exception of ASMW-2, which was slightly higher than previous reporting periods. PCE was detected in excess of the Class GA Standard values of 5.0 ug/l in two of the seven groundwater monitoring wells and one extraction well sampled. PCE was detected in excess of the Class GA Standard value in ASMW-1,



ASMW-2 and EW-2 at concentrations of 54 ug/l, 15 ug/l and 18 ug/l, respectively. In ASMW-1 concentrations of PCE have been increasing since the system shutdown in July 2017 with a minimum detection of 5.3 ug/l in October 2017 and maximum detection of 74 ug/l in January 2019. PCE concentrations in ASMW-2 have exhibited a low of 0.53 ug/l in July 2017, and a high of 15 ug/l in April and July 2019. Concentrations in ASMW-2 have exhibited an increasing trend since the system shutdown. PCE concentrations in extraction well EW-2 have shown a decreasing trend since the system shutdown, ranging from a high of 110 ug/l in July 2017 to a low of 18 ug/l in April and July 2019. Additionally, within monitoring wells ASMW-3 through ASMW-7 and extraction well EW-1, PCE has been detected at concentrations below the Class GA Standard of 5.0 ug/l since the system shutdown and concentrations of PCE in groundwater monitoring wells ASMW-3 through ASMW-7 and extraction well EW-1, have been stable over this same period. Refer to [Attachment D](#) for analytical data results.

#### **Data Validation:**

All sample results have been reviewed by D&B and deemed valid and usable for environmental assessment purposes. Based on D&B's review, qualification of the data was necessary for the following analysis:

##### Groundwater Sampling:

- The percent recoveries (%Rs) were above the quality control (QC) limits for 1,1,1-trichloroethane, 2-butanone (MEK), 2-hexanone, 4-methyl-2-pentanone (MIBK), bromoform, chlorobromomethane, chlorodibromomethane, chloroform, dichlorobromomethane and 1,2-dichloroethane in the matrix spike (MS) and/or the matrix spike duplicate (MSD) collected on July 2, 2019 and July 3, 2019. The relative percent differences (RPDs) were above the QC limits for 1,2-dichloropropane, 2-butanone (MEK), 2-hexanone, 4-methyl- 2-pentanone (MIBK) and o-xylene in the MS/MSD; however, they were not detected so qualification of the data was not necessary.
- The %Rs were below the QC limits for 1,1,2,2-tetrachloroethane, benzene, carbon disulfide, ethylbenzene, isopropylbenzene, methylcyclohexane, m-xylene & p-xylene and o-xylene in the MSD collected on July 2, 2019 and July 3, 2019. As such, these compounds were qualified as an estimated detection limit (UJ) in all samples.
- The %R was below the QC limit for trans-1,3-Dichloropropene in the MSD and was qualified as an estimated detection limit (UJ) in samples collected on July 24, 2019 from extraction wells EW-1 and EW-2.
- Perfluorobutanesulfonic acid (PFBS) and perfluorohexanesulfonic acid (PFHxS) were detected in the method blank. These compounds were detected at concentrations much higher than the method blank and the "B" was removed from the compounds for all samples collected on July 2, 2019.

All analytical data have been submitted to the NYSDEC in the required EQulS format upon receipt of the data from the NYSDEC Remedial Services Contractor. Data Validation Checklists are presented in [Attachment F](#).

#### **Findings and Recommendations**

##### **Findings:**

- General: In accordance with recommendations for the Site the NYSDEC directed that the GWE&TS be shutdown in July 2017, to evaluate if continued operation of the GWE&TS is necessary.
- Facility maintenance was completed on seven occasions during this reporting period.
- Groundwater Monitoring Well Inspection/Sampling Summary:
  - All of the sampled groundwater monitoring wells were found to be accessible during the groundwater monitoring/sampling event conducted on July 2, 2019, July 3, 2019 and July 24, 2019. All groundwater monitoring wells were located as indicated on the site map and the concrete well pads (where applicable), protective casings, surface seals, well IDs, PVC well risers, well plugs and locks were observed to be present and in good condition, with the exception of the following: ASMW-1 was missing three bolts for the surface cover, ASMW-2 was observed to have stripped threads at the manhole tabs, ASMW-4 was observed to have a crack in the manhole and the well cover for ASMW-7 is cracked.







- Monitoring Well PCE Exceedances: PCE was detected at concentrations of 54 ug/l, 15 ug/l and 18 ug/l in groundwater samples collected from ASMW-1, ASMW-2, and EW-2, respectively, exceeding the Class GA Standard of 5.0 ug/l. PCE concentrations in ASMW-1 have been increasing since the system shutdown (ranging from a minimum of 5.3 ug/l in October 2017, to a maximum of 74 ug/l, detected in January 2019); and overall, have exhibited an increasing trend. The PCE concentrations in ASMW-2 have exhibited a low of 0.53 ug/l in July 2017 and a high of 15 ug/l in April and July 2019. The concentrations in ASMW-2 have exhibited an increasing trend since the system shutdown. Concentrations of PCE within extraction well EW-2 have been slightly irregular over the last 2 year period (ranging from a minimum of 18 ug/l in April 2019, to a maximum of 110 ug/l, detected in July 2017); overall, the well exhibits a decreasing trend since the system shutdown. Additionally, within monitoring wells ASMW-3 through ASMW-7 and extraction well EW-1, concentrations of PCE have been detected below the Class GA Standard of 5.0 ug/l since the system shut down, as such concentrations of PCE have been stable since the system shut down.

### **Recommendations:**

- General Treatment System:
  - Though there has been an increasing trend of PCE concentration in monitoring wells ASMW-1 and ASMW-2, concentrations in groundwater do not warrant turning on the system. Therefore, it is recommended that the GWE&TS continue to be shutdown to monitor the effect on contaminant concentrations within the existing monitoring well network located in the vicinity and downgradient of the GWE&TS. To assist in this evaluation it is further recommended that all wells continue to be sampled on a quarterly basis (EW-1, EW-2 and ASMW-1 through ASMW-7).
  - D&B recommends that the NYSDEC Remedial Services Contractor collect the required QA/QC samples as part of routine groundwater sampling.
  - D&B recommends that the NYSDEC Remedial Services Contractor record clear and detailed descriptions of completed field activities and issues encountered with photographs.
  - D&B recommends that groundskeeping activities are performed on a bi-weekly basis during the growing season per the Memorandum on the prolonged system shutdown ([Attachment A](#)).
  - D&B recommends that the bolts to ASMW-1 be replaced and that the well cover for ASMW-7 be replaced. Further, to protect ASMW-7 from future damage, D&B recommends that bollards are to be installed around the surface of the well. No repairs are recommended for ASMW-2 and ASMW-4 at this time.

### **Reclassification/Delisting Evaluation**

The Site was originally listed as a Class 2 Inactive Hazardous Waste Site by the NYSDEC on June 17, 1993. Since this time, completion of the following project phases has occurred, as summarized below:

<b><i>Project Phases and Completion Dates</i></b>	
<b><i>Project Phase</i></b>	<b><i>Completion Date</i></b>
<b>Remedial Investigation</b>	03/1998
<b>Remedial Design</b>	02/2001
<b>Groundwater Extraction and Treatment System Construction</b>	07/2003 <sup>(2)</sup>
<b>Remedial Action (Source Area Remediation)</b>	03/2007 <sup>(1)</sup>

- Source area contaminated soil and groundwater were remediated with the Air Sparge/Soil Vapor Extraction (AS/SVE) system beginning in September 2003. The on-site AS/SVE system has successfully removed the contaminants from the vadose zone and greatly diminished groundwater contaminants to below detectable limits. Although confirmation soil samples met the required remedial goals, a subslab depressurization system replaced the on-site AS/SVE system in 2006 due to the detection of elevated vapor phase VOC concentrations in the basement level and below the basement floor slab.
- Construction of the GWE&TS was completed in July 2003. The GWE&TS was placed into routine operation in September 2004 and currently continues to meet remedial objectives as originally designed.




Given the above, NYSDEC reclassified the Franklin Cleaners GWE&TS Site on December 11, 2012, pursuant to the requirements identified in 6 NYCRR §375-2.7, as a Class 4 Site since the NYSDEC determined that the site no longer presents a significant threat to public health and/or the environment based on remedial efforts performed to date and implementation of the July 2012 Site Management Plan (SMP). In addition, the NYSDEC has implemented a post-remedial indoor air study within the source area structures/buildings to verify current site conditions. Site delisting is not feasible at this time, as all remediation and post-remediation activities have not been satisfactorily completed.

**Report Certification:**

I have personally examined and am familiar with the information submitted in the referenced report. To the best of my knowledge and belief, and based upon my inquiry of those individuals immediately responsible for obtaining the information reported therein, I certify that the submitted information is true, accurate, and complete.

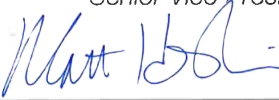
**Project Director:**

  
\_\_\_\_\_  
**Richard M. Walka**

*Senior Vice President*

11.6.19  
**Date**

**Project Manager:**

  
\_\_\_\_\_  
**Matthew Hoskins, P.G.**

**Matthew Hoskins, P.G.**

*Project Manager*

11/6/2019  
**Date**