THIRD FIVE-YEAR REVIEW REPORT
GENZALE PLATING SUPERFUND SITE
NASSAU COUNTY, NEW YORK

Prepared by

U.S. Environmental Protection Agency
Region 2
New York, New York

Evangelista, Pat
Digitally signed by Evangelista, Pat
Date: 2020.06.30 13:57:19 -04'00'

Pat Evangelista, Director
Superfund and Emergency Management Division

See Signature Block

Date

598777

TABLE OF CONTENTS

LIST OF ABBREVIATIONS & ACRONYMS

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FYR	Five-Year Review
gpm	gallons per minute
GPC	Genzale Plating Company
ICs	Institutional Controls
IRIS	Integrated Risk Information System
MW	Monitoring Well
NCDH	Nassau County Department of Health
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
OU	Operable Unit
PCE	Tetrachloroethene
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
PWS	Public Water Supply
RAO	Remedial Action Objectives
RI/FS	Remedial Investigation and Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SVE	Soil Vapor Extraction
TCE	Trichloroethene
UU/UE	Unlimited Use and Unrestricted Exposure
VOC	Volatile Organic Contaminants

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 CFR Section 300.430(f)(4)(ii)) and considering EPA policy.

This is the third FYR for the Genzale Plating Superfund Site (Site) located in Franklin Square, New York. The triggering action for this statutory review is the completion of the previous FYR, dated September 30, 2015. This FYR has been prepared because hazardous substances, pollutants or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of two Operable Units (OUs). OU1 will be addressed in this FYR. OU1 addresses the on-site contamination at the site and OU2 addressed the off-site migration of site-related contamination at the site. The OU2 portion of the Site was addressed by a 1995 Record of Decision which stated that there would be no further action required to address off-site migration of site-related contamination.

The Genzale Plating Site FYR was led by Kevin Willis (remedial project manager). Participants included Marian Olsen (human health risk assessor), Nick Mazziotta (ecological risk assessor), Cecilia Echols (community involvement coordinator), and Liana Agrios (hydrogeologist). The review began on October 30, 2019.

Site Background

The 0.6-acre Site was a former metal-plating facility, Genzale Plating Company, Inc. (GPC), which included an attached two-story office building and an undeveloped backyard area which served as a parking lot and storage area. Beginning in 1915 and operating through 2000, the facility electroplated small products, such as automobile antennas, ball point pens and bottle openers, and is known to have discharged wastewater containing heavy metals, as well as organic contaminants, into four sub-surface leaching pits at the rear of the facility. These releases resulted in the contamination of the shallow Upper Glacial Aquifer (UGA).

There are three aquifers that exist beneath the Site. The UGA overlies the Magothy Aquifer, which, in turn, overlies the Lloyd Aquifer. The Franklin Square Water District (FSWD) provides drinking water from public water supply (PWS) wells which draw water from the Magothy Aquifer and are located within approximately one mile and are not impacted by the site. In the immediate area of the GPC site, groundwater generally flows in a south-southwesterly direction.

The predominant land use in the Site vicinity is residential, but the Site property is zoned commercial. The GPC ceased operations in 2000, and the facility building was subsequently demolished.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Genzale Plating Superfund Site		
EPA ID: NYD980651087		
Region: 2	**State:** NY	**City/County:** Franklin Square/Nassau

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: EPA ***[If "Other Federal Agency", enter Agency name]*:**
Author name (Federal or State Project Manager): Kevin Willis
Author affiliation: EPA
Review period: 9/30/2015 - 3/11/2020
Date of site inspection: February 6, 2020
Type of review: Statutory
Review number: 3
Triggering action date: 9/30/2015
Due date *(five years after triggering action date)*: 9/30/2020

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

Although the facility was connected to the municipal sewer system in 1955, a 1981 Nassau County Department of Health (NCDH) inspection found that industrial wastewater continued to be discharged into the on-site leaching pits. The company was ordered by NCDH to cease the discharge and began, but never completed, the excavation of sludge and contaminated soils from the pits. The New York State Department of Environmental Conservation (NYSDEC) conducted an investigation of the Site in 1983 to determine the potential threat to public health posed by

potential off-site migration of contaminants into the groundwater. As a result of this investigation, the Site was added to the National Priorities List on July 22, 1987.

EPA subsequently conducted a Remedial Investigation and Feasibility Study (RI/FS). Based on the evaluations presented in the risk assessment of the RI, the chemicals of concern (COCs) were identified for the Site soils and groundwater. The COCs are contaminants determined to pose an unacceptable risk to human health and the environment. EPA's baseline risk assessment indicated that the most significant public health risk results from the ingestion of groundwater, inhalation of groundwater volatiles (*i.e.*, while showering), and direct contact and ingestion of soils.

The COCs found in the Site soils were determined to be cadmium, chromium, nickel, barium, lead, copper, arsenic, trichloroethene, bis (2-ethyl-hexyl) phthalate, and chrysene. The COCs in the groundwater were trichloroethene, 1,1,1-trichloroethane, 1,1-dichloroethene, tetrachloroethene, cadmium, chromium, copper, lead, and nickel. All these contaminants were detected above their respective maximum contaminant levels (MCLs).

Response Actions

In 1988, EPA's RI/FS indicated that groundwater and leaching pits located behind the facility were contaminated with both inorganic and organic contaminants.

OU1

The remedial action objectives (RAOs) for the OU1 ROD were to reduce the concentrations of contaminants in the on-site soils to levels which are protective of human health and the environment, to reduce the concentrations of contaminated groundwater underlying the facility in order to reduce the risk associated with the contaminants and to prevent further deterioration of the area groundwater.

In March 1991, EPA selected a remedy for the on-site soil and groundwater. The selected remedy included:

- Soil vapor extraction to address organic contaminants in subsurface soils;
- Excavation of surface soils and leaching pits. Volume of soils to be excavated will be determined during the design;
- Extraction, treatment and reinjection of contaminated groundwater; and
- Investigate and determine the need for groundwater response actions downgradient of the site.

The on-site groundwater portion of the OU1 remedy was considered an interim action so a second operable unit for the Site (discussed below) was developed to determine whether the off-property groundwater warranted remediation and to establish final cleanup goals for the groundwater.

In July 2004, EPA issued an Explanation of Significant Differences (ESD) in order to address the excavation and off-site disposal of a buried production well that was discovered during the excavation of the Site soils. In addition, the ESD also noted that 'institutional controls may need to be established to ensure that soil contamination left at the site, if any remains, is undisturbed and inaccessible."

OU2

The on-site groundwater portion of the OU1 remedy was considered an interim action. In order to complete the groundwater investigation, a second operable unit for the Site (OU2) was developed to determine whether the off-property groundwater warranted remediation and to establish final cleanup goals for the overall groundwater.

The RAO for OU2 was to address the downgradient groundwater contamination attributable to the Site. The overall goal of remediation was to reduce the concentrations of contaminants to levels which are protective of human health and the environment.

The selected remedy of the September 1995 ROD for the downgradient groundwater plume was as follows:

- No Further Action – the downgradient groundwater contamination is limited and does not pose a significant threat to human health or the environment, and, therefore, remediation is not appropriate.

2017 ESD for OU1 and OU2

In March 2017, EPA issued an ESD to clarify and to document clearly that the final groundwater remedy for the Site is a groundwater restoration remedy which established numerical cleanup levels for the remaining contaminants of concern (COCs) in the groundwater at the Site.

Status of Implementation

The soils in the rear portion of the facility property were addressed by treatment by soil vapor extraction (SVE) technology for the VOCs, followed by excavation and off-site treatment and disposal of those soils contaminated with metals. In May 1996, the SVE unit completed operation when confirmatory soil sampling established that the soils had reached cleanup levels of 1 mg/kg for the VOCs. Subsequently, the SVE unit was shut down and dismantled.

From August until Fall 1997, contaminated soils from the leaching pits were excavated from the property. Approximately 1,100 tons of hazardous and 4,425 tons of nonhazardous soils were excavated and shipped off-site for disposal. Subsequently, EPA installed five new monitoring wells to sample the aquifer beneath the property to analyze the groundwater response to the SVE remedy. Sampling of the new monitoring wells revealed that some residual contaminant levels warranted the construction and operation of the groundwater extraction and treatment (GWET) system, selected in the 1991 ROD.

In May 2000, the GPC facility ceased operations. During June 2000, the GPC completed the decommissioning of the operational part of the Site; all wastes generated during the decommissioning were disposed of off-site.

Subsequently, limited sampling of the soil and groundwater underlying the vacated plant building indicated concentrations of contaminants in soil of total chromium up to 82,000 ppm, hexavalent chromium up to 28,100 ppm and PCE up to 16 ppm. As a result, in September 2002,

EPA conducted a time-critical removal action which included the installation of an SVE system to reduce the concentrations of VOCs within the soils on the site property and adjacent homes.

In 2003, EPA conducted vapor intrusion (VI) (subslab and indoor air) sampling at the Site and at surrounding residences. Based on the results of the sampling, three homes were provided with stand-alone indoor air treatment units to address VI concerns. The SVE system that was installed at the Site was found to be effective in removing the VOC-contamination which had migrated into the adjacent homes. The SVE and home treatment systems were operated until February 2005 when the process building was demolished and the underlying soils were excavated and disposed off-site.

During this period of soil excavation, a buried production well was identified behind the former process building. In February 2005, EPA removed the well and the remaining building foundation. During this excavation, a drywell filled with plating wastes and another similar vessel was also discovered under the process building. All wastes were excavated, treated and disposed of off-site.

From July through September 2005, EPA completed construction of the on-property GWET system, designed with ion-exchange technology in order to address the heavy metals contamination in groundwater. While the groundwater treatment system was in operation, the COCs were reduced to a point where the system treatment was modified to utilize specialized carbon with subsequent discharge of treated effluent to the sanitary sewer.

In Spring of 2015, in order to expedite groundwater restoration, EPA initiated a pilot study which called for the injection of a proprietary reducing agent (ABC+), including the reinjection of low pH water, at certain locations in order to immobilize residual metals contamination. These injections were conducted in the former source area near MW-3S and MW-15S. Approximately 5,500 gallons of ABC+ were injected at eleven locations.

In June 2015, EPA performed early post-injection groundwater sampling which showed a substantial reduction in chromium and nickel concentrations in monitoring wells MW-3S and MW-6S to 12 parts per billion (ppb) and 70 ppb for total chromium and 94 ppb and non-detect for nickel, respectively.

In September 2016, a second round of injections was performed. At this time, EPA transferred the Site Operation and Maintenance (O&M) responsibilities to NYSDEC. NYSDEC decided to continue the stabilization injection pilot study.

Recent sampling performed by NYSDEC has shown that the ABC+ injections are effective in remediating the recalcitrant Site contamination. Specifically, the November 2019 sampling round showed that the COCs have rebounded to far lesser concentrations than observed before the pilot study had begun.

Since the initial pilot study results have suggested that the injections were effective in reducing the COCs, NYSDEC and EPA have agreed that an additional set of injections of ABC+ is warranted. NYSDEC will perform that effort in Summer 2020. NYSDEC has secured access to that part of the property where the injection wells and the associated monitoring wells are located. Once the next round of injections is allowed to act on the recalcitrant metals contamination, the Site groundwater will then be resampled. Subsequently, the groundwater data

will be evaluated when the overall effectiveness of the injection pilot study can be determined. NYSDEC will provide EPA with the full report of the stabilization injection findings. EPA expects that this continued series of stabilizer injections will ensure that the residual chromium and nickel in the saturated soils will no longer partition to the groundwater.

Once EPA has reviewed NYSDEC's evaluation report on the pilot study, the Agencies expect to address the continued operation of the GWET system, which has been inactive since the Site transfer.

Institutional Controls (ICs) Summary Table

Table A: Summary of Planned and/or Implemented ICs:

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Soil	Yes	Yes	Entire site	Future excavation at the site is limited to a depth of less than 15 feet below the existing ground surface, and which prevents disturbance of the remaining portions of the facility foundation	Deed Notice – June 2011
Groundwater	Yes	No	Entire site	NYSDEC prohibits new groundwater potable wells from being installed in Nassau County	New York Sanitary Code (Title 10 of the New York Code of Rules and Regulations Section 5-2.4)

Systems Operations/Operation & Maintenance

EPA operated the on-property GWET system for 10 years until the Agency transferred the O&M for the Site to NYSDEC in 2016. The GWET system operations are currently suspended for the duration of the pilot study. NYSDEC continues to evaluate the stabilization injection effort and to sample the groundwater at the Site on a regular basis.

Potential Site impacts from climate change have been assessed, and the performance of the remedy is currently not at risk due to the expected effects of climate change in the region and near the Site.

III. PROGRESS SINCE THE LAST REVIEW

At the time of the last FYR, EPA was in the process of transferring the O&M of the GWET system to the NYSDEC. Once transferred, the GWET system was turned off while the

stabilization injections were continuing to act on the residual contamination. This shutdown was performed to be able to observe the efficacy of the injections.

After evaluating the two rounds of groundwater sampling performed in April 2017 and November 2019, it was determined that another round of stabilizer injection is warranted. The analysis determined that the injections were an effective and more cost-efficient method to remediate the recalcitrant contamination at the Site. At this point, the groundwater contamination is limited to metals in a few wells. The GWET system equipment will remain in place until after EPA evaluates the additional pilot study findings and determines whether the Site remedy should be modified to provide for additional injections or other measures which would obviate the need for the GWET.

Table B: Protectiveness Determinations/Statements from the 2015 FYR

OU #	Protectiveness Determination	Protectiveness Statement
Sitewide	Protective	The remedy at the Genzale Plating Company site is protective of human health and the environment.

There were no issues and recommendations identified in the previous FYR.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On October 1, 2019, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at Superfund sites in New York, New Jersey, Puerto Rico and the U.S. Virgin Islands including the Genzale Plating site. The announcement can be found at the following web address: https://www.epa.gov/aboutepa/fiscal-year-2020-five-year-reviews. In addition to this notification, a public notice was made available on the Site's web page (https://www.epa.gov/superfund/genzale-plating) on January 14, 2020, stating that a FYR was in process and inviting the public to submit any comments to EPA. The results of the review and the report will be made available at the above-referenced webpage. The Site information repository located at Franklin Square Public Library, 19 Lincoln Road, Franklin Square, NY 11010 and the U.S. EPA Region 2 office at 290 Broadway, 18th Floor, New York, New York.

Data Review

Groundwater Monitoring

Metals

The federal and New York State drinking water standard for total chromium in drinking water is 100 ppb; the standard for hexavalent chromium is 50 ppb. There is no federal drinking water standard for nickel, but the New York State drinking water standard for nickel is 100 ppb.

During the two sampling events performed during this FYR period, detectable concentrations of hexavalent chromium, total chromium and/or nickel were recorded at wells MW-3S and MW-

15S (former source area wells), MW-17S, MW-18S, and MW-19S. Within this subset of wells, concentrations of hexavalent chromium exceeded the regulatory standard in two wells (MW-3S and MW-18S), concentrations of total chromium exceeded the standard in two wells (MW-17S and MW-18S), and concentrations of nickel exceeded its standard in one well (MW-18S).

In 2015, during the previous FYR period, after the application of a reducing agent ABC+, recorded concentrations of hexavalent chromium, total chromium and nickel concentrations were below standards in these monitoring wells.

Figures 2 and 3 present the historic and current concentrations of hexavalent chromium and total chromium in monitoring wells: MW-3S, MW-15S and MW-18S. Also, Figure 4 presents the historic and current concentrations of nickel in these monitoring wells. During this FYR period, some wells have showed a rebound in these metal concentrations. In the April 2017 sampling event, concentrations of hexavalent chromium were non-detectable in all samples. Total chromium was observed at the highest concentration in MW-18S at 7.9 ppb; the highest nickel concentration was also observed at MW-18S at 11.9 ppb.

A review of the 2019 total chromium data set has revealed that there may be some quality assurance issues suggesting that these data should be used qualitatively only. MW-18S had recorded results of hexavalent chromium (402 ppb), total chromium (411 ppb), and nickel (168 ppb), which was the only well in this sampling event where the total chromium and hexavalent chromium values were deemed acceptable. The highest level of hexavalent chromium (868 ppb) was in MW-15S but the total chromium values for this well did not pass validation. This increase of metals was generally observed at all sampled monitoring wells and indicated a limited rebound of contaminant concentrations. Please note that the 2019 values for total chromium and hexavalent chromium in Figure 2 and Figure 3 are approximate.

The levels shown above indicate that some rebounding is occurring after the injections, but it does appear that the COCs are rebounding less after each treatment. Hence, continuation of these injections should effectively treat and reduce the Site COCs permanently. Until such time as the ABC+ injections attain the Site's remediation goals or an amendment to the ROD indicates that the GWET component of the Site remedy should be replaced with another means of restoring the aquifer, the suspended GWET system will remain intact.

Despite rebounding concentrations in some wells, the extent of the remaining metals contamination at the Site is limited to a few wells. Additionally, concentrations are significantly lower than they have been historically (as shown in Figures 2 – 4). Further evaluation of decreasing trends following the next round of injections will provide valuable information about the long-term efficacy of the amendment injection.

VOCs

During this FYR period, detectable concentrations of VOCs were recorded in wells MW-3S, MW-15S, MW-17S, MW-18S, and MW-19S. Within this subset of wells, concentrations of TCE exceeded the standard in two wells (MW-15S and MW-18S) in the vicinity of the former source area of the Genzale Plating facility.

Historically, concentrations of VOCs were recorded above standards in the vicinity of the former source area. During this FYR period, MW-3S showed a decrease in concentrations of 1,1,1-TCA

and TCE to below the standard of 5 ppb (Figure 4). MW-15S showed a decrease in concentrations of 1,1,1-TCA and TCE. However, MW-15S showed a TCE concentration of 13 ppb in April 2017 but decreased to below the standard in September 2019 (Figure 6). MW-18S showed an exceedance of TCE in April 2017 at 11 ppb but concentrations decreased to non-detect in September 2019 (Figure 7).

Emerging Contaminants

In August 2019, as part of a New York State-led sampling program, wells MW-3S and MW-15S (located in the former source area) were sampled for previously uncharacterized contaminants, including 1,4-dioxane and per- and poly-fluoroalkyl substances (PFAS).

In 2019, the New York State Drinking Water Council (NYSDWC) proposed a maximum contaminant limit (MCL) of 1.0 ppb for 1,4-dioxane. 1,4-dioxane was detected in MW-3S at a concentration of 0.38 ppb and in MW-15S at a concentration of 0.50 ppb. Both wells showed 1,4-dioxane below the proposed limit.

In 2019, the NYSDWC proposed an MCL of 10 parts per trillion (ppt) for PFOA and 10 ppt for PFOS. In well MW-3S, PFOA and PFOS were detected at concentrations of 16.90 ppt and 9.18 ppt, respectively. In well MW-15S, PFOA and PFOS were detected at concentrations of 47.40 ppt and 24.10 ppt, respectively. The EPA Health Advisory (HA) level is 0.070 ppb for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), individually and combined, was not exceeded; however, the screening value of 0.040 ppb from the December 19, 2019 "Interim Recommendations to Address Groundwater Contaminated with Perfluorooctanoic Acid and Perfluorooctanesulfonate (OLEM Directive No 9283.1-47)," was exceeded. The State of New York is in the process of finalizing MCLs for 1,4-dioxane, PFOA and PFOS. EPA will continue to work with NYSDEC to determine whether further sampling at the Site is necessary.

Site Inspection

On February 6, 2020, EPA conducted a Site inspection. In attendance were Kevin Willis of EPA, Steven Scharf of NYSDEC and Jennifer Lawrence of Environmental Assessment & Remediations, consultant for NYSDEC.

The purpose of the inspection was to assess the protectiveness of the remedy and to discuss the potential decommissioning of the GWET system. The inspection team observed that the entire property continues to house a variety of construction equipment and that the area where the injection wells are located still has temporary fencing around them.

V. TECHNICAL ASSESSMENT

QUESTION A: *Is the remedy functioning as intended by the decision documents?*

The ROD, as modified by the 2004 ESD called for, among other actions, SVE, excavation of soils, and extraction and treatment of contaminated groundwater. The property is zoned commercial. The removal of the majority of contaminated building materials and soils to a depth of 15 feet has interrupted potential exposures from direct contact with the soils. At the current time, the property is fenced to prevent potential access to the Site. An IC is in place which states

that future excavation at the site must be limited to a depth of less than 15 feet below the existing ground surface and which prevents disturbance of the remaining portions of the facility foundation.

The GWET system operations are currently suspended for the duration of the pilot study. NYSDEC continues to evaluate the stabilization injection effort and to sample the groundwater at the Site on a regular basis. Based on the most recent groundwater sampling data, the plume extent appears to be primarily limited to two on-site former source area monitoring wells (MW-3S and MW-15S) and one on-site well in the vicinity of the former source area (MW-18S). MW-6S, the most downgradient well, was not sampled during this FYR period, but concentrations of total chromium (70-450 ppb) exceeded their regulatory standards during the last FYR. Future sampling will include this well in the monitoring program. At the time of the OU2 ROD, the data indicated that off-site migration was not occuring even though concentrations of metals on-site were much higher. Given the low concentrations currently on-site, off-site migration is not expected to be occurring.

In order to expedite groundwater restoration, pilot studies injections were conducted in the areas of the former source areas (MW-15S and MW-3S), including the reinjection of low pH water to mobilize residual metals in soils and the application of a reducing agent (ABC+) to immobilize residual metals contamination in the source area. As previously detailed in the Data Review section, initially, concentrations of heavy metals (total chromium, hexavalent chromium, and nickel) decreased after the injections were applied, but, subsequently, there was shown to be a rebound. However, EPA expects that the continued injection of in-situ stabilizer compounds will ensure that the residual chromium and nickel will no longer partition into the groundwater.

Groundwater monitoring will be used to continue to evaluate the efficacy of the stabilization efforts and determine progress towards restoration of the aquifer to beneficial use. The pilot study efficacy will be fully evaluated following this year's injection. EPA and NYSDEC anticipate that after one or two additional injection treatments we will be able to determine if this treatment will be successful.

Although the selected remedy did not select ICs preventing groundwater use. At the current time, all residents obtain potable water from the FSWD. Additionally**,** NYSDEC prohibits new groundwater potable wells from being installed in Nassau County.

QUESTION B: *Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?*

The exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of the remedy remain valid.

Soil. The exposure assessment considered industrial use under the current conditions and residential use under future conditions. Removal of the contaminated soils down to 15 feet has eliminated the potential for direct contact with the contaminants in soils provided that future construction does not occur at the Site, resulting in disturbance of potentially contaminated soils 15 feet below the existing ground surface. Other toxicity data and the RAOs have not changed; however, EPA's Integrated Risk Information System (IRIS) program has not updated the toxicity

values for any of the COCs identified at the Site. The IRIS program is currently re-assessing the toxicity of hexavalent chromium and arsenic which will be re-evaluated in future FYRs.

Groundwater. The evaluation of groundwater focused on two primary exposure pathways - direct ingestion of groundwater as a potable water source, and potential VI. All residents of the area are receiving their water from the municipal supply wells which are located approximately one mile from the Site and have not been impacted. The standards for TCE and PCE remain valid.

Vapor Intrusion. In 2003, subslab gas sampling was conducted along with indoor air sampling. Based on the results of this analysis, three homes were temporarily provided with individual indoor air carbon filtration systems to address VI concerns. Once the supplementary SVE remediation was introduced, VI sampling at residential homes showed no indoor air detections site-related contaminants. The supplementary SVE remediation successfully treated the soils and carbon filtration systems were removed. The residential indoor air continued to be monitored until the site soils were being excavated and had continued to show no detections.

The September 2019 NYSDEC groundwater sampling results were compared to the concentrations in groundwater calculated using the Vapor Intrusion Screening Level calculator to identify the potential for VI from the contaminants in groundwater. As a result, the evaluation of TCE, 1,1,1-trichloroethane, 1,1-dichloroethene, and PCE indicates that the concentration in groundwater were all below the VI concentration based on residential exposures associated with a cancer risk of one in a million or a non-cancer Hazard Quotient =1. Therefore, VI would not be considered a concern.

Ecological Risk Assessment. Based on the results of the RI, impacts to ecological receptors from contamination associated with the Site were determined to be unlikely, since the Site includes little to no viable habitat and does not appear to offer any appreciable ecological attractiveness. Based on a review of existing data, the only potential route of exposure to wildlife is through groundwater contaminant transport into surface waters. The nearest surface water bodies to the Site are 3.2 miles southwest and 3 miles southeast, respectively. Groundwater results obtained during this FYR period further indicate that Site groundwater contamination is unlikely to affect any downgradient surface water bodies as well.

QUESTION C: *Has any **other** information come to light that could call into question the protectiveness of the remedy?*

No.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations	
Issues and Recommendations Identified in the Five-Year Review:	
OU: 1	**Issue Category:** Remedy Performance
	Issue: Concentrations of metals rebounded

	Recommendation: Following the next round of injections, further evaluation of decreasing trends is needed in order to provide information about the long-term efficacy of the stabilizer amendment.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	8/1/2022

OTHER FINDINGS

In addition to the issue and recommendation defined above, MW-6S should be included in the groundwater sampling network. NYSDEC will also coordinate with the lab to ensure future data analysis does not result in data quality issues.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)		
Operable Unit: 1	*Protectiveness Determination:* Short-term Protective	*Planned Addendum Completion Date:*
Protectiveness Statement: The remedy protects human health and the environment in the short-term because contaminated soils have been excavated and Nassau County well restrictions prevent exposure to contaminated groundwater. In order to be protective in the long term, further evaluation of trends following the next round of injections is needed to provide information about the long-term efficacy of the amendment.		

Sitewide Protectiveness Statement	
Protectiveness Determination: Short-term Protective	*Planned Addendum Completion Date:*
Protectiveness Statement: The remedy protects human health and the environment in the short-term because contaminated soils have been excavated and Nassau County well restrictions prevent exposure to contaminated groundwater. In order to be protective in the long term, further evaluation of trends following the next round of injections is needed to provide information about the long-term efficacy of the amendment.	

VIII. NEXT REVIEW

The next FYR report for the Genzale Plating Superfund Site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Table 1: Chronology of Site Events

Event	Date
Listing on National Priorities List	July 1987
ROD for OU1 Signed	September 1991
Initial Site Mobilization	April 1995
Completion of Initial SVE and Soils Excavation	September 1997
OU2 Investigation Starts	March 1993
OU2 Record of Decision Signed	September 1995
Building Demolition Begins	May 2003
Installation of Second SVE System	June 2003
Issuance of Explanation of Significant Differences	July 2004
Complete Building Demolition/Soil Excavation	June 2005
Complete Groundwater Treatment Plant Construction	September 2005
Final Inspection with EPA and NYSDEC of Completed RA	September 28, 2005
Final Inspection of Operational Groundwater Extraction & Treatment System	September 26, 2006
Groundwater Extraction & Treatment System - Operating	Sept. 2006 - Present
Evaluation Reporting – Resin Performance Analysis	September 2011
Evaluation Reporting - Remedial Site Evaluation, Optimization	October 2012
Evaluation Reporting – In-Situ Soil Flushing	Dec. 2012 - Present
Evaluation Reporting - Optimization Pilot – Modified Extraction	Dec. 2012 - Present
Transfer of Genzale Plating Superfund Site to NYSDEC	September 2016
Explanation of Significant Differences	March 2017

Table 2: Remediation Goals for Soil (all concentrations in µg/kg)
From the 1991 ROD

Contaminants of Concern	Soil - Protection of Groundwater	Human Health Risk	Remediation Goals
cis-1,2-Dichloroethene	500	-	500
Tetrachloroethene (PCE)	1,000	100,000	1,000
Trichloroethene (TCE)	500	-	500
Vinyl chloride	500	-	500

Table 3: Documents, Data and Information Reviewed in Completing the Five-Year Review

Table 2: Documents Reviewed

Author	Date	Title/Description
EPA	03/29/1991	OU1 Record of Decision
EPA	09/29/1995	OU2 Record of Decision
EPA	07/23/2004	Explanation of Significant Differences
EPA	2005-2009	Results of Annual Groundwater Sampling; DESA; 2005-2014
EPA	09/2011	Technical Memo – Resin Performance Analysis
EPA	10/2012	Technical Memo - Remedial Site Evaluation, Optimization Update
EPA	12/2012	Technical Memo – In-Situ Soil Flushing
EPA	12/2012	Technical Memo - Optimization Pilot – Modified Extraction
EPA	9/2015	Second Five Year Review
EPA	11/2016	Final Notice of Genzale Site Transfer
EPA	3/2017	Explanation of Significant Differences
NYSDEC	4/2017	Groundwater Data – Genzale Plating
NYSDEC	1/2019	Emerging Contaminants – Genzale Plating
NYSDEC	9/2019	Groundwater Data – Genzale Plating

Figures:

Figure 1

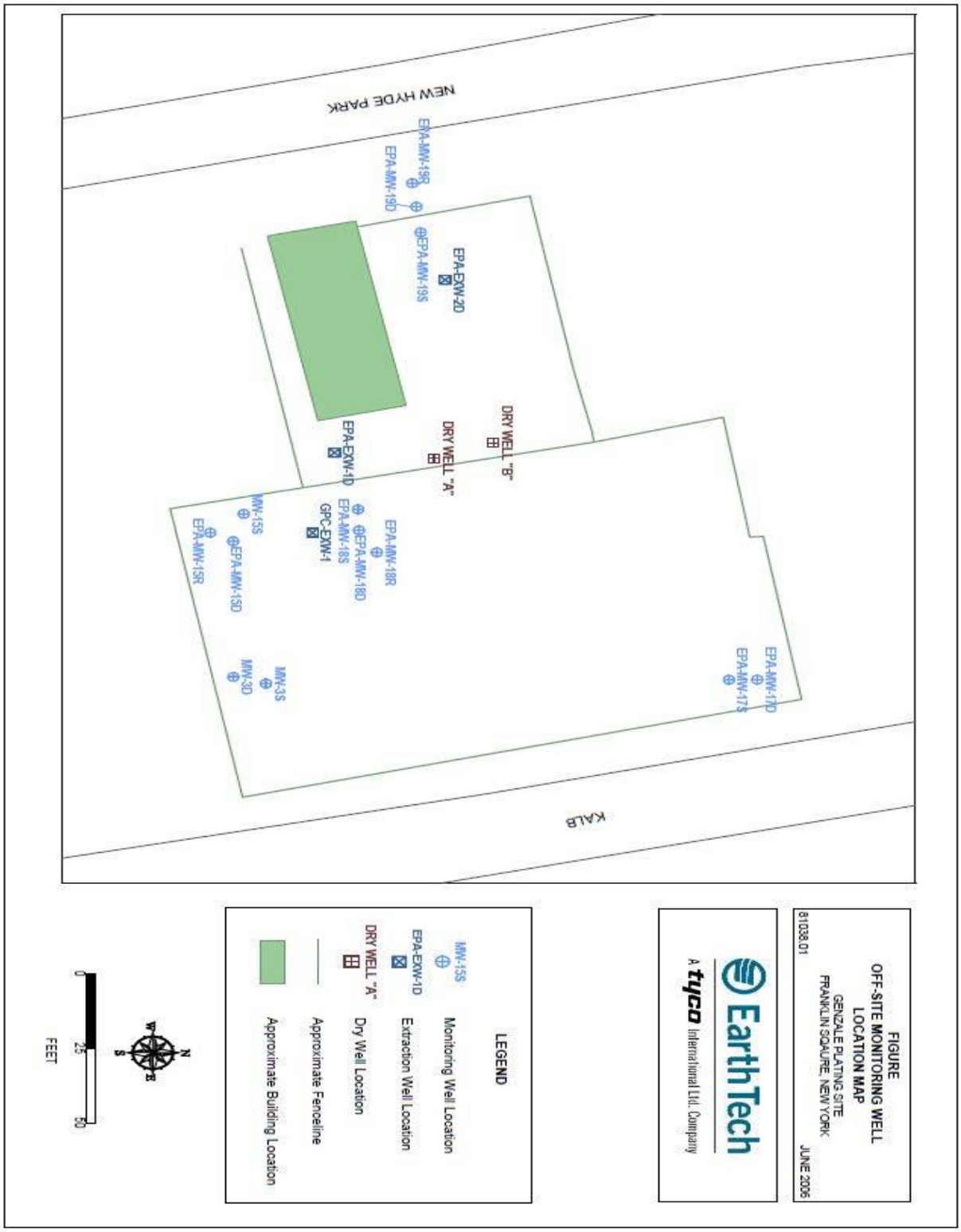

Figure 2

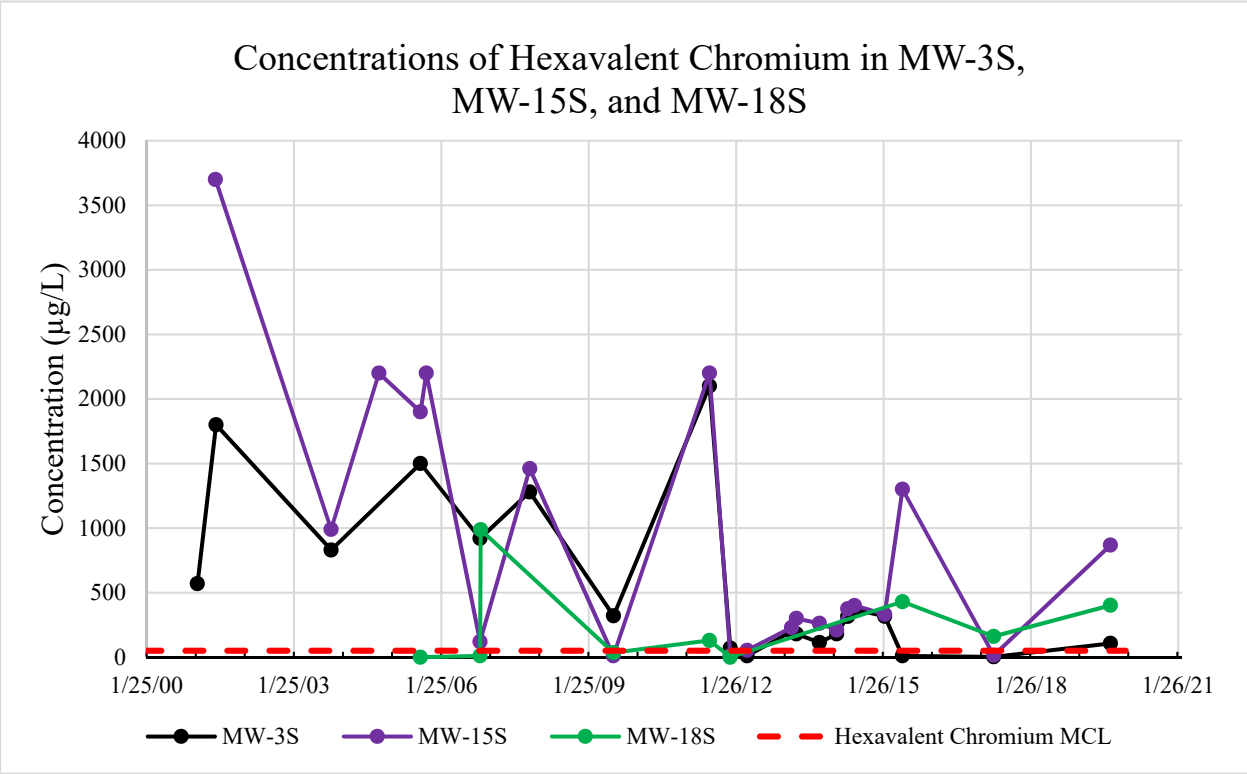

Figure 3

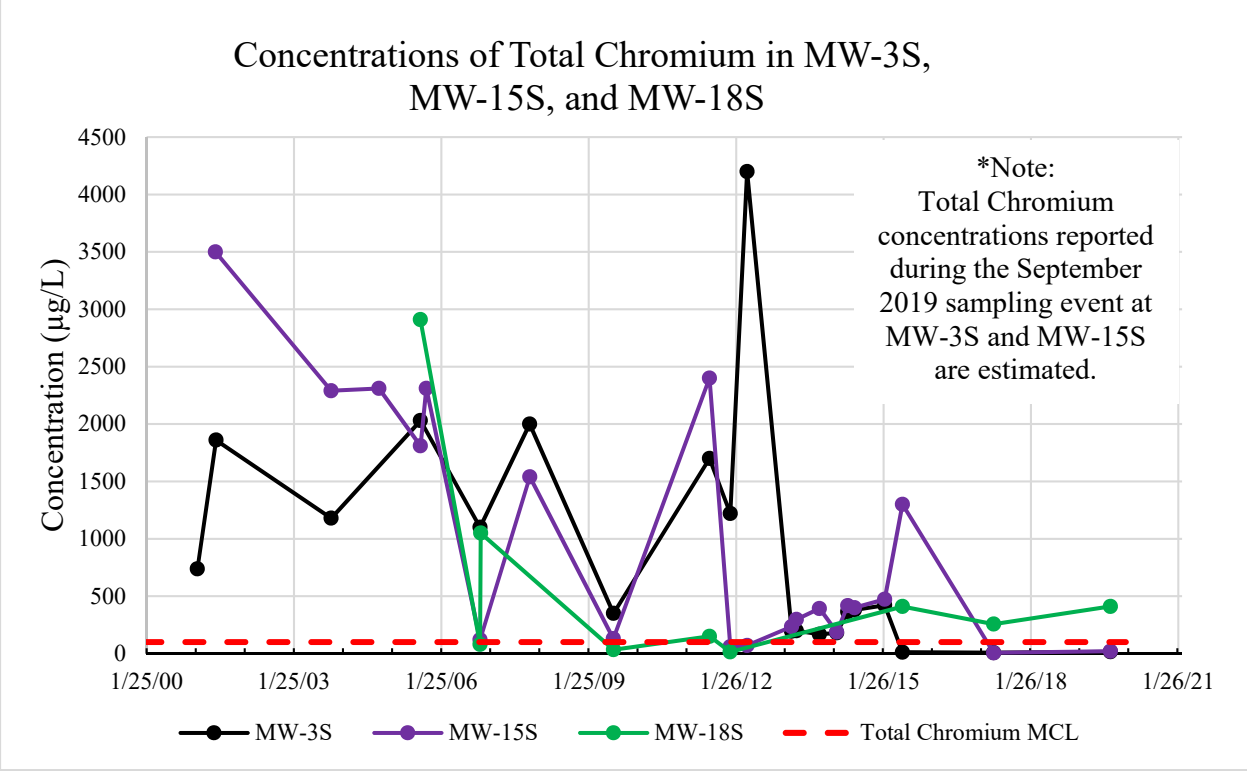

Figure 4

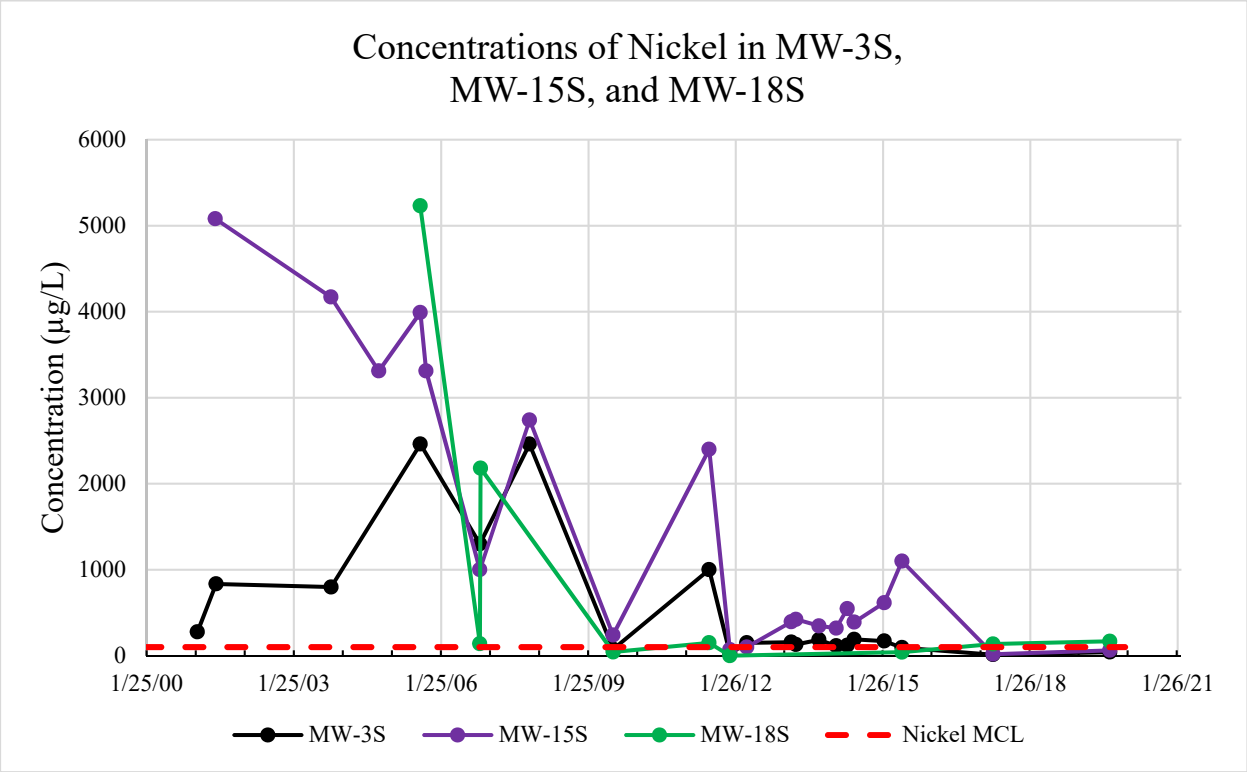

Figure 5

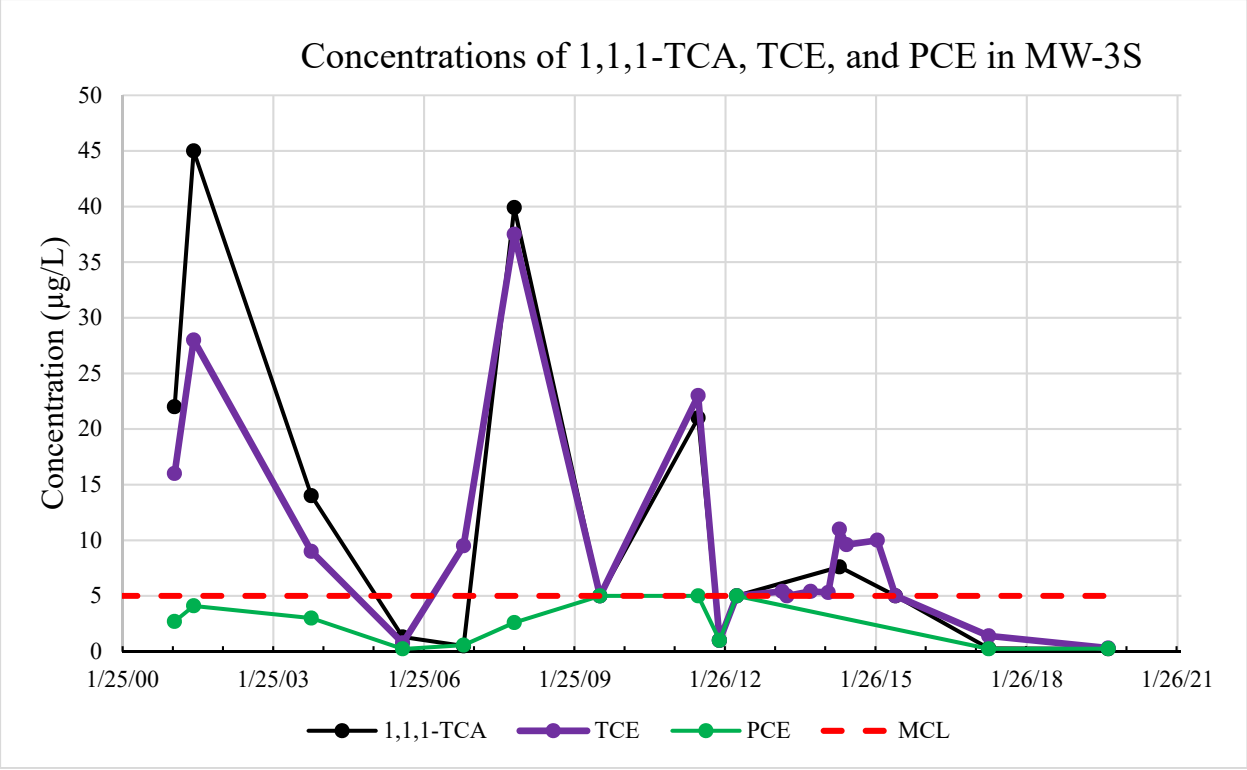

Figure 6

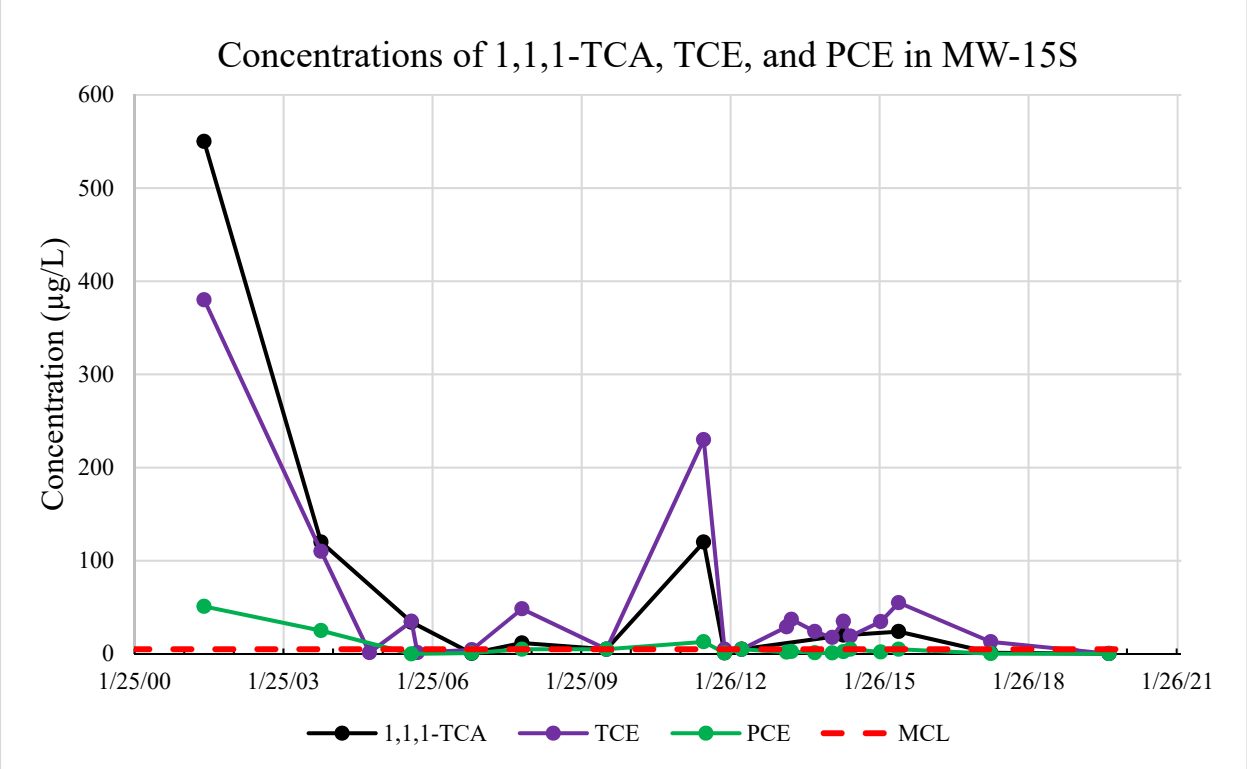

Figure 7