FOURTH FIVE-YEAR REVIEW REPORT FOR
Preferred Plating Corp. Superfund Site
Farmingdale
Suffolk County, New York

Prepared by

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

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LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
ICs	Institutional Controls
MCLs	Maximum Contaminant Levels (EPA Drinking Water Standards)
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NYSDEC	New York State Department of Environmental Conservation
NPL	National Priorities List
O&M	Operation and Maintenance
PRP	Potentially Responsible Party
RAO	Remedial Action Objectives
ROD	Record of Decision
RPM	Remedial Project Manager
TBC	To be considered
WQS	(New York State) Water Quality Standards

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 fourth FYR for the Preferred Plating Corp. Superfund Site (the Site). The triggering action for this policy review is the completion date of the previous FYR, which was September 25, 2012. The purpose of this FYR is to assure that implemented remedies protect public health and the environment and function as intended by the decision documents. The remedial actions will not leave hazardous substances, pollutants, or contaminants on Site above levels that allow for unlimited use and unrestricted exposure, but requires more than five years to complete.

The Site is being addressed as three Operable Units (OUs). OU1 consists of groundwater monitoring and the natural attenuation of contaminated groundwater. This remedy is ongoing and the subject of this FYR. OU2 addressed the source of the groundwater contamination, namely, the contaminated soil and sediment, and has been completed. OU3 focused on searching for other possible sources of groundwater contamination upgradient of the Site. OU3 found no other sources of groundwater contamination and determined that no further action was necessary. The OU2 and OU3 remedies leave no hazardous substances from this CERCLA release remaining on-Site above health-based levels; therefore, the FYR requirement does not apply to these operable units.

The FYR for the Site was led by Mark Dannenberg (the EPA Remedial Project Manager). In addition, Katherine Mishkin (the EPA hydrogeologist), Chuck Nace (the EPA human health and ecological health risk assessor), and Cecilia Echols (the EPA community involvement coordinator) participated in the FYR. The owner of the property was notified of the initiation of the FYR. The review began on 1/19/2017.

Site Background

The Preferred Plating Corp. Site is located at 32 Allen Boulevard in Farmingdale, New York. The property is less than one acre in size, and is situated in a light industrial area one mile east of the Nassau-Suffolk County line. The Site is located east of Route 110 and south of the Long Island Railroad (see Figures 1 and 2, attached). A few industrial facilities neighbor the property. The surrounding businesses and residences are serviced by public water.

The Site is at an elevation of approximately 58 feet above mean sea level and is relatively flat, sloping slightly from the north to the south. The majority of the Site is covered by pavement and the existing building. The only remaining unpaved areas on the property are two small grassed areas in the front of the property and a gravel and grass strip located along the west side of the building.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Preferred Plating Superfund Site		
EPA ID: NYD980768774		
Region: 2	**State:** NY	**City/County:** Farmingdale/Suffolk
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: State ***[If "Other Federal Agency", enter Agency name]*:** New York State Department of Environmental Conservation		
Author name (Federal or State Project Manager): Mark Dannenberg		
Author affiliation: U.S. EPA - ERRD		
Review period: 10/1/2012 - 6/23/2017		
Date of site inspection: 6/20/2017		
Type of review: Policy		
Review number: 4		
Triggering action date: 9/25/2012		
Due date *(five years after triggering action date)*: 9/25/2017		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

Groundwater contaminated with heavy metals was detected in the immediate vicinity of the Site as early as June 1953. During that same period, an inspection of the Preferred Plating Corp. facility by the Suffolk County Department of Health Services (SCDHS) discovered that the storage pits used for industrial wastewater at the Preferred Plating facility were cracked and leaking. Samples taken from the pits by SCDHS revealed the major contaminants to be heavy metals.

Historic water level survey data indicate that the depth to the water table ranges from about 12 to 18 feet below ground surface. The direction of groundwater flow is generally to the south-southeast. Results of groundwater aquifer tests indicate that the groundwater velocity is between one and five feet per day, and that a good hydraulic continuity exists between the Upper Glacial and Magothy Aquifers in the area. The nearest public drinking water supply well is approximately 1 mile south of the Site.

From June 1987 to June 1989, EPA conducted the initial remedial investigation and feasibility study (RI/FS) of the Site which focused on contaminated groundwater. The study detected heavy metals, including chromium and cadmium, and chlorinated organic compounds in the groundwater underlying the Site. The results of the baseline risk assessment indicated that, in the event that the groundwater was to be used as a source of drinking water, the Site posed unacceptable risks to human health. An ecological risk assessment (ERA) was also performed in 1989 for OU1. The ERA determined that there was no risk to terrestrial wildlife from contamination at the Site, and that the only potential route of exposure to wildlife in the vicinity of the Site was if contaminants were transported through groundwater and discharged via groundwater into surface waters, particularly the Great South Bay located several miles south of the Site. The ERA determined that no significant effects would occur on aquatic organisms as a result of contamination from the Site.

In 1992, an RI/FS for OU2 was completed pertaining to the source areas. Although the risk assessment did not identify any unacceptable risks from exposure to soils, the RI concluded that soil contamination surrounding the former waste storage pits, former sanitary leaching pool, and the former steam condensate leaching pool was contributing to groundwater contamination and action was warranted.

A third RI/FS (associated with OU3) was conducted to address a potential source of groundwater contamination upgradient of the Preferred Plating Corp. facility. The upgradient property owner, Del Laboratories, Inc. initiated an RI/FS in September 1990, pursuant to an Administrative Order on Consent with EPA to determine if its operations had impacted groundwater quality. The ROD for OU3, signed in September, 1993, documented that no remedial action was necessary, based in part on the fact that prior actions had already been taken to address environmental conditions at the Del Laboratories facility/property.

Response Actions

Remedy Selection

Groundwater (OU1)

On September 22, 1989, a ROD was signed to address the groundwater contamination. The remedy for OU1 focused only on the treatment of the contaminated groundwater. The remedial action objective for the Site was to reduce the groundwater contaminant concentrations in the upper glacial aquifer underlying the Site to upgradient concentrations.

The major components of that remedy included extraction of the contaminated groundwater, treatment of heavy metals and chlorinated organic compounds, and reinjection of the treated groundwater into the aquifer.

In July 1997, following the excavation and off-site disposal of contaminated source area materials required by the September 1992 OU2 ROD, groundwater sampling results indicated a significant decrease in concentrations of the primary contaminants of concern, cadmium, chromium, and chlorinated organics. In addition, since the OU1 ROD was signed in 1989, better sampling techniques which minimized the turbidity of the groundwater also resulted in providing a more accurate measurement of contamination. At this time, only cadmium exceeded both its federal and State drinking water standards. Chromium did not exceed either the federal or state drinking water standard of 100 µg/L, but slightly exceeded the state groundwater quality standard of 50 µg/L. Furthermore, 1,1,1-trichloroethane (TCA), the only organic contaminant consistently detected throughout the sampling

activities, was not detected above federal or state standards in any of the samples collected following the removal of the on-site sources.

Based on this information, EPA issued a ROD Amendment on September 30, 1997, modifying the original OU1 ROD for groundwater.

The ROD Amendment identified the following OU1 remedial action objectives:

- protect human health by ensuring future residents are not exposed to contaminated groundwater; and
- reduce groundwater contamination levels to drinking water standards.

The two major components of the modification to the selected remedy are:

- elimination of the groundwater extraction and treatment system; and
- implementation of an annual groundwater monitoring program to ensure that the remedy remains protective of human health and the environment.

The modified remedy addresses the low levels of cadmium still present in the groundwater and relies on natural attenuation processes to reduce contaminant levels, particularly cadmium, in the groundwater. The annual groundwater monitoring program was instituted to evaluate the effectiveness of the natural attenuation processes and to demonstrate that the amended remedy remains protective.

Source Control (OU2)

The Record of Decision for OU2 was signed on September, 28 1992.

The remedial action objectives for OU2 were to:

- prevent leaching of contaminants in the subsurface soils to the groundwater; and
- minimize length of operation of the groundwater treatment system by removing the source of contamination.

The major components of the selected remedy were:

- excavation of contaminated subsurface soils from the Site;
- off-site treatment and disposal of excavated material at a RCRA Subtitle C facility; and
- backfilling excavated areas with clean soil.

Upgradient Source (OU3)

The Record of Decision for OU3, signed in September 1993, documented that no remedial action was necessary at the Del Laboratories property based largely on the fact that prior actions had already been taken to address environmental conditions at the facility. The Del Laboratories property was not part of the CERCLA release and therefore not part of the Preferred Plating Superfund Site.

Status of Implementation

The design for this treatment system (OU1) was completed in March 1992. At that time, construction of the groundwater treatment system was postponed while EPA completed its investigation of the contaminant source areas (associated with OU2).

In June 1993, following signature of the OU2 ROD, EPA issued a Unilateral Administrative Order (UAO) to the property owners requiring them to implement the OU2 source control remedy. The remedial action, performed by Eder Associates (a contractor hired by the owner of the property), with EPA oversight, resulted in the removal and off-site disposal of approximately 1,500 tons of contaminated soils and sediments. The source control remedial action included the excavation of contaminated soil from within, around and beneath the former waste storage pit area, the former sanitary leaching pool, and the former steam condensate leaching pool and line. The excavations, which were accomplished using sheet piles, were completed to a depth of 16 feet below grade (down to the water table). All excavated areas were backfilled with certified clean fill. All construction activities associated with OU2 were completed by June 1994 in accordance with the OU2 ROD, the approved remedial design, and the UAO issued by EPA.

Institutional Controls

None of remedy decision documents required institutional controls.

Currently, groundwater at the Site is not being used and it is not expected to be used in the future. Furthermore, public water supplies are readily available and required to be used by local ordinance. In addition, New York State law restricts to a large degree the future use of groundwater at this Site. New York Environmental Conservation Law Section 15-1527 provides that on Long Island (which includes Suffolk County), "No person or public corporation shall hereafter install or operate any new or additional wells...to withdraw water from underground sources for any purpose or purposes whatsoever where the installed pumping capacity of any such new well or wells singularly or in the aggregate, or the total installed pumping capacity of old and new wells on or for use on one property, is in excess of 45 gallons a minute without a permit pursuant to this title." Furthermore, the New York Sanitary Code (Title 10 of the New York Code of Rules and Regulations Section 5-2.4) states that "No person shall construct or abandon any water well unless a permit has first been secured from the permit issuing official." These institutional controls are not part of the site remedy, but provide extra layers of protection during the period of remediation.

Operation and Maintenance

Groundwater monitoring has been conducted at the Site since 1991. From 1991 through 2009, monitoring was conducted on an annual basis in eight shallow and two intermediate wells in the unconsolidated Upper Glacial Aquifer. In 2008, seven additional monitoring wells were installed (ERT-1 through ERT-7) to further define groundwater contamination. Four monitoring wells (ERT-1 through ERT-4) were advanced in the area of the former leaching pools and waste storage pit. One monitoring well (ERT-5) was located to the southwest side of the building and two monitoring wells (ERT-6 and ERT-7) were added to the south of the Site, across Allen Boulevard, to better define side and down-gradient groundwater flow and impact (see Figure 4). Groundwater monitoring was conducted in 2012 and 2016 by EPA. The primary contaminants of concern are cadmium and chromium; groundwater monitoring always tests for metals. Because volatile organic compounds (VOCs) had not been detected above their respective MCL for several consecutive monitoring events in any of the eight regularly monitored wells, testing of VOCs has only been performed periodically. Groundwater samples were analyzed for VOCs in the April 2012 and in December 2016 monitoring events. In addition, NYSDEC required the owner of the Site property to perform groundwater monitoring on some of the wells in 2015; the owner also performed a separate groundwater monitoring study (installing different temporary

wells) in September 2016 to ascertain if contaminants were coming from an upgradient source. The data from these sampling events is assessed in this FYR.

Finally, 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

This is the fourth FYR for the Preferred Plating Site. The third FYR was completed in September 2012 and determined that the remedy was protective, stating: "The implemented actions at the site protect human health and the environment. Currently, there are no exposure pathways that could result in unacceptable risks and none are expected, as long as the site use does not change."

The FYR did not identify any issues/recommendations that impact current or future protectiveness. However, a suggestion was made in the review to improve operation, maintenance, and montoring activities:

> The rate of decline of concentrations of cadmium and chromium in on-property wells (and off-property wells) will continue to be closely monitored. It may also prove useful to submit both a filtered and unfiltered sample for metals analysis to determine whether the metals are bound in the turbid sediments present in the samples being sent for analysis.

Sampling activities conducted by EPA in December 2016 did submit both filtered and unfiltered samples for metals analysis; the results were similar. In the last five years, the groundwater monitoring has continued as groundwater cleanup objectives have not yet been achieved.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification and Involvement

On November 14, 2016, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at 38 Superfund sites in New York and New Jersey, including the Preferred Plating site. The announcement can be found at the following web address: https://www.epa.gov/sites/production/files/2016-11/documents/five_year_reviews_fy2017_final.pdf.

The results of the review and the report will be made available at the Site information repositories located at: the West Babylon Library, 221 Route 109, West Babylon, New York; and the US EPA, 290 Broadway, New York, NY 10007. The report will also be available on the US EPA website.

Data Review

Document Review
The documents, guidance, and information which were reviewed in conjunction with the FYR is summarized in Table 1 at the end of this report.

Data Review

In summary, concentrations of cadmium and chromium, the two most common analytes reported in the groundwater at the Site, decreased significantly over the years. However, concentrations have fluctuated in some wells since 2007, particularly in monitoring well SP-6 (refer to Figures 3 and 4). Monitoring well SP-6 is on the southside of the Site property, immediately in front of the building. Tables 2 and 3 summarize annual groundwater sampling results for cadmium and chromium, respectively, and include data from monitoring performed prior to the ROD Amendment through the present. The groundwater cleanup objectives for cadmium and chromium are based on groundwater standards for both drinking water standards (MCLs) and from the New York State Water Quality Standard for Surface Waters and Groundwater (WQS). The federal standards, namely, the Maximum Contaminant Levels (MCLs), are 5µg/L for cadmium and 100µg/L for chromium. The WQS are 5 µg/L for cadmium and 50 µg/L for chromium. Groundwater concentrations greater than the MCL are shown in **bold** print in Tables 2 and 3. As depicted in Tables 2 and 3, several groundwater wells were not sampled during the more recent monitoring events. Specifically, monitoring wells SP-2 and SP-3 which have been destroyed and were not sampled in 2012, 2015, and 2016; monitoring well ERT-1 was bent and thus a sample could not be collected in 2012; and monitoring well ERT-2 was inaccessible in the 2012 monitoring event as a car without wheels was covering it.

As can be seen from Tables 2 and 3, the most recent monitoring event of December 2016 indicated the highest concentration of cadmium at 20 µg/L (monitoring well ERT-5). The cadmium concentration at monitoring well SP-6 for this sampling event was 14 µg/L, which is much lower than the highest concentration (635 µg/L also in SP-6 in February 1991) found since monitoring was initiated. Similarly, the highest concentration of chromium detected in December 2016 was 62 µg/L (in monitoring well SP-6), which is much lower than the highest historical concentration detected at the Site (5850 µg/L in SP-3 in August 1988) and the highest historical concentration (3290 µg/L in August 1988) detected in SP-6. The 62 ug/l detection of chromium in SP-6 is below the federal drinking water standard but above the New York State WQS. Monitoring well SP-6 has historically been the most impacted well on-site. It is possible that residual contamination may exist below the limits of excavation identified in the ROD and bound in the pore-space in the vicinity of well SP-6. Monitoring well SS-6 was installed at the same depth and in the same general vicinity as SP-6 but it does not have impacts of cadmium or chromium nearly as historically high as SP-6. ERT-5, which is hydraulically downgradient of these wells, also indicated the presence of cadmium (20 µg/L) above the WQS in the December 2016 sampling event; chromium was detected at ERT-5 (50 µg/L), which is not above its WQS, during the December 2016 event. It appears as though it will take longer for groundwater in the vicinity of SP-6 to achieve cleanup standards than the remaining portion of the plume.

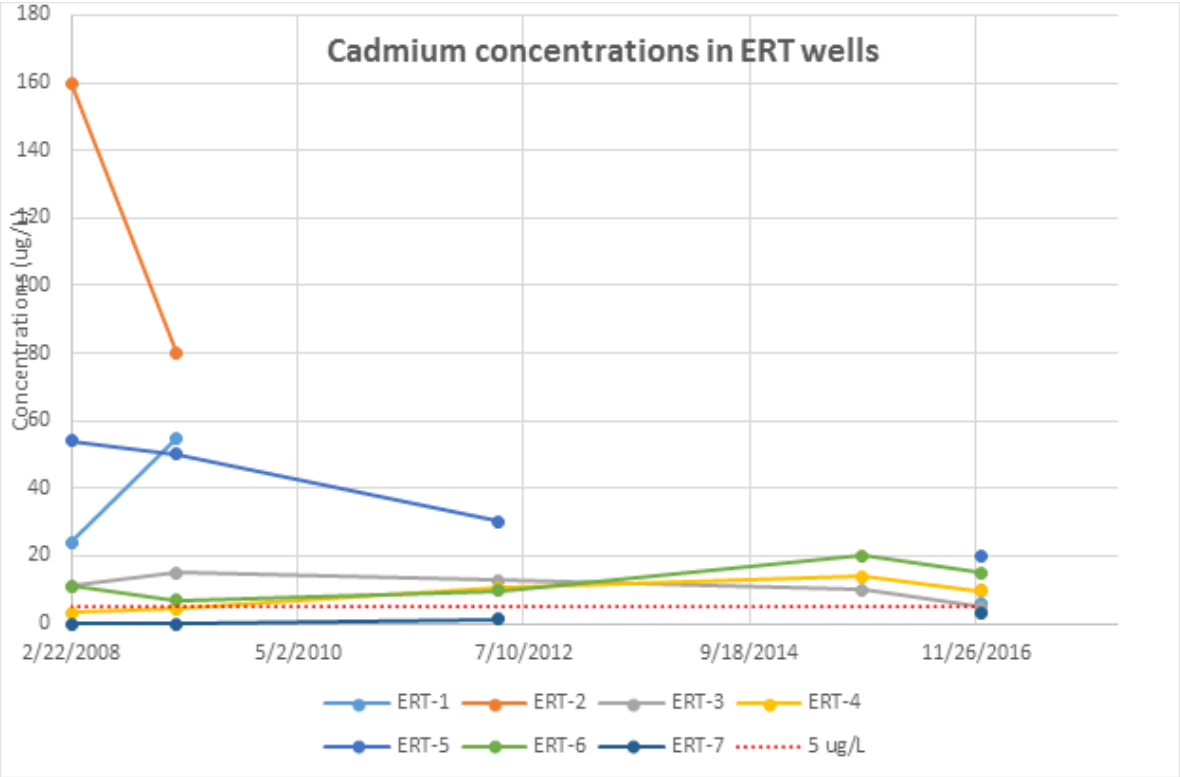
Data for the other wells sampled also indicates that, while the rate of decline of concentrations of cadmium and chromium in wells located on the property has slowed, and concentrations have fluctuated in some wells since the last FYR, the contamination remaining is at relatively low levels, especially when compared to historical concentrations. All of the historical wells (those installed prior to the end of 2007) sampled during the last five years indicated a decline in cadmium concentrations from the January 2007 sampling event. The five new ERT wells (ERT-2 through ERT-6) sampled in December 2016 were close to the MCL/WQS for cadmium, though most were still slightly above the MCL/WQS. All of the historical wells sampled in December 2016 were below the MCL for chromium; however, monitoring wells SP-6, SS-6, and ERT-3 were slightly above the WQS. It is important to note that ERT wells 6 and 7 (located off the property, downgradient and just across the street of Allen Blvd.) indicate non-detectable levels of cadmium at ERT-7, 15 ug/L at ERT-6, and chromium

In a separate investigation conducted by a contractor for the owner of the property in September 2016, five temporary groundwater wells (TW-1 – TW-5) were installed to depths of 29 – 30 ft bgs on the northern and western Site boundaries (upgradient/sidegradient property boundaries), with the intent to answer concerns of a potential off-site source contributing to cadmium and chromium contamination in groundwater found downgradient of the Site. Groundwater data collected from TW-1, TW-2, and TW-3 indicated cadmium and chromium concentrations were below WQS. While chromium concentrations were below the WQS in TW-4 and TW-5, cadmium was detected above the WQS at 21 ug/L and 73 µg /L, respectively. Given the location of temporary groundwater points, TW-4 and TW-5, it is likely that the cadmium hits are from an on-site historical source point though an off-site source to the west cannot be discounted at this time either. Another component of these additional investigations was to determine/confirm the direction of groundwater flow. During this investigation it was confirmed that the direction of groundwater flow is to the south.

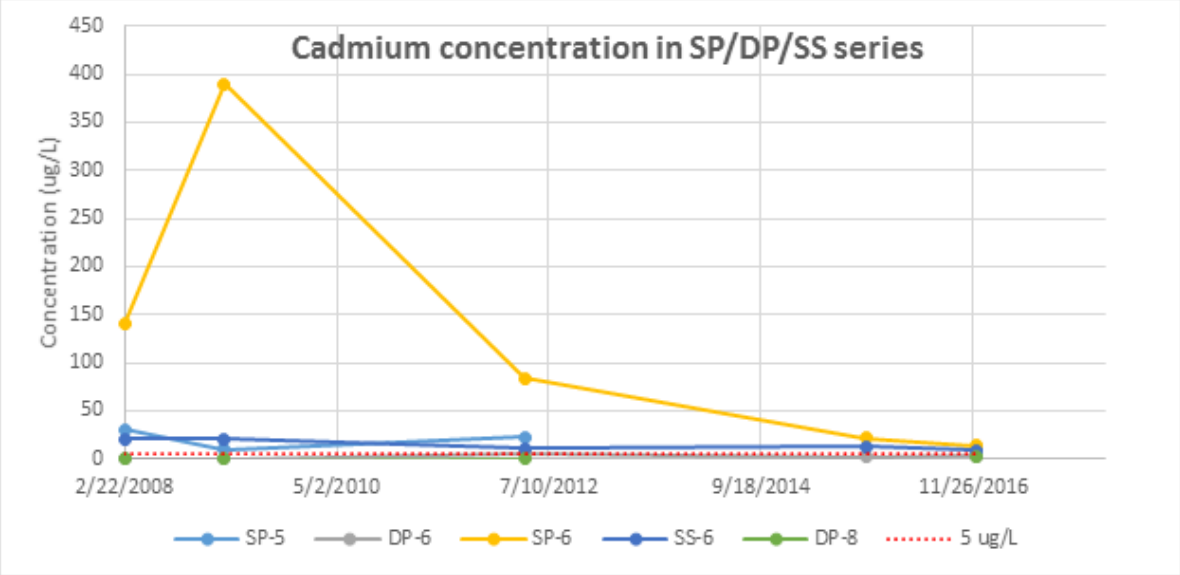
Cadmium

From 2012 to 2016, detectable cadmium concentrations ranged from 1.42 ug/L (ERT-7 in April 2012) to 83.3 µg /L (SP-6 in April 2012). Overall, cadmium concentrations have declined over this FYR (see Figures A and B – Data Plots for Cadmium). During the most recent sampling event, groundwater samples were collected by the EPA Division of Environmental Sampling and Assessment and evaluated for total and dissolved concentrations. The results from the 2016 sampling event indicate that dissolved cadmium concentrations range from 3 ug/L (ERT-7, DP-6, DP-8) to 20 µg /L (ERT-5). While the highest cadmium concentrations were observed in downgradient monitoring well SP-6 (83.3 µg /L in April 2012), concentrations in SP-6 were observed at 14 µg /L in December 2016. SP-6 is situated on the downgradient property boundary, but ERT-6 and ERT-7 are further downgradient on the south side of Allen Boulevard. ERT-7 is deeper and has shown cadmium concentrations below the 5 µg /L WQS. Downgradient monitoring well ERT-6 is situated adjacent to ERT-7 and cadmium concentrations have ranged from 9.59 to 20 µg /L during this review period. In December 2016, total and dissolved phase cadmium concentrations were 15 µg /L, indicating the cadmium groundwater plume has migrated beyond the Preferred Plating property boundary, but at concentrations just above the WQS.

Figure A - Cadmium concentrations in ERT monitoring wells from 2008 to 2016



FigureB - Cadmium concentrations in SP/DP/SS series monitoring wells from 2008 to 2016.



Chromium

From 2012 to 2016, total chromium concentrations ranged from 0.27 µg /L (ERT-7 in April 2012) to 876 µg /L (ERT-4 in October 2015). During the most recent sampling even in December 2016, dissolved total chromium concentrations ranged from 5 µg /L (ERT-1, ERT-6, ERT-7, DP-8) to 62 µg /L (SP-6) and the WQS was exceeded in three monitoring wells (ERT-3, SP-6, SS-6). Overall, total chromium concentrations are declining over this FYR period (see Figures C and D – Data Plots for Chromium).

In several monitoring wells, including: ERT-3, ERT-4, SP-6, and SS-6 there appears to be a spike in chromium levels at the October 2015 sampling event. It is unclear if the concentration spike was in dissolved phase concentrations or a release of suspended particles. In all the above listed monitoring wells, total chromium concentrations subsequently decreased at the December 2016 monitoring event. Filtered and unfiltered samples were analyzed in 2016. It should be noted that dissolved chromium concentrations were similar to the total chromium concentrations in the December 2016 event.

While monitoring well SP-6 has, historically, been the most impacted well at the Site, this review period indicates that ERT-4 has also shown higher levels of chromium with a maximum concentration of 876 ug/L (in October 2015). However, this high level of chromium in ERT-4 is not similar to data from other samples collected during this review period; specifically, ERT-4 had levels of chromium of 45 µg /L (in February 2008), 44 µg /L (in March 2009), 23.3 µg /L (in April 2012), and 26 µg /L (in December 2016). During the October 2015 sampling event, hexavalent chromium was evaluated in some groundwater samples and showed exceedances in ERT-03 and ERT-04 at 90 and 100 µg /L, respectively. In SS-6, SP-6, and ERT-06 hexavalent chromium concentrations were below the WQS of 50 µg /L. The NY State WQS for both total chromium and hexavalent chromium is 50 µg /L. The data indicates that the presence of hexavalent chromium in groundwater exceeding the WQS is limited to the area of the former leaching pools and waste storage pit and is not migrating beyond the property boundary.

Figure C - Chromium concentrations in ERT monitoring wells from 2008 to 2016.

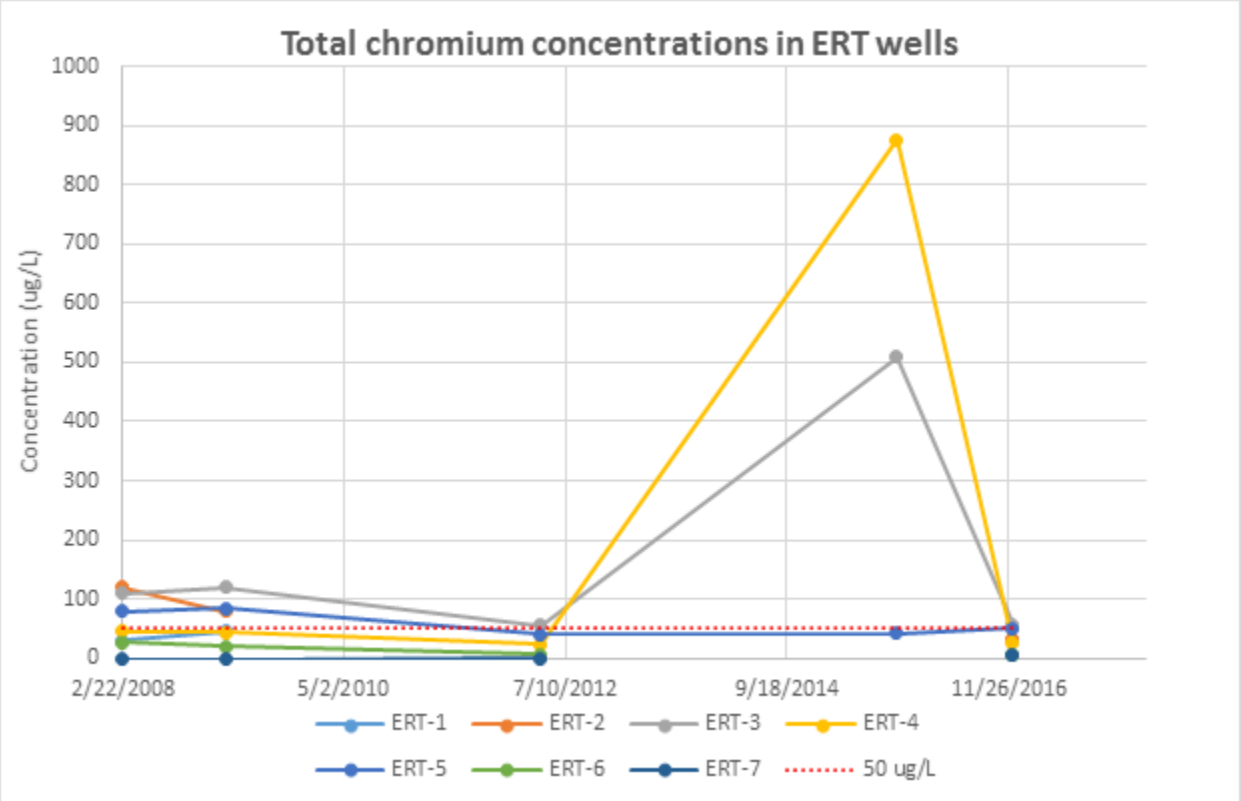
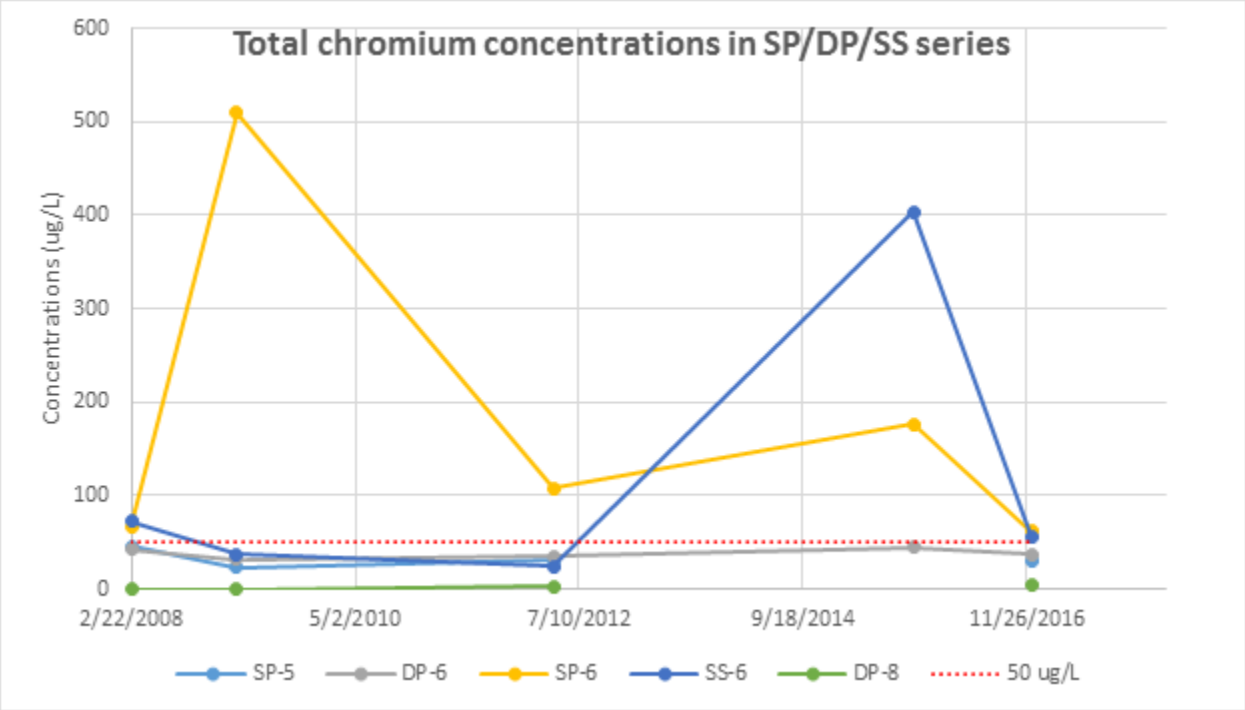


Figure D - Chromium concentrations in SP/DP/SS series monitoring wells from 2008 to 2016.



Volatile Organic Compounds

As was noted in the previous five-year review, VOCs are no longer a concern at the Site. Levels of VOCs, including TCA and trichloroethylene (TCE), decreased significantly following the completion of the source control remedial action in 1994. Prior to 1996, VOCs had been detected above MCLs in six out of the eight regularly monitored wells. Because VOCs had not been detected above their respective MCL for several consecutive monitoring events in any of the eight regularly monitored wells, testing of VOCs has only been performed periodically. Groundwater samples were analyzed for VOCs in the April 2012 and in December 2016 monitoring events. In one sample from 2012, toluene from monitoring well ERT-4 exceeded the WQS for toluene in groundwater. Toluene was detected at 15 µg/l. The WQS for toluene is 5 µg/l; the Federal MCL for toluene is 1,000 µg/l. Toluene is not a contaminant of concern for the Preferred Plating Site and the presence of toluene in this one well is not considered to be Site-related. No other samples exceeded any State or Federal standards for VOCs. The sampling results from the December 2016 monitoring event show non-detect levels for VOCs at most of the monitoring wells, and only very low concentrations of VOCs a few wells. In one sample, cis-1,2-dichloroethylene (a breakdown product of TCE) was detected at 32 ug/L in ERT-6, exceeding the NYSDEC groundwater quality standard of 5 ug/L. No other samples exceeded groundwater quality standards for VOCs. This analysis supports that VOC contamination at the Site has been effectively remediated and is not of concern. Future VOC analysis in groundwater is not warranted and it is recommended that the Site operation and maintenance plan be modified to remove VOC consistuents from the sampling plan.

In summary, concentrations of cadmium and chromium, the two most common analytes reported in the groundwater at the Site, decreased significantly over the years. However, concentrations have fluctuated in some wells since 2007. While cadmium and chromium continue to exceed groundwater cleanup standards, the exceedances are at relatively low levels, especially when compared to historical

concentrations; wells located downgradient of the property (just across the street of Allen Blvd), indicate levels of chromium are below the standards and cadmium levels are maginally above WQS, suggesting the boundaries of the plume are defined and limited to the vicinity of the Site.

Site Inspection

The inspection of the Site was conducted on 6/20/2017. In attendance were Mark Dannenberg, EPA Region 2 (Remedial Project Manager); Katherine Mishkin, US EPA Region 2 (Hydrogeologist), and Chuck Nace, US EPA Region 2 (Human Health and Ecological Risk Assessor). The purpose of the inspection was to assess the protectiveness of the remedy. The inspection included a tour of the Site and an examination of the groundwater monitoring well network. There were no significant changes in Site or groundwater use that would affect the remedial action objectives or suggest the need for any institutional controls.

V. TECHNICAL ASSESSMENT

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

The remedy identified in the 1989 ROD for OUl, which consisted of a groundwater treatment system, was replaced with a long-term groundwater monitoring plan in the 1997 OU1 Amended ROD due to groundwater concentrations decreasing over time.

Groundwater monitoring at the site shows that cadmium and chromium continue to exceed groundwater cleanup standards in the vicinity of the former source area. Temporary well locations indicate that it is unlikely that an upgradient source is impacting the contamination observed under the property. Data trends in on-site wells show natural attenuation is not occurring as rapidly as anticipated by the decision document, although concentrations throughout the plume area indicate an overall decreasing trend. While the rate of decline of concentrations of cadmium and chromium in wells located on the property has slowed, and concentrations have fluctuated in some wells since the last FYR, it is important to note that the wells installed in 2008, located downgradient of the property (just across the street of Allen Blvd), indicate levels of chromium are below the WQS and cadmium levels are maginally above. This suggests that the boundaries of the plume are defined and limited to the vicinity of the site.

Currently, groundwater at the site is not being used and it is not expected to be used in the future. Furthermore, public water supplies are readily available and required to be used by local ordinance. In addition, as noted under the Institutional Controls section above, New York State law restricts installation of private wells, and, to a large degree, the future use of groundwater at this Site.

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?

Human Health - There have been no changes in the physical conditions of the site since the last FYR that would change the protectiveness of the remedy. The Site is located in a light industrial area. Most of the Site is covered by pavement and the existing building. A few businesses operate in the building. The building and surrounding area is serviced with public water supply. As stated in the previous five-year reviews, the exposure assumptions and toxicity data were evaluated and were found to still be valid. The exposure assumptions and toxicity data were reviewed as part of this five-year review and they remain valid at this time. The vapor intrustion pathway was examined and determined to not be an

important transport mechanism for VOCs at the site, with VOC data collected in 2012 and 2016 confirming that volatile organics are not a concern associated with the Site, and that the vapor intrusion pathway is not an issue. The toxicity values also remain valid. The presence of hexavalent chromium, which is considered more toxic than trivalent chromium, in soil was considered in the last FYR and it was determined that the levels did not call into question the protectiveness of the remedy. The cleanup levels have not changed since the last FYR and therefore are still valid. The remedial action objectives that were used at the time of the remedy are still valid.

Ecological – As indicated in the previous FYR, there were no completed pathways identified for ecological receptors in previous documents. Based upon review of the past and current data, combined with the current status of the site, the previous conclusion that there are no completed exposure pathways for ecological receptors is still valid.

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

There have been no changes in the physical conditions of the site. No other information has come to light that could call into question the protectiveness of the remedy

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU1

Other suggestions: Modify the O&M plan to remove the requirement for VOC sampling and analysis

VII. PROTECTIVNESS STATEMENT

Protectiveness Statement(s)		
Operable Unit: OU1	*Protectiveness Determination:* Protective	*Planned Addendum Completion Date:* Click here to enter a date
Protectiveness Statement: The implemented actions at the site protect human health and the environment.		

Sitewide Protectiveness Statement	
Protectiveness Determination: Protective	*Planned Addendum Completion Date:* Click here to enter a date
Protectiveness Statement: The implemented actions at the site protect human health and the environment.	

VIII. NEXT REVIEW

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

APPENDIX A – Tables

Table 1: Relevant Documents for the Preferred Plating Corp. Superfund Site Five-Year Review		
Author	**Date**	**Title/Description**
US Environmental Protection Agency	September 22 1989	Record of Decision (OU1)
US Environmental Protection Agency	September 28 1992	Record of Decision (OU2)
US Environmental Protection Agency	September 28 1993	Record of Decision (OU3)
Eder Associates	June 1994	Remedial Closeout Report for Operable Unit 2
US Environmental Protection Agency	September 30, 2002	The First Five-Year Review
US Environmental Protection Agency	September 28, 2007	The Second Five-Year Review
US Environmental Protection Agency	September 25, 2012	The Third Five-Year Review
US Environmental Protection Agency (EPA-ERRD-DESA)	December 2016	Groundwater Monitoring Report
C2G Environmental Consultants, LLC (Consultant to the owner of the property	2015	Groundwater Monitoring Report
Lockheed Martin Technology Services	August 14, 2008	Environmental Investigation Trip Report
US Environmental Protection Agency & New York State Department of Environmental Conservation	October 13, 2011	Site Transfer Agreement (from US EPA to NYSDEC) for the Preferred Plating Site
	Various dates	EPA guidance for conducting FYRs and other guidance and regulations to determine if any new Applicable or Relevant and Appropriate Requirements relating to the protectiveness of the remedy have been developed since EPA issued the Record of Decision.

Table 2

Historical Groundwater Analytical Data for Cadmium - August 1988 through April 2012

Sampling Date	***Monitoring Well (data is in units of ug/L of cadmium)***																
	SP-1	DP-1	SP-2	SP-3	SP-4	SP-5	SP-6	DP-6	SS-6	DP-8	ERT-1	ERT-2	ERT-3	ERT-4	ERT-5	ERT-6	ERT-7
Aug-88	**70.6**	**8.4**	**79.3**	**64.5**	**78.7**	**399**	**365**	**23.1**	**211**	ND	--	--	--	--	--	--	--
Sep-88	**15.1**	**11.4**	**26.5**	**26.5**	**271**	**348**	**180**	NA	**224**	ND	--	--	--	--	--	--	--
Feb-91	**6.9**	NA	**41.6 (f)**	NA	NA	**254**	**635**	**7.8(f)**	NA	NA	--	--	--	--	--	--	--
Aug-93	ND	ND	**21**	**22**	**10**	**58**	**57**	NS	**123**	NS	--	--	--	--	--	--	--
Jul-94	5	ND	**29**	**7**	ND	**90**	**136**	**6**	**70**	ND	--	--	--	--	--	--	--
Apr-95	ND	ND	ND	ND	ND	**43**	**33**	**6**	**35**	ND	--	--	--	--	--	--	--
Aug-96	ND	ND	**24**	**9**	NS	**48**	ND	**60**	**35**	NS	--	--	--	--	--	--	--
Jan-98	ND	ND	ND	ND	NS	**23**	**38.2**	ND	**10.2**	NS	--	--	--	--	--	--	--
Aug-99	ND	ND	ND	**5.7**	NS	**28.1**	**30.2**	ND	**20.1**	NS	--	--	--	--	--	--	--
Jul-00	ND	ND	**14.4**	ND	NS	**59.7**	**75.9**	ND	**77.6**	NS	--	--	--	--	--	--	--
Jul-01	ND	ND	**12**	**8**	NS	**76**	**77**	ND	**58**	NS	--	--	--	--	--	--	--
Feb-02	ND	ND	**5.1**	4	NS	**6.3**	**22**	1.4	**13.5**	NS	--	--	--	--	--	--	--
Oct-02	NS	NS	3	3.6	NS	**20**	**36**	ND	**17**	NS	--	--	--	--	--	--	--
Dec-03	NS	NS	NS	**5.4**	NS	**47.8**	**192**	3.6	**42.5**	0.62	--	--	--	--	--	--	--
Jan-05	NS	NS	**10.6**	2.7	NS	**13.2**	**67.1**	0.78	**14.9**	NS	--	--	--	--	--	--	--
Jul-05	NS	NS	**7.3**	3.6	NS	**32.8**	**195**	1.5	**56.7**	ND	--	--	--	--	--	--	--
Dec-05	NS	NS	**9.8**	**5**	NS	**27.3**	**161**	4.1	**38.4**	ND	--	--	--	--	--	--	--
Jan-07	NS	NS	**5.4**	3	NS	**37**	**350**	ND	**19**	ND	--	--	--	--	--	--	--
Feb-08	ND	NS	3.4	3.3	NS	**30**	**140**	ND	**21**	ND	**24**	**160**	**11**	3.2	**54**	**11**	ND
Mar-09	NS	NS	ND	**6.3**	NS	**9.4**	**390**	ND	**21**	ND	**55**	**80**	**15**	4.4	**50**	**6.8**	ND
Apr-12	0.93	ND	NS	NS	NS	**22.7**	**83.3**	5.48	**10.4**	0.12	NS	NS	**12.8**	10.7	**30.1**	**9.59**	1.42
Oct-15	NS	NS	NS	NS	NS	NS	**22**	2	**13**	NS	NS	NS	**10**	**14**	NS	**20**	NS
Dec-16	NS	NS	NS	NS	NS	**12**	**14**	ND	**8.7**	ND	**5.7**	**10**	4.9	**9.6**	**20**	**15**	ND

NYSDEC Water Quality Standard Surafce Waters and Groundwater for Cadmium - 5 ug/L

USEPA Federal MCL for Cadmium - 5 ug/L

- - No data available - well not installed

ND Not detected above the NYS and Federal standards

NA Not available -Not analyzed

NS Not Sampled

Bold Exceedence of NYSDEC and/or Federal Standards

Table 3

Historical Groundwater Analytical Data for Chromium - August 1988 throughApril 2012

Sampling Date	***Monitoring Well (data is in units of ug/L of chromium)***																
	SP-1	DP-1	SP-2	SP-3	SP-4	SP-5	SP-6	DP-6	SS-6	DP-8	ERT-1	ERT-2	ERT-3	ERT-4	ERT-5	ERT-6	ERT-7
Aug-88	**291**	43.2	**1560**	**5850**	**363**	**4440**	**3290**	**479**	**1920**	15.1	--	--	--	--	--	--	--
Sep-88	81.4	11.4	**1510**	**289**	**155**	**2970**	**1110**	56.3	**3390**	ND	--	--	--	--	--	--	--
Feb-91	49	ND	**1800**	NA	NA	**619**	NA	ND	NA	NA	--	--	--	--	--	--	--
Aug-93	53	ND	**560**	**165**	89	**140**	**166**	NS	**263**	NS	--	--	--	--	--	--	--
Jul-94	39	23	**1630**	23	51	**350**	43	71	**125**	ND	--	--	--	--	--	--	--
Apr-95	ND	ND	83	11	ND	20	14	20	15	ND	--	--	--	--	--	--	--
Aug-96	ND	ND	57	ND	NS	20	42	20	20	NS	--	--	--	--	--	--	--
Jan-98	ND	ND	ND	19.6	NS	16.4	12	45	19.8	NS	--	--	--	--	--	--	--
Aug-99	ND	ND	26.2	ND	NS	15.3	28	29.8	31.7	NS	--	--	--	--	--	--	--
Jul-00	ND	2.9	32.7	ND	NS	13.5	19	ND	**111**	NS	--	--	--	--	--	--	--
Jul-01	ND	ND	**130**	ND	NS	13	30	**552**	57	NS	--	--	--	--	--	--	--
Feb-02	ND	11	9.3	ND	NS	40.2	75.4	47.9	**102**	NS	--	--	--	--	--	--	--
Oct-02	NS	NS	22	5	NS	30	69	61	93	NS	--	--	--	--	--	--	--
Dec-03	NS	NS	NS	3.1	NS	50.3	35.1	21.5	84.5	ND	--	--	--	--	--	--	--
Jan-05	NS	NS	44.4	11.1	NS	39.2	52.2	41.9	66.4	NS	--	--	--	--	--	--	--
Jul-05	NS	NS	89.7	6.6	NS	**168**	31.9	39.2	**218**	ND	--	--	--	--	--	--	--
Dec-05	NS	NS	75.4	8.5	NS	38.5	**180**	30.4	60.5	0.32	--	--	--	--	--	--	--
Jan-07	NS	NS	65	ND	NS	28	23	30	**100**	ND	--	--	--	--	--	--	--
Feb-08	15	NS	37	ND	NS	46	67	43	73	ND	30	**120**	**110**	45	80	27	ND
Mar-09	ND	NS	43	ND	NS	23	**510**	32	37	ND	45	80	**120**	44	85	21	ND
Apr-12	2.72	NS	NS	NS	NS	30.3	**108**	35.3	23.9	2.48	NS	NS	56.1	23.3	40.2	6.59	0.27
Oct-15	NS	NS	NS	NS	NS	NS	**176**	45	**404**	NS	NS	NS	**509**	**876**	NS	43	NS
Dec-16	NS	NS	NS	NS	NS	35	62	37	56	ND	5	34	57	26	50	ND	ND

NYSDEC Water Quality Standard Surafce Waters and Groundwater for Chromium -50 ug/L

USEPA Federal MCL for Chromium - 100 ug/L

- - No data available - well not installed

ND Not detected above the NYS and Federal standards

NA Not available -Not analyzed

NS Not Sampled

Bold Exceedence of NYSDEC and/or Federal Standards

APPENDIX B Figures

Figure 1: Site Location Map (Broad View of Site on Long Island)

32 Allen Blvd, Farmingdale, NY 11735-5612

Figure 2: Site Location Map (Close-up View of Site Location)

32 Allen Blvd, Farmingdale, NY 11735-5612

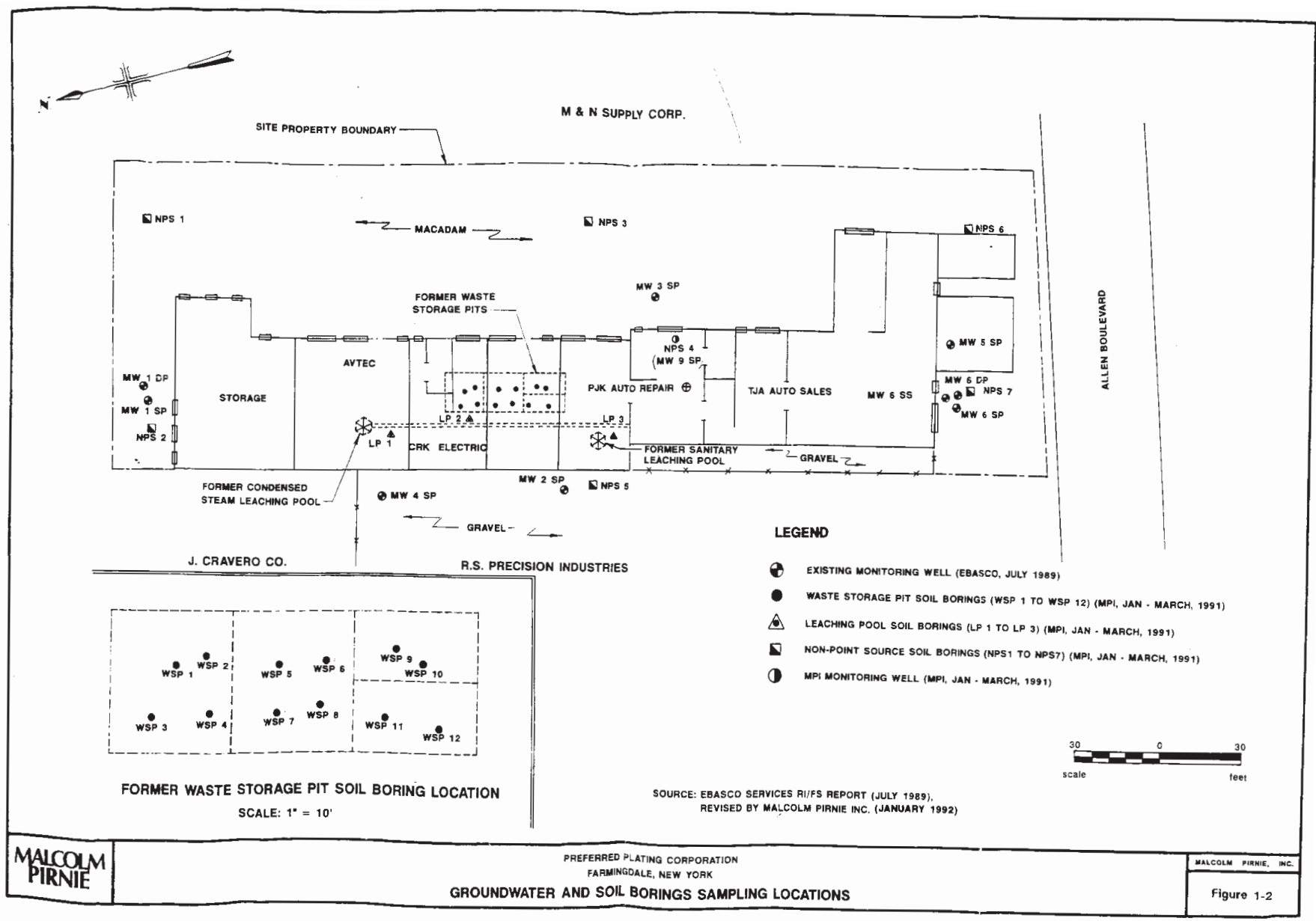

M & N SUPPLY CORP.
SITE PROPERTY BOUNDARY
NPS 1
MACADAM
NPS 3
NPS 6
MW 3 SP
FORMER WASTE STORAGE PITS
NPS 4 (MW 9 SP)
MW 5 SP
ALLEN BOULEVARD
MW 1 DP
MW 1 SP
NPS 2
STORAGE
AVTEC
PJK AUTO REPAIR
TJA AUTO SALES
MW 6 SS
MW 6 DP
NPS 7
MW 6 SP
LP 2
LP 3
LP 1
CRK ELECTRIC
FORMER SANITARY LEACHING POOL
GRAVEL
FORMER CONDENSED STEAM LEACHING POOL
MW 2 SP
NPS 5
MW 4 SP
GRAVEL
J. CRAVERO CO.
R.S. PRECISION INDUSTRIES
WSP 1
WSP 2
WSP 3
WSP 4
WSP 5
WSP 6
WSP 7
WSP 8
WSP 9
WSP 10
WSP 11
WSP 12
FORMER WASTE STORAGE PIT SOIL BORING LOCATION
SCALE: 1" = 10'
LEGEND
EXISTING MONITORING WELL (EBASCO, JULY 1989)
WASTE STORAGE PIT SOIL BORINGS (WSP 1 TO WSP 12) (MPI, JAN - MARCH, 1991)
LEACHING POOL SOIL BORINGS (LP 1 TO LP 3) (MPI, JAN - MARCH, 1991)
NON-POINT SOURCE SOIL BORINGS (NPS1 TO NPS7) (MPI, JAN - MARCH, 1991)
MPI MONITORING WELL (MPI, JAN - MARCH, 1991)
30 0 30
scale feet
SOURCE: EBASCO SERVICES RI/FS REPORT (JULY 1989), REVISED BY MALCOLM PIRNIE INC. (JANUARY 1992)
MALCOLM PIRNIE
PREFERRED PLATING CORPORATION
FARMINGDALE, NEW YORK
GROUNDWATER AND SOIL BORINGS SAMPLING LOCATIONS
MALCOLM PIRNIE, INC.
Figure 1-2

Figure 3

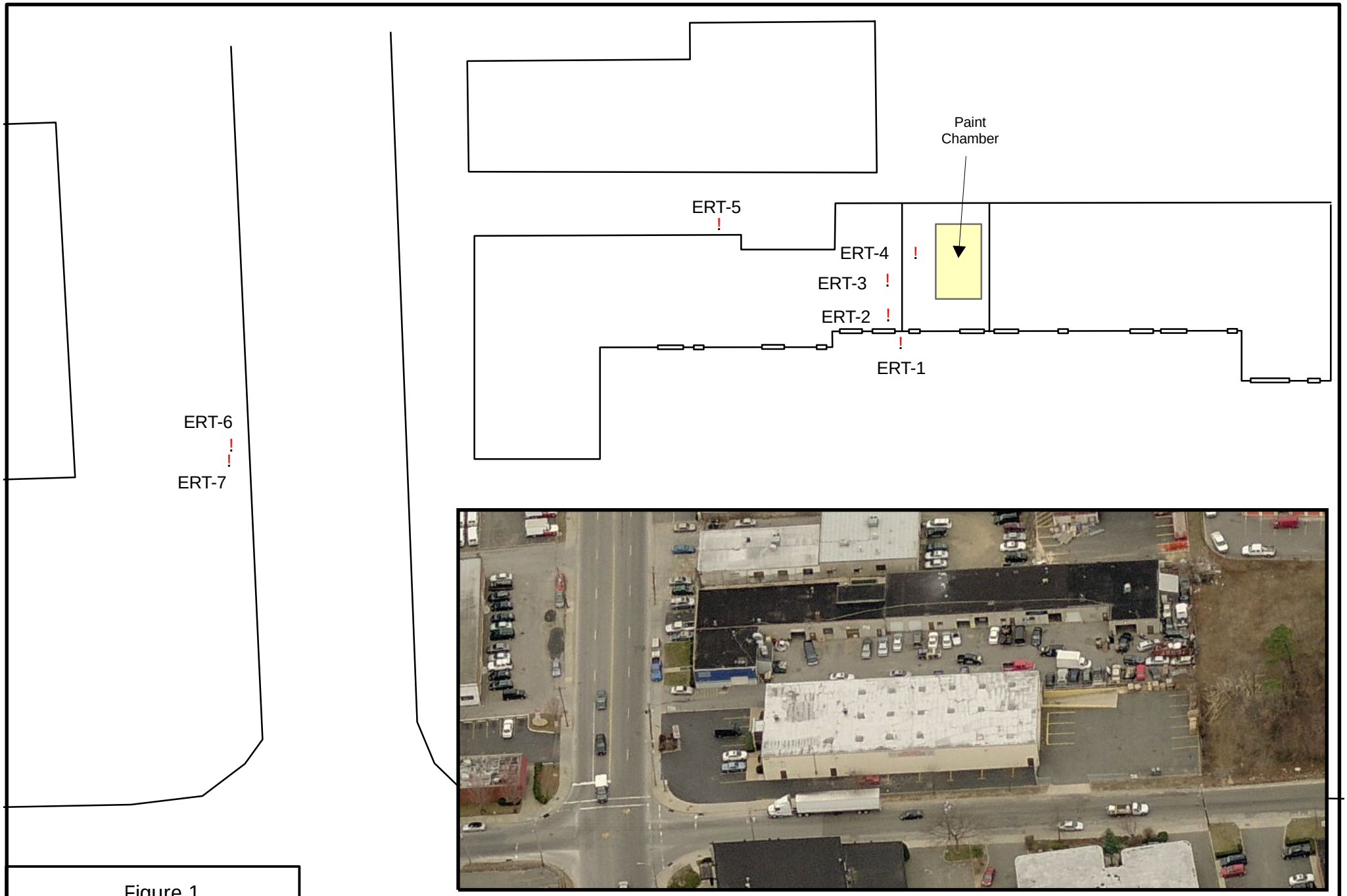


Figure 1
Site Sketch Map
Preferred Plating Site
February 2008
Farmingdale, New York

U.S. EPA Environmental Response Team
Response Engineering and Analytical Contract
EP-C-05-032
WA # 0-276

Figure 4