

XRI – Warren, MI

GSI Solutions to Achieve NFA

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Introduction

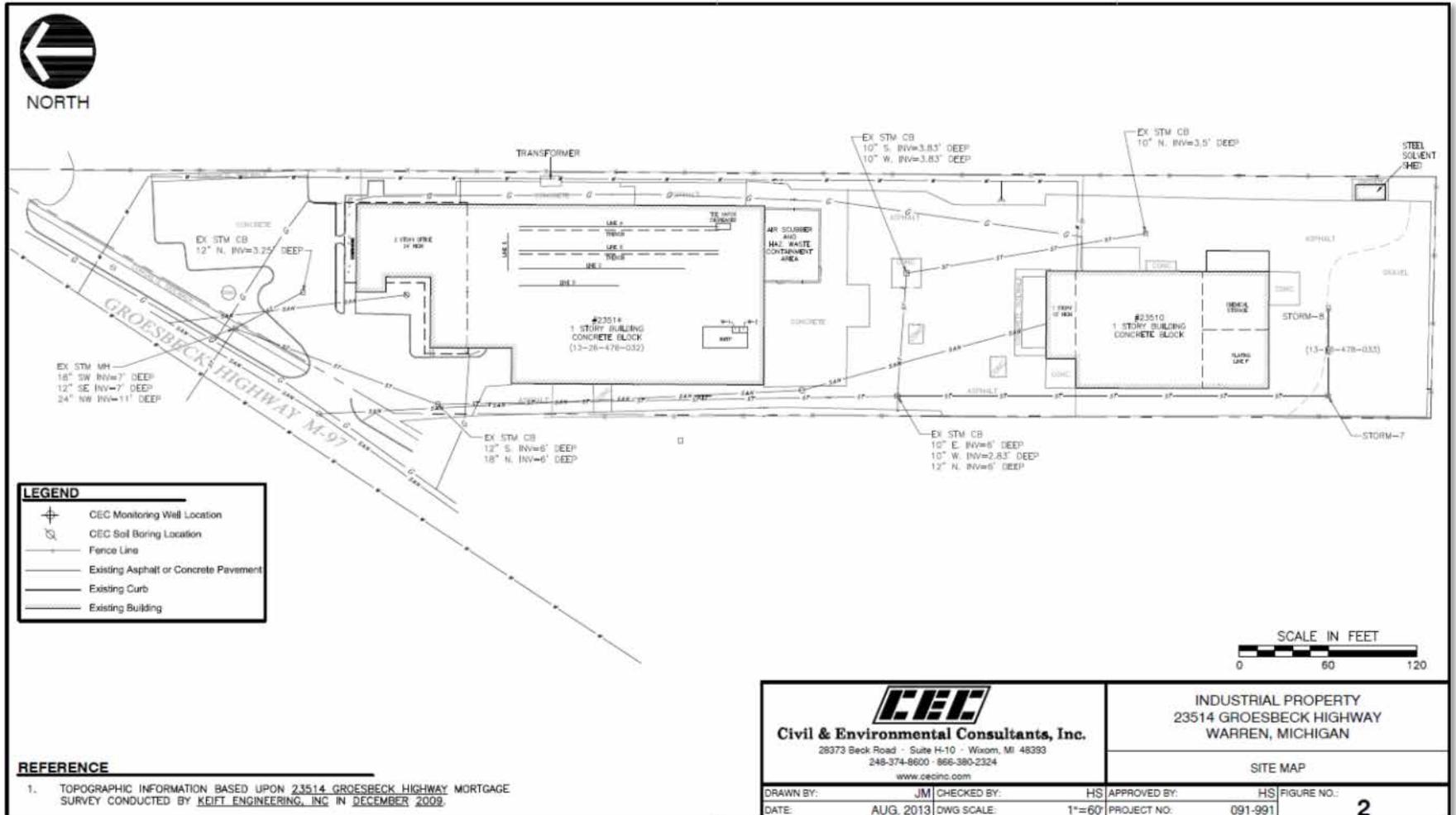


- Case study of a specialty plating operation in Warren, MI that had GSI and potential vapor intrusion issues that were addressed through a collaborative effort between MDEQ, the site owner, and CEC to achieve NFA status.

Site Information

- Site is occupied by two primary buildings:
- North Building:
 - ∅ 35,140 SF and comprised of offices, warehouse, five plating lines, TCE vapor degreaser, air scrubber and hazardous waste containment area, wastewater treatment area, and laboratories.
- South Building:
 - ∅ 11,600 SF and comprised of offices, warehouse, one plating line, and a hazardous materials storage area

XRI Site – Warren, Michigan



Historical Land Use and Site Ownership

- Industrial use of the site began in 1979 as a machine and tooling operation until 1985.
- From 1985 – 2000 the site was used as plastic injection molding operation.
- From 2000 to present day the site has operated as a specialty plating operation
- XRI purchased the site in 2010 and continued operating as a specialty plating operation

Purchase by XRI

- CEC conducted a Phase I ESA, PII ESA, Supplemental PII ESA, and BEA for the site.
- Phase I ESA identified several recognized environmental conditions (RECs) including:
 - Ø Plating operations conducted onsite since 1993
 - Ø Historical use of site as a machine shop
 - Ø Historical exterior storage of hazardous materials (drums)
 - Ø Documented surface releases in 2002 and 2004
- Recommended Phase II ESA.

Purchase by XRI

- Phase II ESA identified VOCs, SVOCs, Al, As, Ba, Cr, Co, Fe, Mg, Mn, Se, Na, and Zn above criteria.
- Completed BEA for Site.
- Seller and buyer (XRI) determined they wanted closure for the Site. CEC shifted focus from due diligence investigation to remedial investigation and closure objectives.

Road to NFA

- Initial response activities:
 - Ø Remedial Investigation
 - Ø GWNIAA
 - Ø Statistical analysis and background metals determination
 - Ø Application of MIOSHA exemption to address VI
 - Ø Silver GSI issue

Remedial Investigation

- Several iterations of subsurface investigation and monitoring conducted for delineation and to address specific exposure pathways/exceedances
- A total of 34 soil borings and 16 monitoring wells were installed onsite.
- 27 soil samples and 49 groundwater samples were collected for laboratory analysis over the entire investigation.

Site Geology

- Generally, the soils consisted of sandy, silty, or clayey fill underlain by fine to medium sand situated above a silty clay layer.
- GWNIAA determination, which was granted by the MDEQ on April 6, 2012.

 Civil & Environmental Consultants, Inc. Chicago Cincinnati Cleveland Columbus Export Detroit Indianapolis Nashville Phoenix Pittsburgh St. Louis						Project Name: PPI 23510 & 23514 Groesbeck Hwy Warren, MI		Borehole/Well ID: SB-25/MW-4	
Date Started: 3/24/2010 Completed: 3/24/2010						Project No.: 091-991		Casing Elevation: 0 Ground Elevation: 0 Groundwater Ele.:	
Drilling Company: EPS, Inc. Driller: Neil Martin CEC Representative: Heston Stein Drilling Method: Geoprobe / Drill Rig						Sample Information: Soil sample SB-25(2'-3') and SB-25(7'-8') submitted for laboratory analysis.			
Bore Hole: 8.25" Core Size:						Comments/Problems:			
Well Installed: <input checked="" type="checkbox"/>									
Screened Interval: 2'-7'									
Sample No./Core Run	Recovery (feet)	Blow Counts/RDD	Organic Vapor Reading (ppm)	Sample Type	Depth (feet)	Material Description and Comments	Graphic Log	Elevation (feet, msl)	Well Diagram
					0	Ground Surface		0.0	
					0	CONCRETE		-0.7	
					1	SANDY CLAY, dark brown, trace gravel, damp		-1.5	
S-1	100		0	GP	2	SAND, dark brown, damp, small to medium grained, moderately sorted		-2.0	
					3	SILTY CLAY, brown-gray mottled, hard, damp		-3.7	
					4	CLAYEY SAND, brown, saturated, small grained, poorly sorted		-5.0	
S-2	100		0	GP	6	SILTY CLAY, brown-gray mottled, hard, damp		-7.0	
					8				
					10				
S-3	100		0	GP	12	SILTY CLAY, brown, hard, damp		-12.0	
					12	End of Boring (12')			

Contaminants of Concern

- Due to significant use of Ag in plating solutions, CEC could not utilize argument that Ag was naturally occurring background.
- Based on investigation to date, metals statistical analysis, and exposure pathway analysis, the COCs were narrowed down to VOCs, SVOCs, and silver.

COC Soil Exceedances

– Soil:

∅ VOCs: no GNCC exceedances.

∅ SVOCs: only fluoranthene and phenanthrene exceeded the GNCC for GSIP.

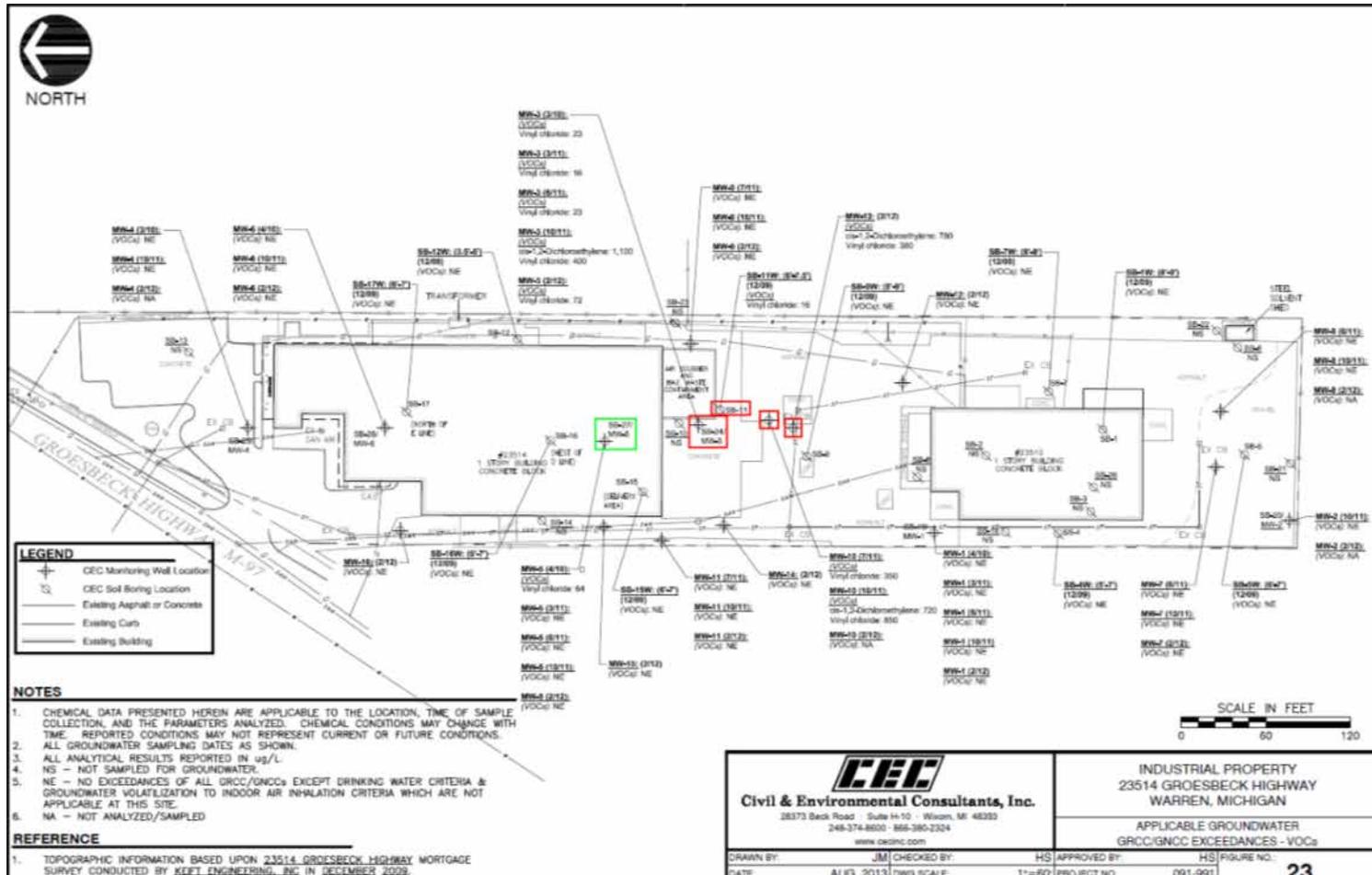
∅ Silver: exceeded GNCC for GSIP on the extreme southern portion of the site and in sediment samples collected in the storm sewer catch basins.

COC Groundwater Exceedances

– VOCs:

- ∅ The VOC exceedances of applicable GRCCs in groundwater were limited to a small area in the immediate vicinity of the secondary containment area adjoining the south wall of the northern building.
- ∅ Cis-1-2-dichloroethylene concentrations exceeding GSI.
- ∅ Vinyl chloride concentrations exceeding GSI.

COC Groundwater Exceedances - VOCs



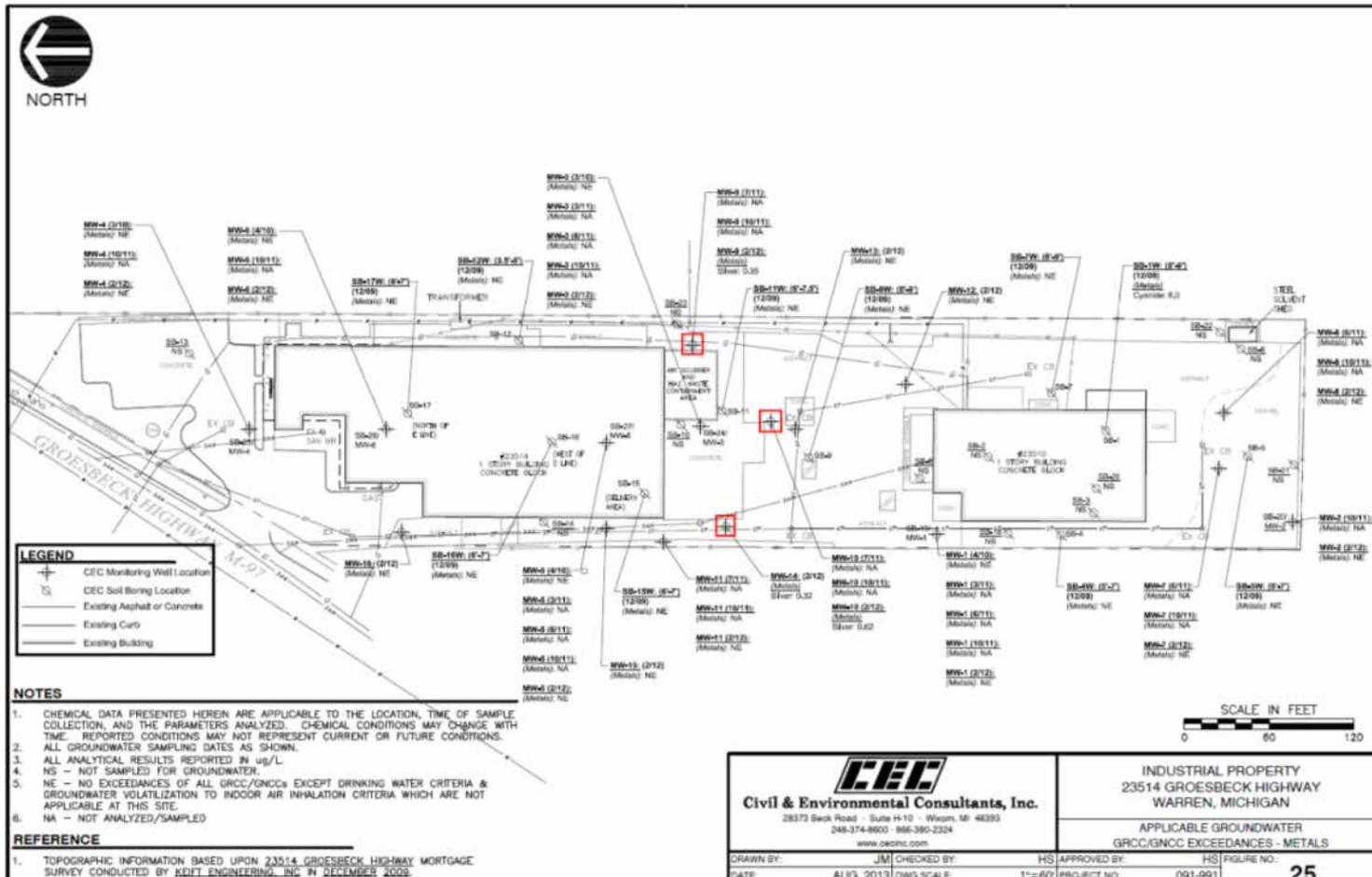
COC Groundwater Exceedances: SVOCs & Ag

– Groundwater:

∅ SVOCs: no GRCC/GNCC exceedances.

∅ Silver: identified in groundwater samples from MW-9, MW-10, and MW-14 in the central portion of the site within close proximity to storm sewer lines at concentrations exceeding GSI.

COC Groundwater Exceedances: Ag



Road to NFA

– Final response activities:

- ∅ Application of MIOSHA exemption to address VI due to presence of TCE and daughter products.
- ∅ Mitigation of Ag GSI issue.
- ∅ Restrictive covenant.

MIOSHA Exemption to Address VI

- TCE and daughter products present in groundwater underneath the northern building at less than 10 feet below the foundation make the groundwater volatilization to indoor air GNCCs not applicable.
- As an alternative to the use of this criteria, CEC used Section 324.20120a(18) of Part 201, which allows a facility to eliminate these criteria if all of the following conditions are met:

MIOSHA Exemption to Address VI

- The facility falls within the the NAICS code range of 31-33.
- The facility complies with MIOSHA.
- The hazardous substances are included in the facility's hazard communication program.

Mitigation of Silver GSI Issue

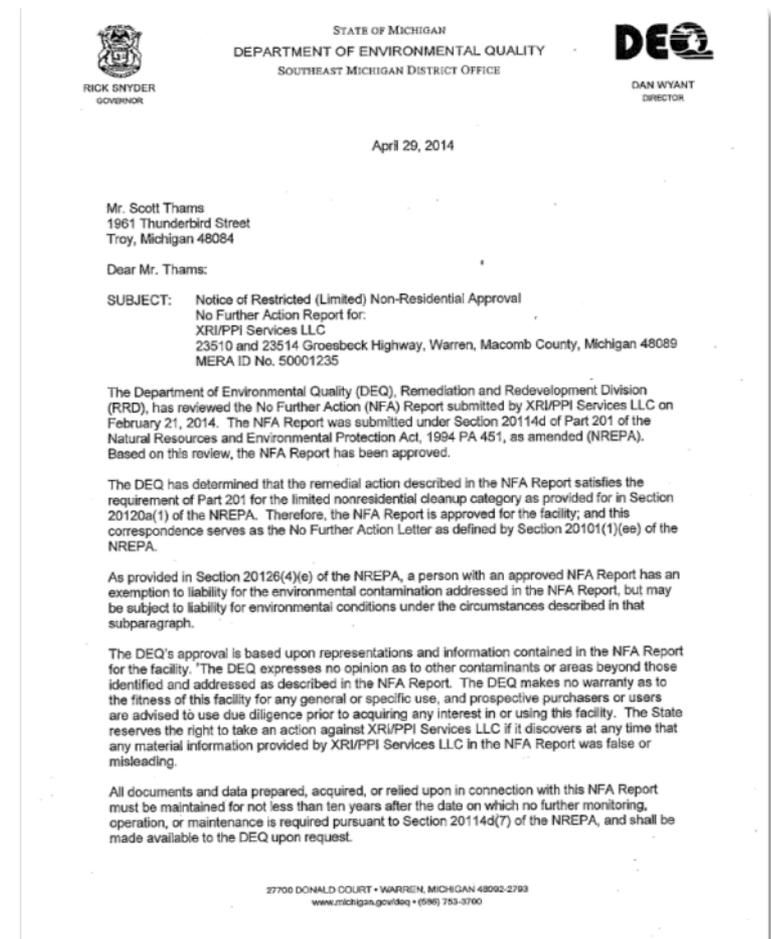
- Silver identified in site stormwater effluent at outfall to municipal storm sewer and downstream at the Red Run Drain (4.8 miles from site) exceeding GSI.
- Silver identified above GSI in sentinel wells adjacent to the storm sewer line.
- Ag was identified exceeding GSIP in sediments within 5 catch basins onsite.

Mitigation of Silver GSI Issue

- Entire storm sewer system jetted/vacuumed to remove sediment.
- Two subsequent stormwater effluent sampling events did not identify Ag.
- Ag was likely deposited in the storm sewer sediments during the two surface releases. Additionally, heavy sediment load within the system likely contributed Ag as particulates.
- GSI pathway was eliminated for Ag.

Site Granted NFA by MDEQ

- MDEQ granted a limited nonresidential cleanup NFA for the site on April 29, 2014.



Questions

- Any questions or comments?



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