

Public Update – August 11, 2020



Electro Plating Services Site, Madison Heights, Michigan



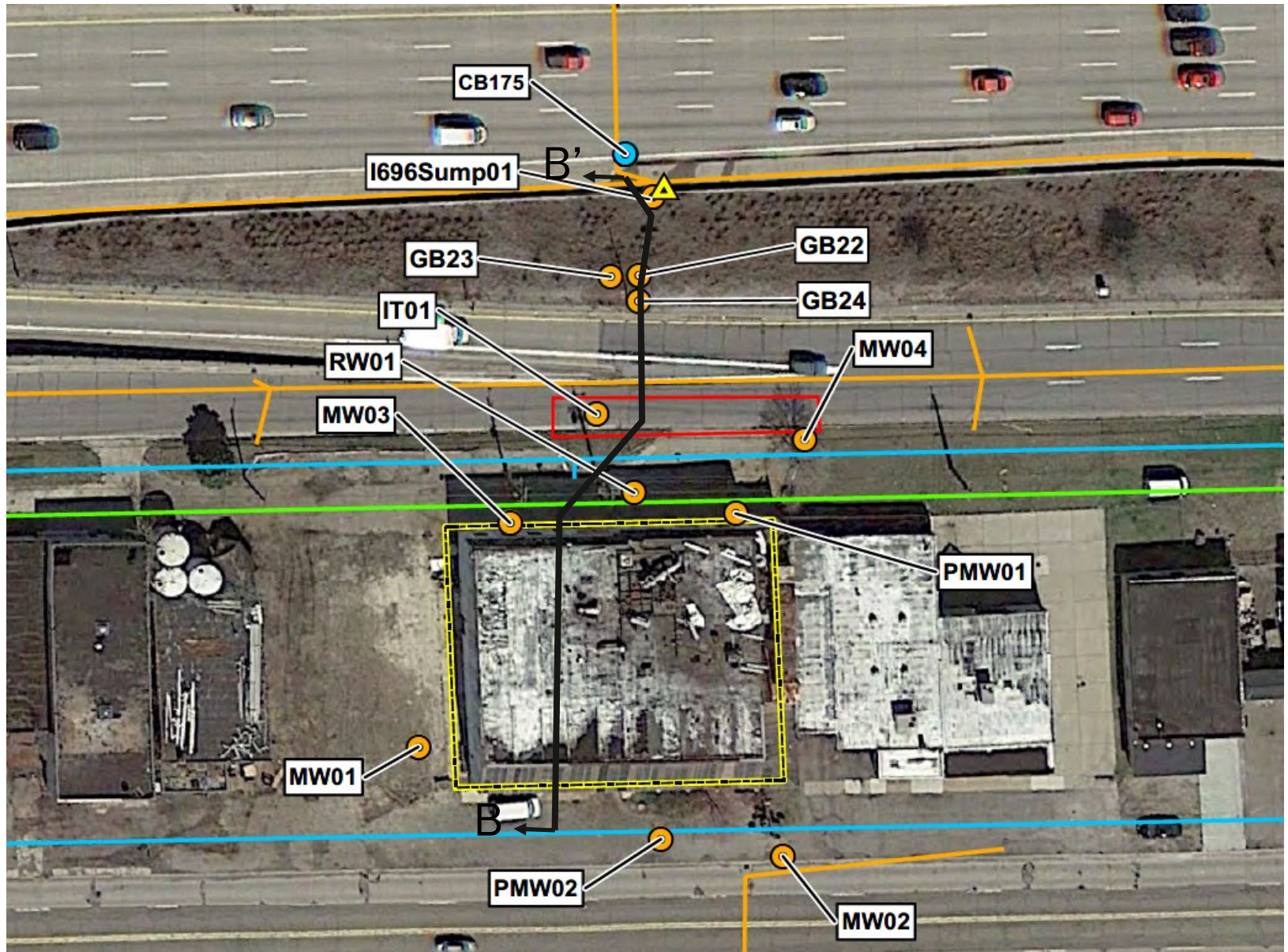
Electro-Plating Services I-696 Incident



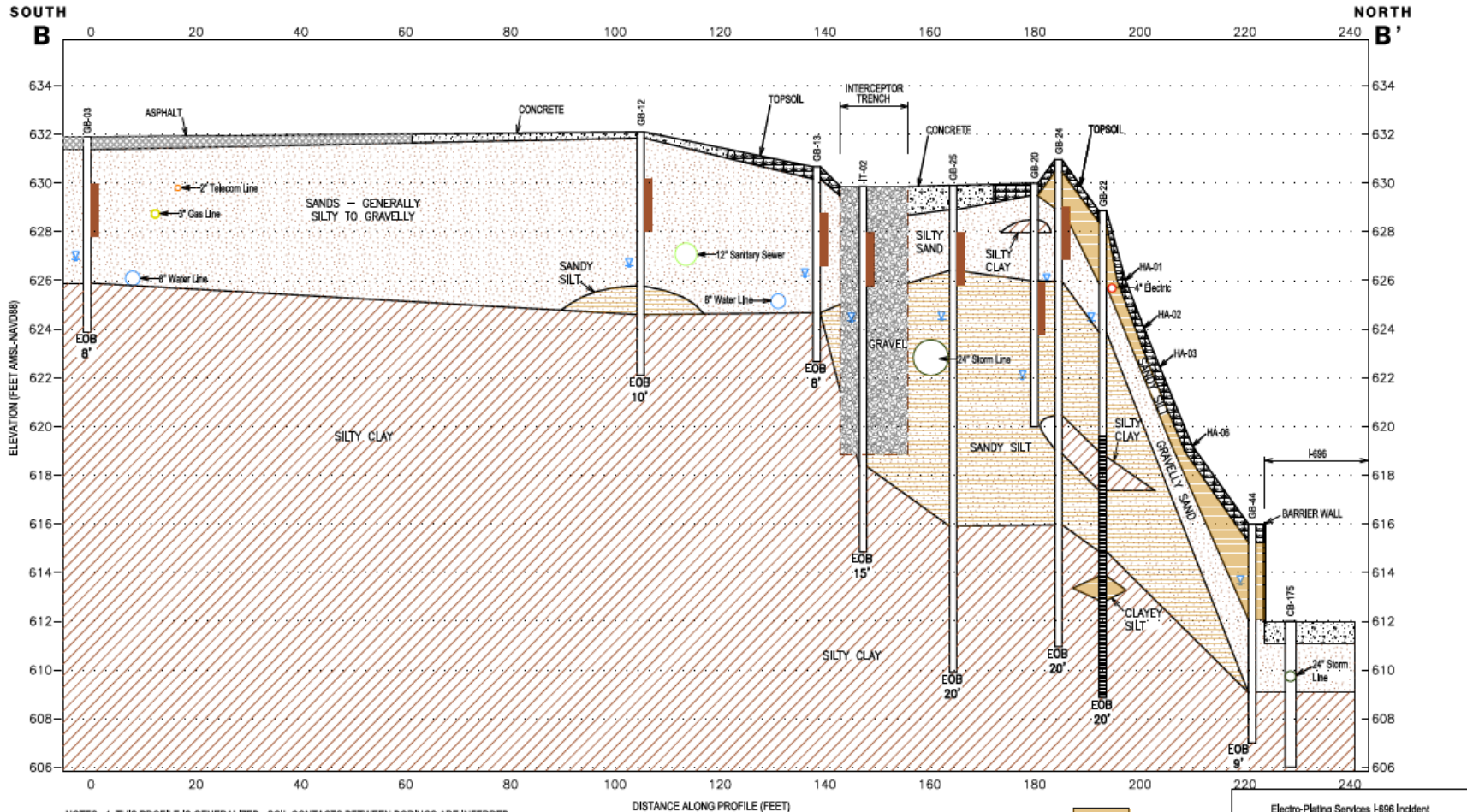
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EPS - I696 Site



Elevation Profile – Cross Section



- NOTES: 1. THIS PROFILE IS GENERALIZED. SOIL CONTACTS BETWEEN BORINGS ARE INFERRED. FOR ACTUAL CONDITIONS, REFER TO ORIGINAL SOIL BORING LOGS.
2. GROUND SURFACE ELEVATIONS WERE SURVEYED BY MSG SURVEY CREW.
3. EOB = END OF BORING.
4. SUBSURFACE SOIL DESCRIPTIONS FOR BORINGS HPT-01, HPT-04, HPT-05, HPT-06, HPT-07, HPT-08, HPT-09, HPT-10 AND HPT-11 ARE BASED ON INTERPRETATION OF THE RESPECTIVE HYDRAULIC PROFILING TOOL (HPT) PRESSURE AND FLOW MAX LOGS PROVIDED BY STOCK DRILLING, INC.
5. THE SIZE AND CONFIGURATION OF SUBSURFACE UTILITIES SHOWN ON THIS CROSS SECTION ARE ESTIMATED.

- Elevation where groundwater was encountered during drilling
- Monitoring Well Screen
- Soil Sample Depth Interval

LEGEND

- Concrete
- Sands - Generally Silty to Gravelly
- Silty Clay

- Clayey Silt
- Gravel
- Asphalt
- Topsoil
- Sandy Silt

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Madison Heights, Michigan

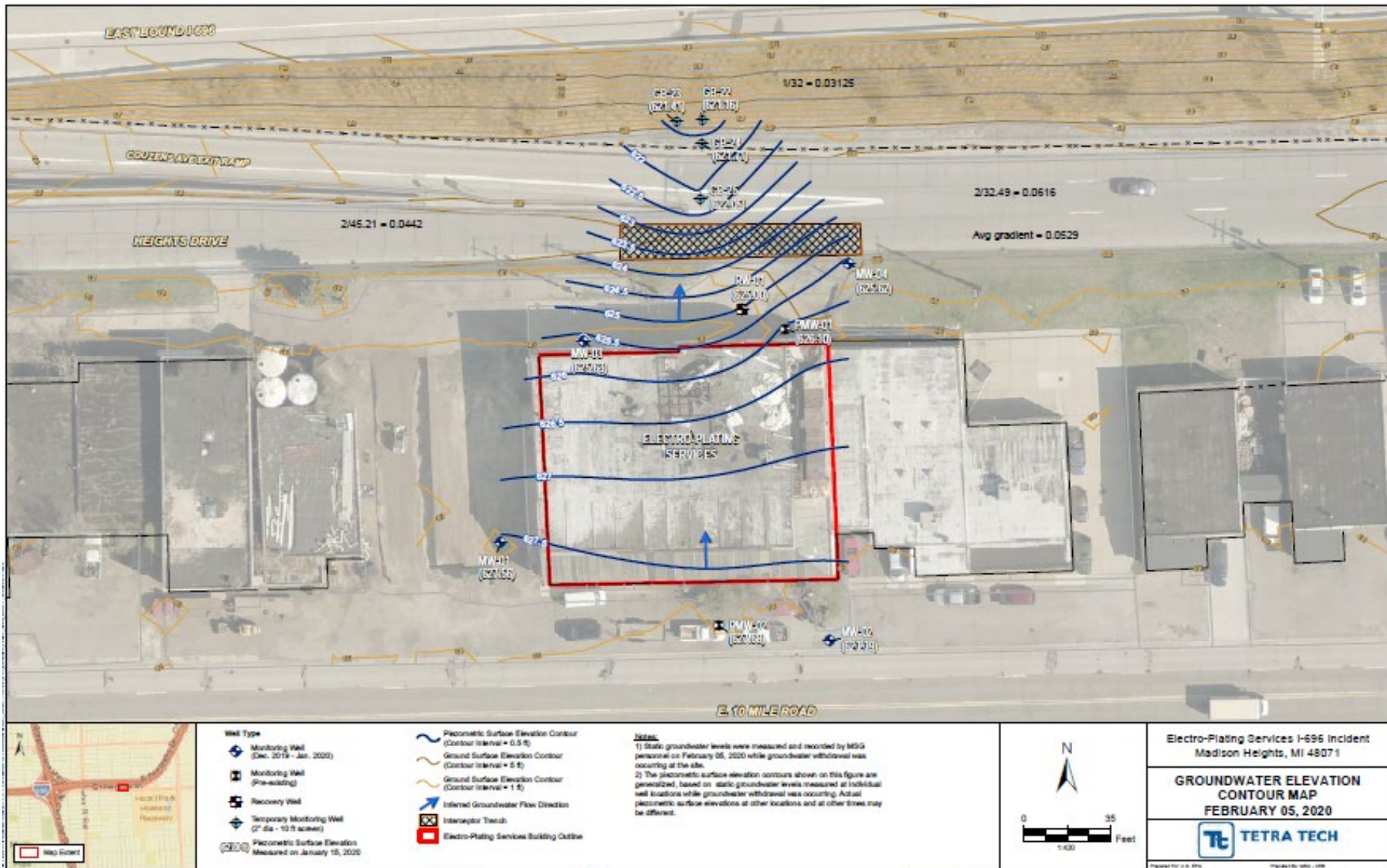
FIGURE 3
GENERALIZED GEOLOGIC
CROSS SECTION B-B'



Prepared For: USEPA

Prepared By: MSG-CUB

Groundwater Flow



Legend

- Release Location
- Groundwater Not Encountered
- Water Sample - No Exceedance
- Water Sample - TCE Exceedance
- Water Sample - Cr(VI) Exceedance
- Water Sample - Exceedance in both TCE and Cr(VI)
- Proposed New Monitoring Well
- Estimated Hexavalent Chromium Compliance Boundary
- Estimated Trichloroethene Compliance Boundary
- Sanitary Sewer
- Storm Sewer
- Municipal Water
- Approximate Site Boundary

Groundwater results are compared to EGLE's Groundwater-Surface Water Interface (GSI) Criteria values for hexavalent chromium and TCE.

Notes:
 EGLE = Michigan Department of Environment, Great Lakes, and Energy
 Cr(VI) = Hexavalent Chromium
 TCE = Trichloroethylene

Source: Oakland County, MI Orthoregistry Dataset (2017)

Electro-Plating Services - 1696 Release
 945 10 Mile Road
 Madison Heights, Oakland County, Michigan

Figure 6X
Primary Contaminants of Concern
Groundwater Screening Level Exceedances

TETRA TECH

Prepared For: US EPA Prepared By: Tetra Tech, Inc.

Response Actions



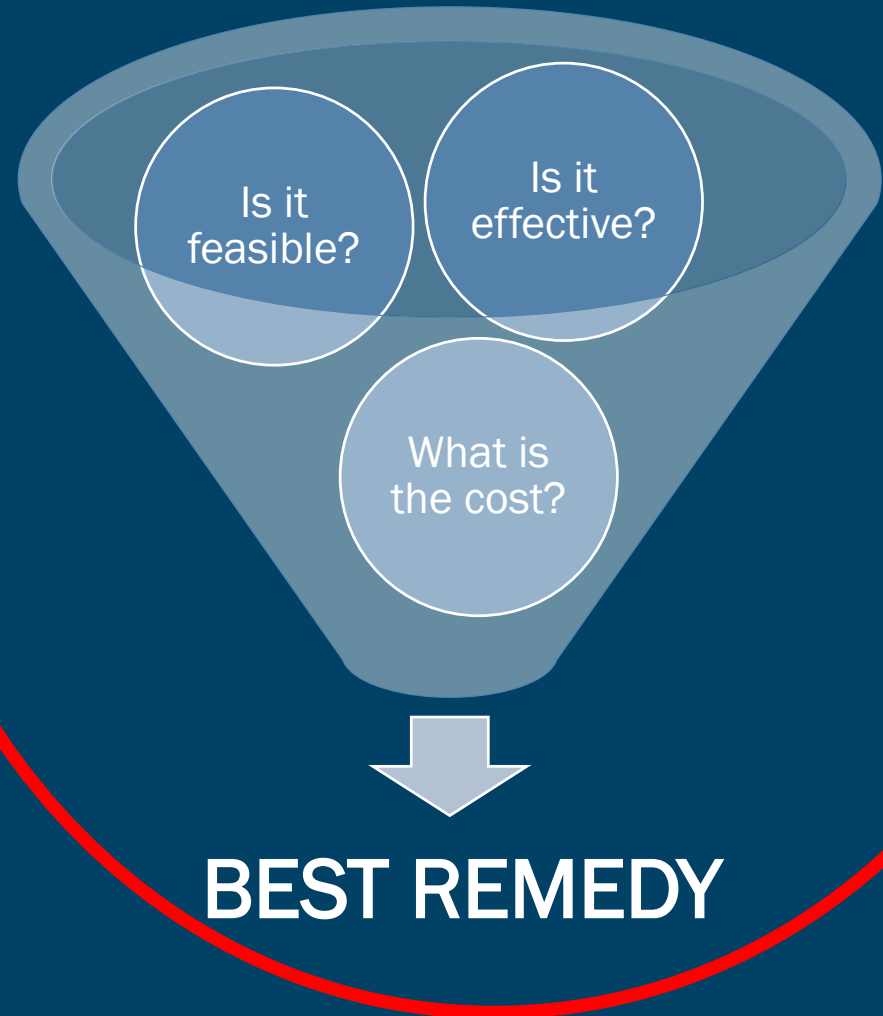
Site Operations

- Collection Systems:
 - Interceptor Trench
 - Basement Sump
 - I696 Embankment Sump
- Bypass System
- COVID-19 – Operations Continued through quarantine
- Minimized personnel working on-site / Rotating schedules
- START Contractors only on-site as needed
- I696-Sump pumped up to Interceptor Trench
- Frac Tank removed from I-696



EPA looked at a variety of technologies including:

- In-Situ (in-place) Treatment
- Groundwater collection and Conveyance
- Wastewater Treatment System
- Excavation/Containment
- A combination of more than one technology
- No further action



A total of 9 options were looked at before choosing In-Situ Treatment



What is In-Situ Treatment?

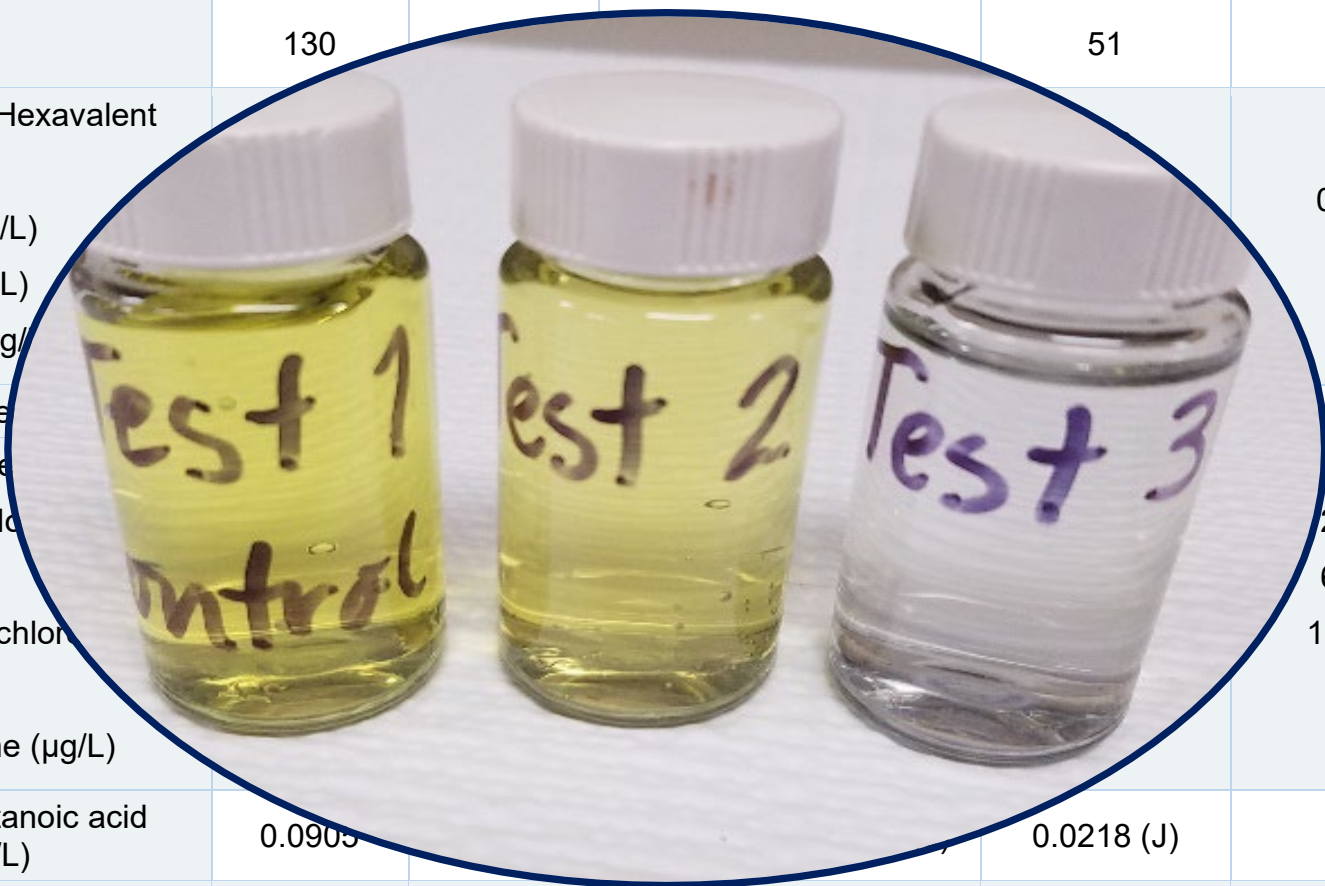
- In-situ treatment is the treatment of contamination in location where it is found in the environment, without removing the soil or groundwater from its location.
- Because the contaminated media (soil, groundwater, etc.) is treated In-Situ, the amount of waste produced is significantly reduced.
- This method is especially helpful when cleaning up high levels in levels of contamination.

Why did we choose In-Situ Treatment?

- Treatment of the Chemicals of Concern
 - Hexavalent Chromium
 - Trichloroethylene (TCE)
 - Cyanide
- Reduction of PFAS/PFOS
- Long Term benefits

Treatability Study

| Analyte | EP-RW-01-012120 | Test 1 Control | Test 2 I-3+EHC Plus (2 wt.%) | Test 3 I-3+EHC Plus (5 wt.%) | Remediation Goal |
|---|-----------------|-----------------|------------------------------|------------------------------|------------------|
| pH (SU) | 6.83 | 8.36 | 7.01 | 6.98 | --- |
| ORP (mV) | 130 | | | 51 | |
| Chromium, Hexavalent (µg/L) | | | | | 11 |
| Mercury (µg/L) | | | | | 0.20 |
| Arsenic (µg/L) | | | | | 10 |
| Selenium (µg/L) | | | | | 5 |
| Cyanide, Free (µg/L) | | | | | 5.2 |
| Trichloroethylene (µg/L) | | | | | 200 |
| cis-1,2-Dichloroethene (µg/L) | | | | | 620 |
| trans-1,2-Dichloroethene (µg/L) | | | | | 1,500 |
| Chloroethene (µg/L) | | | | | 13 |
| Perfluorooctanoic acid (PFOA) (µg/L) | 0.0905 | | | 0.0218 (J) | 12 |
| Perfluorooctane sulfonate (PFOS) (µg/L) | <u>20.2 (J)</u> | <u>3.47 (J)</u> | <u>0.617 (J) / 0.558 (J)</u> | <u>0.467 (J)</u> | 0.012 |



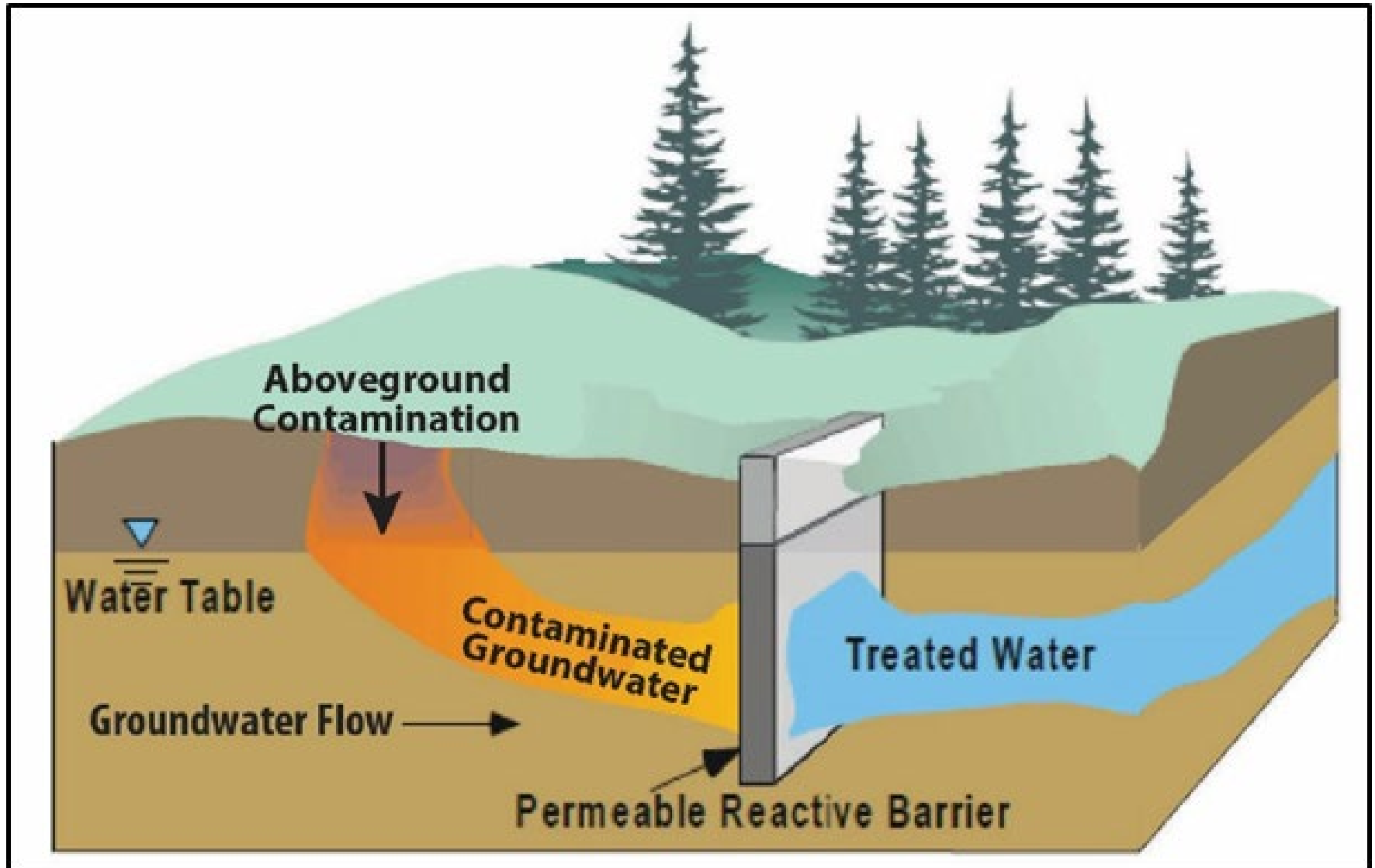


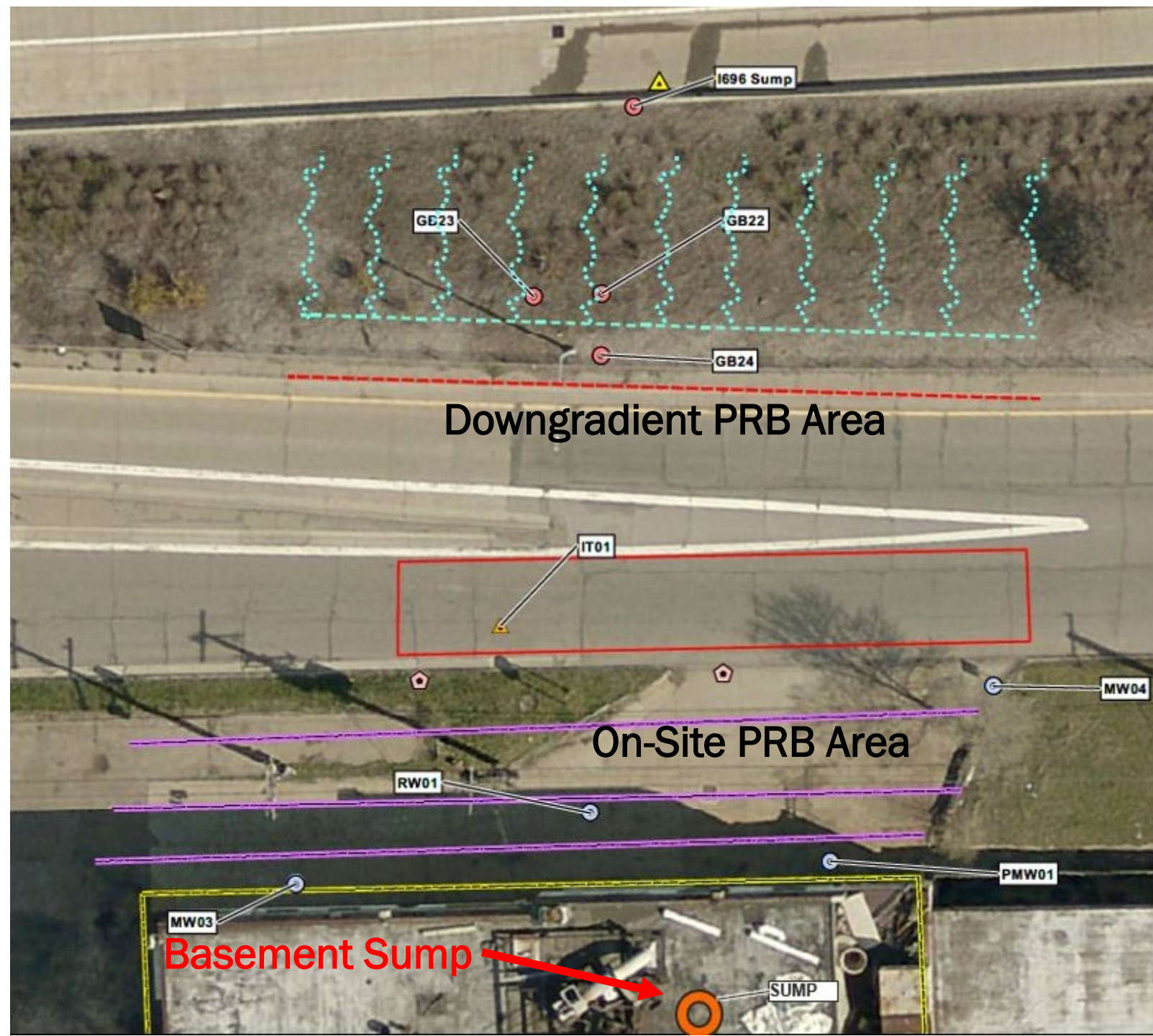
How to Implement In-Situ Treatment

Permeable Reactive Barrier

- A permeable reactive barrier (PRB) is an In-Situ treatment zone established within a contaminated groundwater unit through the application of reactive products.
- The reactive materials interact with the plume of contaminants as it passively migrates through the PRB, removing or degrading contaminants with treated groundwater migrating out of the PRB.
- The primary removal mechanisms include:
 - (1) sorption and precipitation,
 - (2) chemical reaction, and
 - (3) biological oxidation or reduction, depending on the target contaminants.

Conceptual example design





Pilot Study

Injection of the treatment reagents under pressure



Gravity fed reagents along
the embankment into
Permanent Monitoring
Wells



CONTINUED OPERATIONS & ADDITIONAL ACTIONS TO BE TAKEN



Continued Operations and Additional Actions



| | Volume (Gallons) (8/11) |
|--|-------------------------|
| Total Liquid Currently On-Site | 10,469 |
| Total Liquid Taken Off-Site for Disposal | 307,576 |
| Total Volume Liquid Collected On-Site | 318,045 |

- Lining of Sanitary & Storm Sewers – Cured In Place Pipe
 - Repair damaged underground wastewater and stormwater sewer pipes without excavation
 - Repair 2 manholes



MADISON HEIGHTS 10 MILE

1659 -> 1658

Circular 12inch Vitrified Clay Pip

204.90

MADISON HEIGHTS 10 MILE

1659 -> 1658

Circular 12inch Reinforced Concret

204.70



Schedule of Site Activities:

| ESTIMATED TIMELINE | DESCRIPTION |
|--|--|
| Week of July 13 | Pilot Study |
| Week of July 27 | Lining of Sanitary & Storm Sewer |
| | Removal of By-Pass System |
| September | Full-Scale Injection |
| Late December (TBD) | Remove Interceptor Trench / Restore Service Drive* |
| | Remove I-696 Sump / Restore* |
| | Demobilization of EPA / Transfer Site to EGLE |
| *Weather dependent / Subject to change | |



EPA Estimated Costs

- Costs to date: ~\$2.2M
- Future Costs: ~ \$2M
 - In-Situ Treatment
 - Continued Operations

Annual Operation & Maintenance Costs (O&M)

***To be conducted by EGLE**

- **Estimated IST O&M Costs:** **\$63,600**
 - Quarterly GW Monitoring: \$48,500*
 - 3-5 year Maintenance: \$45,300**
 - \$15,100 Annualized
 - 5-10 year Maintenance: \$238-330,000***



* Base Annual Cost

** 3-years initial app

***Every 5-10 years – may be required if no source removal

INFORMATION UPDATES

- EPA - Website
 - <https://www.epa.gov/mi/electro-plating-services-i696-release-site>
- EGLE - Website
 - https://www.michigan.gov/egle/0,9429,7-135-3312_4118-515339--,00.html

