



RACER TRUST LANSING PLANTS 2, 3, & 6

2024 Second Quarter Progress Report | July 15, 2024

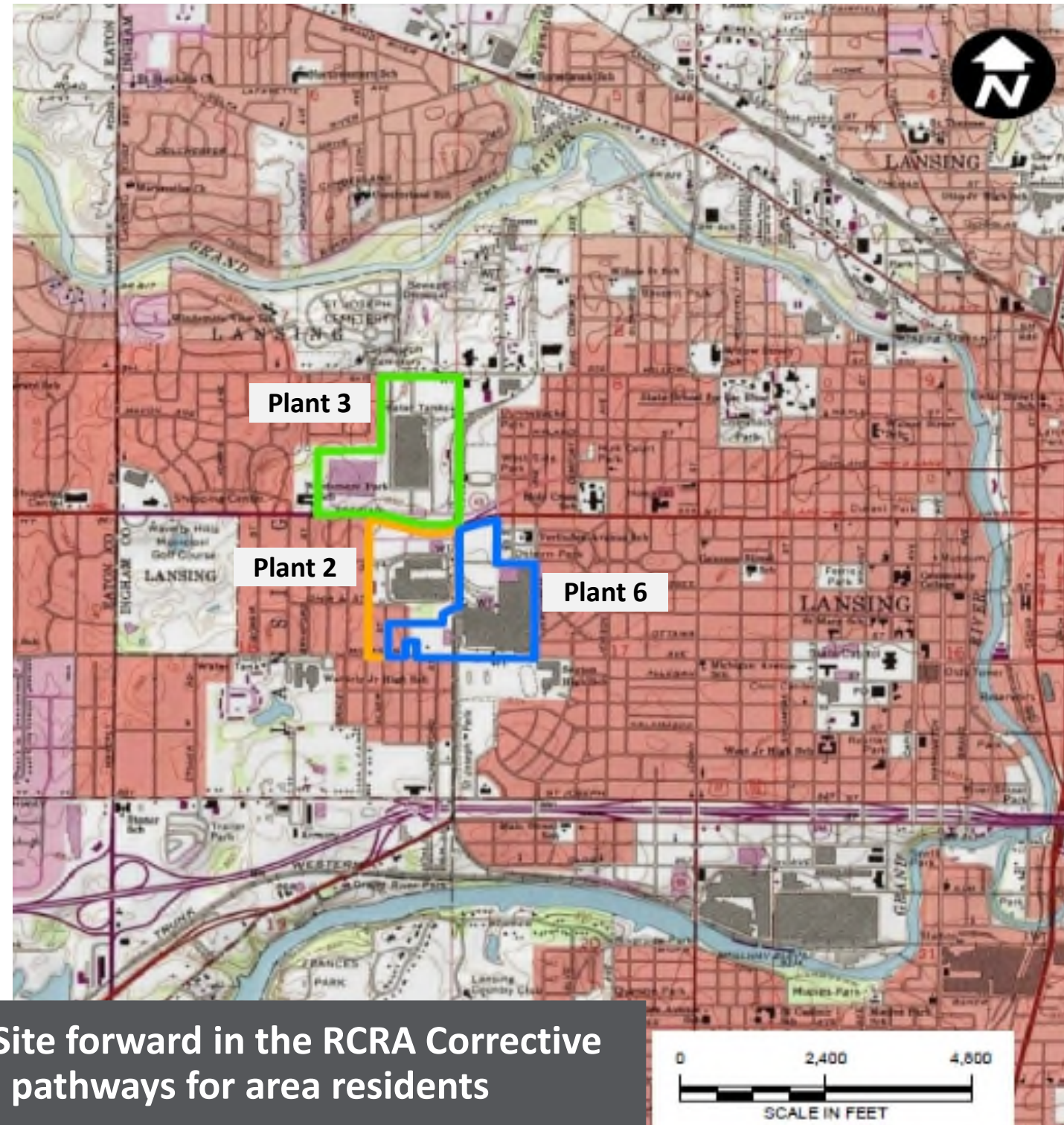
More detailed reports are available on RACER's Webpage for this Site:
<https://www.racertrust.org/properties/lansing-plant-2-industrial-land>

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Site Introduction

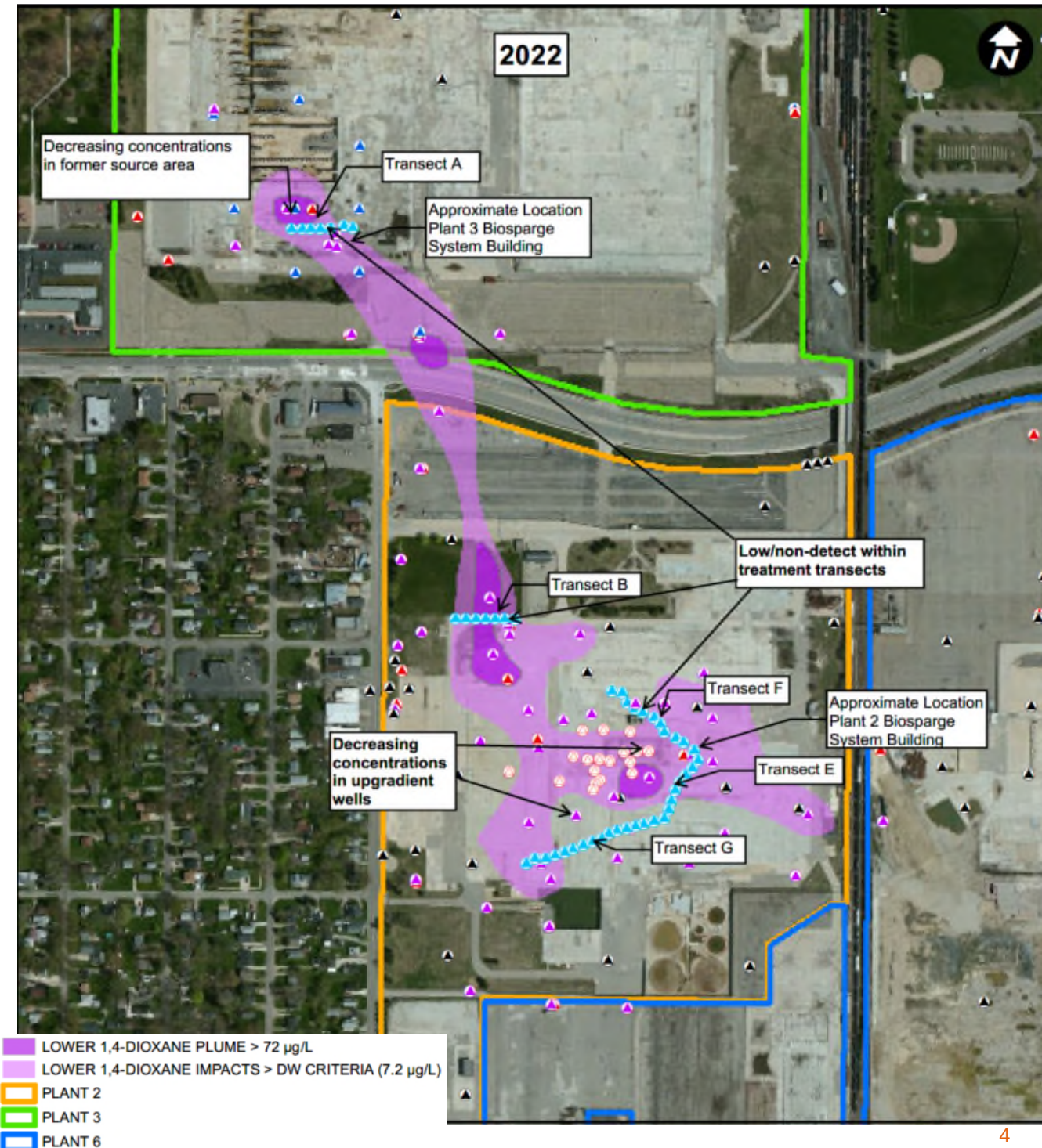
- Remediation at the RACER Lansing Site is being performed through the Resource Conservation and Recovery Act (RCRA) Corrective Action program under the oversight of the Michigan Department of Environment, Great Lakes, and Energy (EGLE). Current activities include focused site characterization, and interim remedial actions.
- There is currently no known complete exposure pathways for area residents associated with the site contaminants.
- Characterization of the 1,4-dioxane plume in weathered bedrock at a depth of approximately 60 to 75 feet below the ground surface is complete. Remediation of 1,4-dioxane in the weathered bedrock includes operation of the Plant 2 and Plant 3 biosparge systems (The Plant 3 system began operating in 2019 and the Plant 2 system began operating in 2020). The biosparge system has successfully reduced concentrations of 1,4-dioxane in the weathered bedrock. Both short- and long-term system objectives continue to be met.
- Routine groundwater monitoring on and in certain areas adjacent to Plants 2, 3, & 6 in the shallow (perched) zone, weathered bedrock, shallow bedrock, and deep bedrock is ongoing and is anticipated to continue for several years.



Activities completed during this period move the Site forward in the RCRA Corrective Action process and verified no complete exposure pathways for area residents

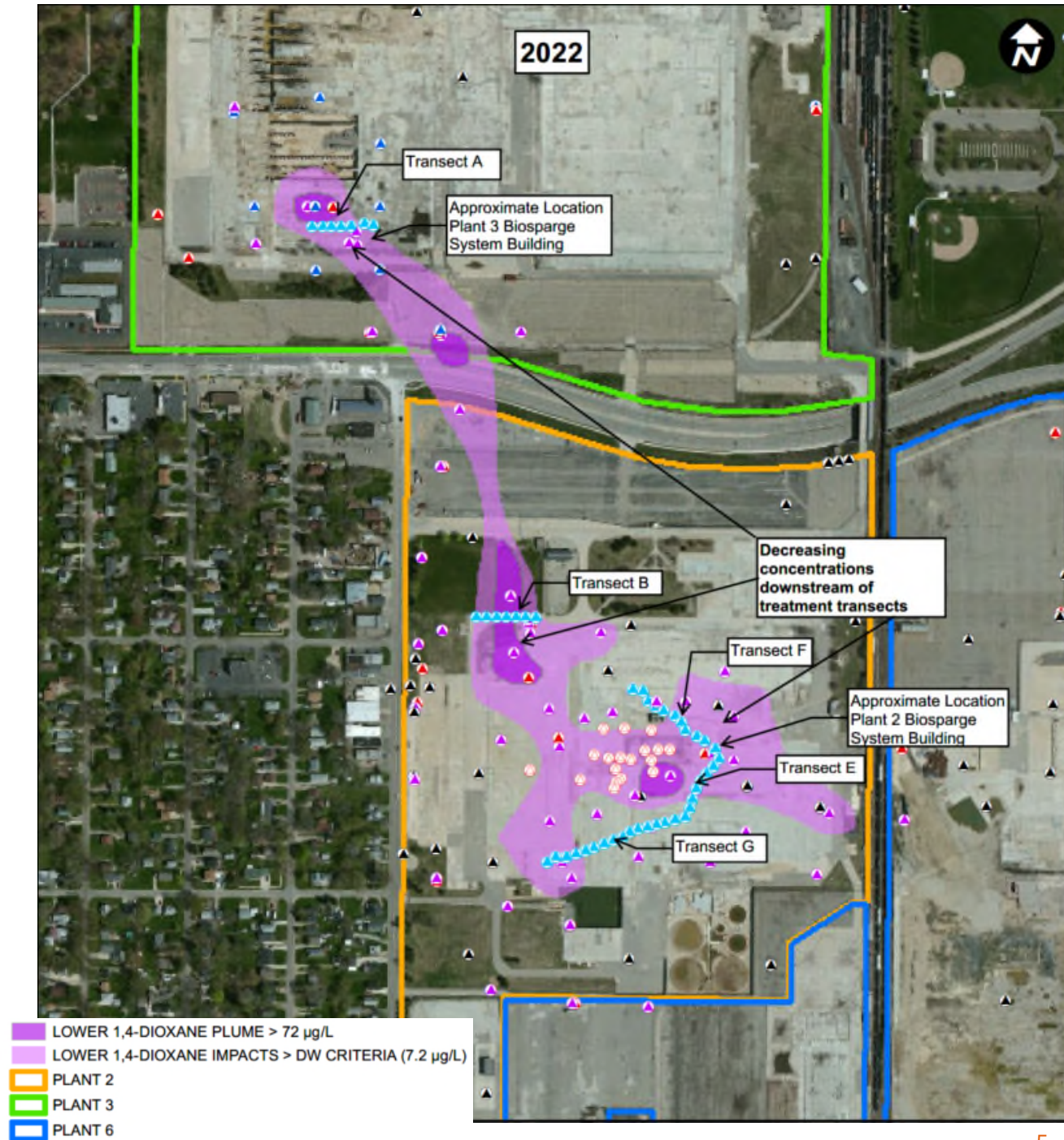
Remediation of 1,4-Dioxane in Weathered Bedrock

- Biosparge systems at Plant 2 and Plant 3 are fully operational
 - Some downtime in May and June related to equipment repairs, well rehabilitation/repair to optimize performance, or regular system maintenance
- Results of performance monitoring show that the biosparge systems are achieving the short-term objective of reducing 1,4-dioxane concentrations and mass along the core of the weathered bedrock plume



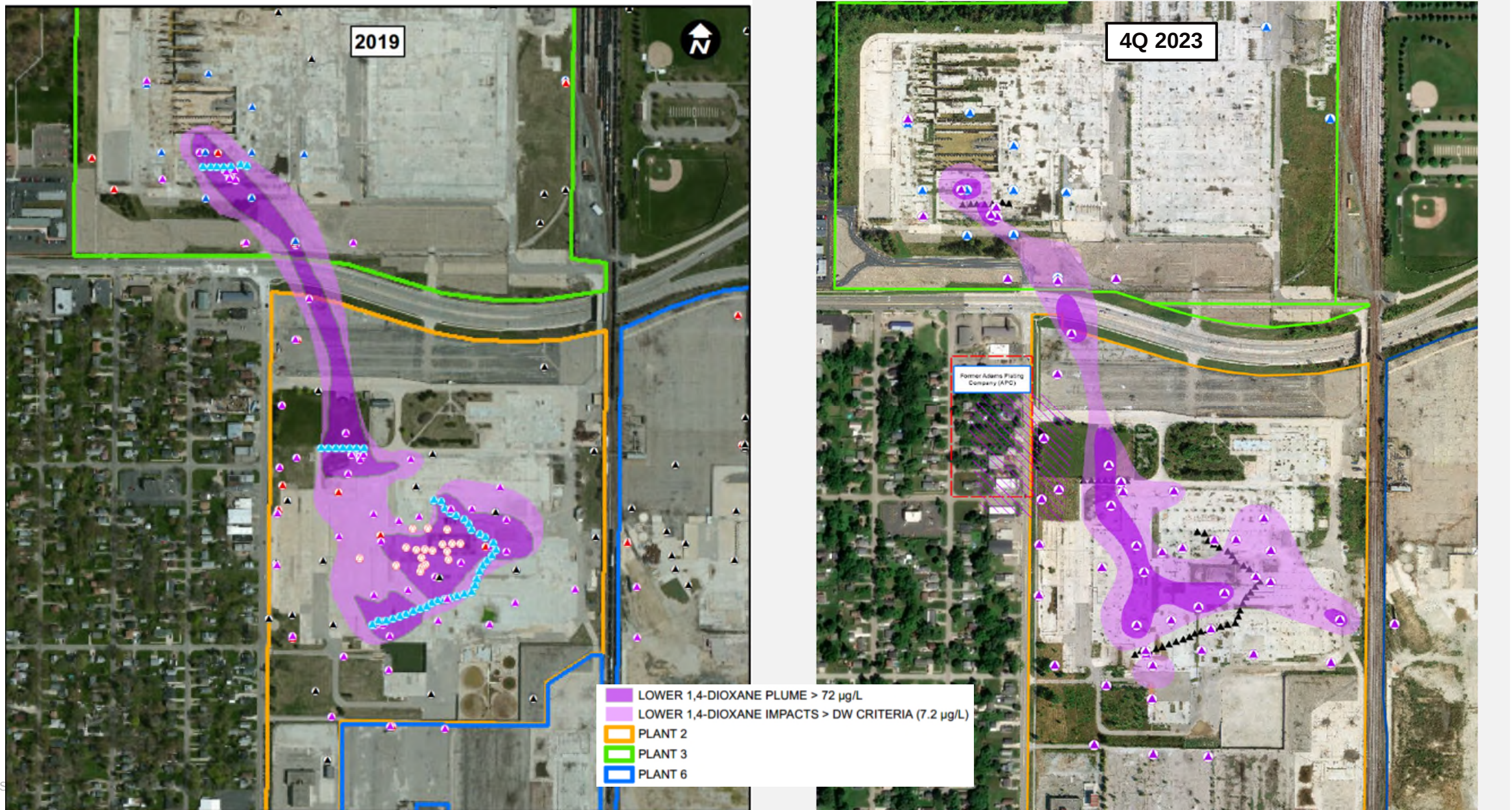
Remediation of 1,4-Dioxane in Weathered Bedrock

- Semi-annual performance monitoring was conducted 2Q 2024. Supplemental performance monitoring of select wells will occur in 3Q and the next semi-annual event will occur in 4Q 2024.
- Results from First and Second Quarter 2024 sampling events continue to show stable to decreasing concentrations of 1,4-dioxane although some slight increases are seen likely due to system downtime during the 2Q sampling period
- An annual Biosparge Summary Report summarizing the 2023-year data is anticipated to be submitted to EGLE during the First Quarter of 2024
- A test was proposed to temporarily shut down portions of the biosparge system to evaluate how the groundwater concentrations respond and to assess if modifications to the operation of the biosparge system are needed to reduce concentrations further. Awaiting EGLE response before implementation.



Remediation of 1,4-Dioxane in Weathered Bedrock

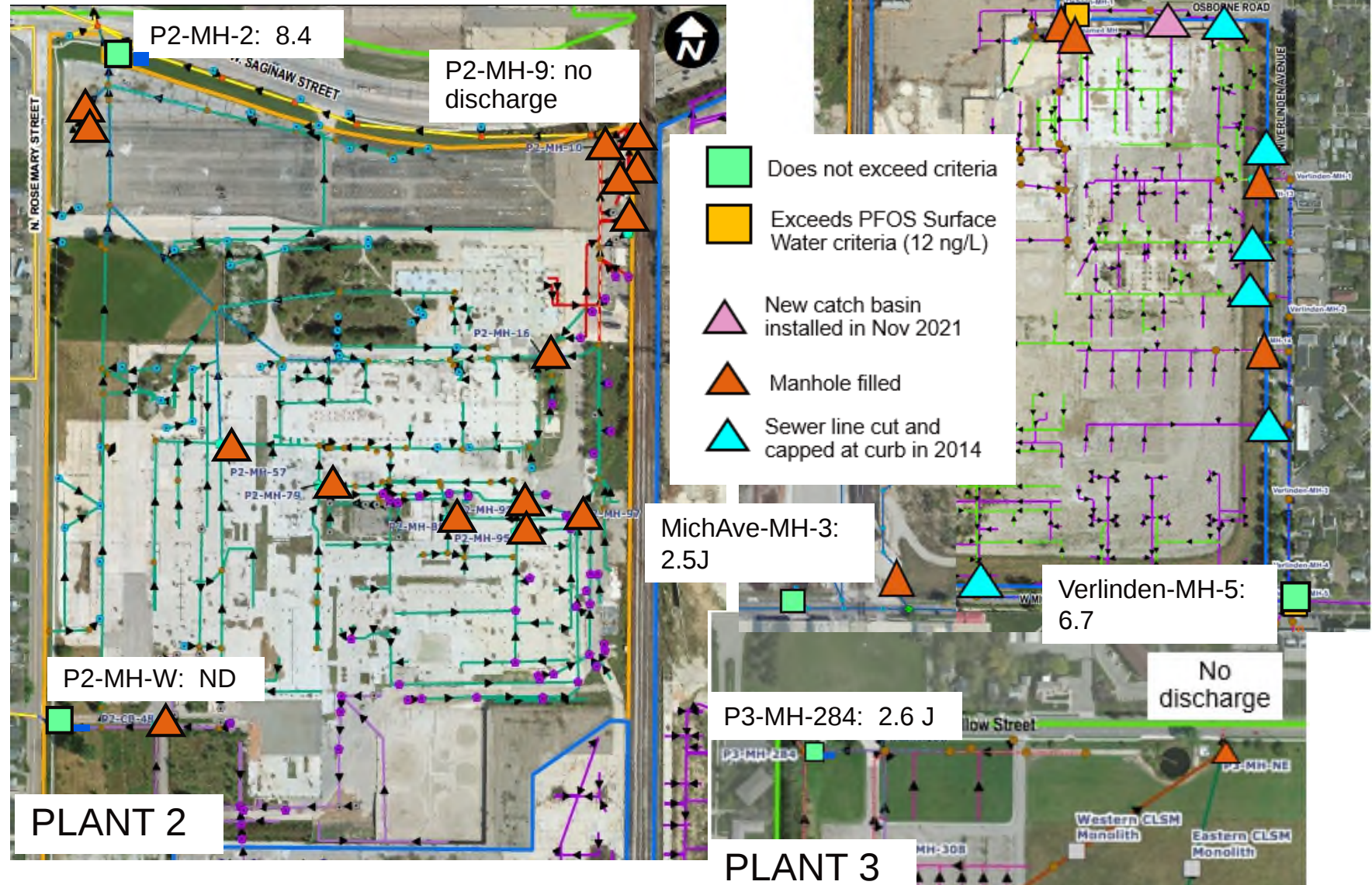
- Visual depiction of lower 1,4-dioxane plume (located within the deep overburden and weathered bedrock) distribution in 2019 vs. Fourth Quarter 2023



Monitoring PFAS Impacts

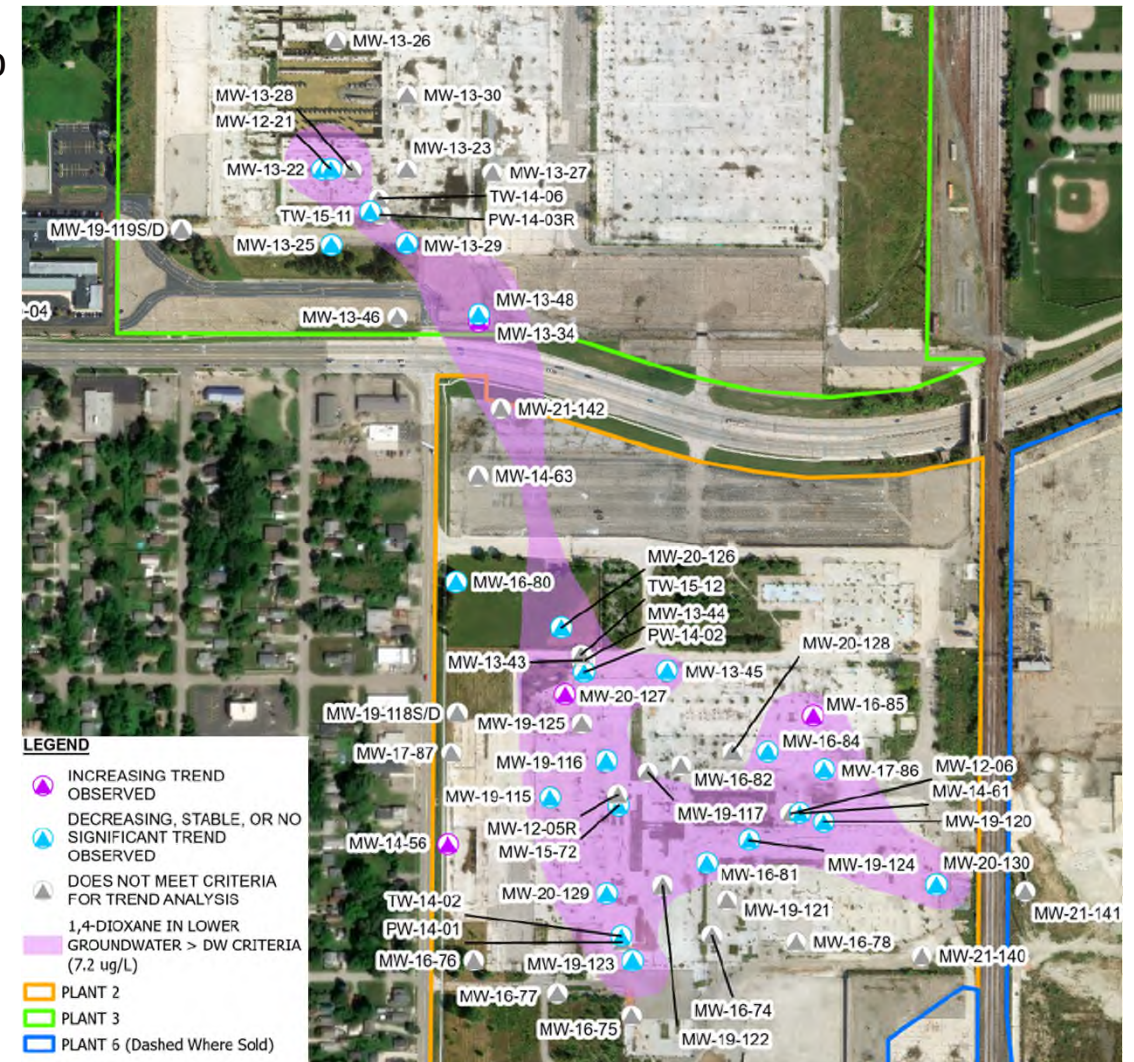
Sewer Monitoring

- Second Quarter site wide monitoring of storm sewers was conducted in April 2024. Results for Perfluorooctanesulfonic acid (PFOS), the specific PFAS of concern, are depicted on figures to the right. Results are at or below the relevant criteria for all but one sample location at Plant 6 (Osborn-MH-1).
- Third Quarter site wide monitoring of storm sewers was completed in July 2024. Results will be summarized in the 3Q Quarter Progress Report.



2023 Annual Monitoring Report Summary

- *Lower 1,4-Dioxane:* Since Plant 2 and 3 biosparge start up in 2020 and 2019, respectively, concentrations across the lower 1,4-dioxane plume are stable to decreasing. A few localized weathered bedrock wells exhibited increasing trends for 1,4-dioxane at Plant 2 and will continue to be monitored in accordance with the 2023 EGLE approved monitoring plan.
- *Perched 1,4-Dioxane:* Detections of 1,4-dioxane at MW-14-58R and associated wells on western Plant 2 will continue to be monitored semi-annually.
- *1,4-Dioxane in Bedrock:* Detections of 1,4-dioxane in deeper bedrock monitoring wells installed along the core of the plume did not exceed drinking water criteria in 2023. Sampling of Lansing Township wells showed results below drinking water criteria and consistent with prior years.
- *VOCs:* Vinyl chloride at the Plant 6 entrance increased from non-detect to 2 µg/L, which exceeds the Site Specific Volatilization to Indoor Air Criteria (SSVIAC) of 0.96 µg/L, but concentrations over time have varied from below criteria to just above the criteria. Soil vapor sampling at SVMP-20-01, has not detected vinyl chloride.
- *PFAS Compounds:* PFAS in perched groundwater at Plants 2, 3, and 6 property boundaries, show stable to decreasing trends, except for one well on Plant 2 western boundary, one well on the Plant 6 eastern boundary, and two wells on or near the Plant 3 eastern boundary (one on-site and one off-site). These locations appear to be localized or are delineated off-site.



Reports Submitted to EGLE Second Quarter 2024

- 2023 Annual Monitoring Report – Submitted on 6/27/24
- Reports can be viewed or downloaded from the RACER Website for the Lansing Property:
<https://www.racertrust.org/properties/lansing-plant-2-industrial-land>

Work in Progress and Near-Term Milestones Anticipated During the Third Quarter of 2024



Activity	Schedule
Remediation of 1,4-Dioxane in the Weathered Bedrock	
Plants 2 and 3 Biosparge System Operation	Ongoing
Biosparge Shut Down Test	Pending EGLE Concurrence
Investigation of 1,4-Dioxane	
Data Sharing of Additional Groundwater Gauging and Sampling in vicinity of Rosemary Street (Coordinated Sampling with EPA for Adams Plating Property Adjacent to Site)	Third Quarter 2024
Remediation and Investigation of PFAS	
Quarterly Storm Sewer Sampling	July 2024
Other investigations, Sampling and Reporting	
Plants 2 Area 2 Excavation and Plants 2 and 3 Exposure Barrier Placement Summary Report	Third Quarter 2024
Approved Groundwater Monitoring Plan - Third Quarter 2024 Groundwater Monitoring	August 2024
Semi-Annual Groundwater Monitoring Report for 2024	Third Quarter 2024

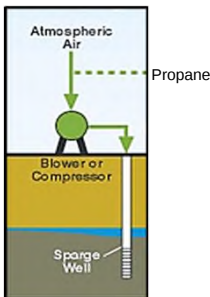
Appendix

BIOSPARGING TREATMENT OF 1,4-DIOXANE

Lansing Industrial Land, Lansing and Lansing Township, Michigan

WHAT IS BIOSPARGING?

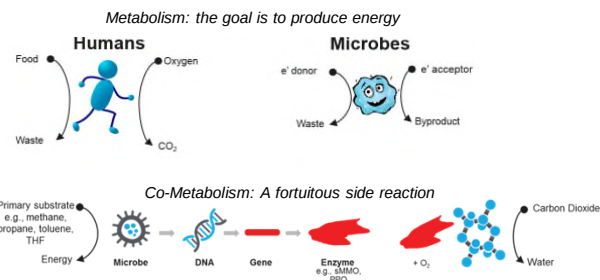
- Air and small amounts of propane are injected into the ground through wells
- Promotes biodegradation of chemicals in groundwater, much faster than it would occur naturally
- 1,4-dioxane is treated in the ground, so minimal waste is generated
- Nearby wells are sampled to make sure treatment is occurring



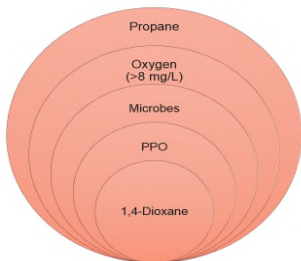
TREATMENT OBJECTIVES

- Reduce onsite concentrations of 1,4-dioxane in the top/weathered zone of the bedrock aquifer
- Prevent off-site migration of 1,4-dioxane

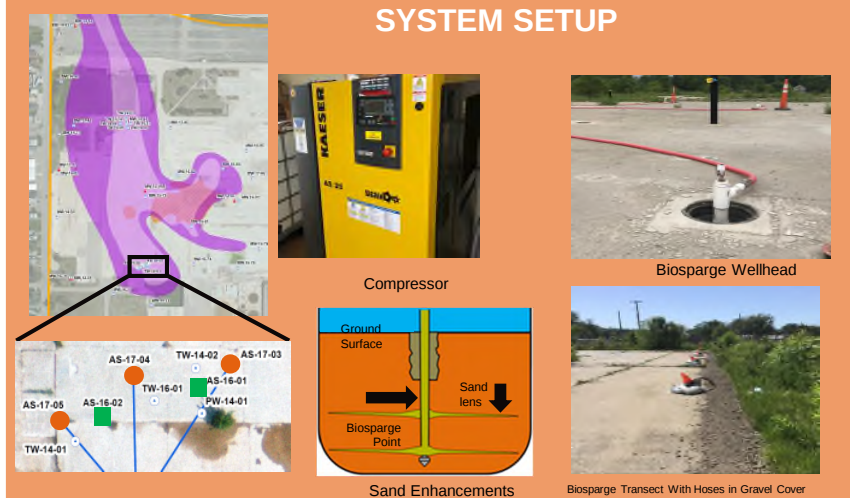
CO-METABOLIC BIODEGRADATION OF 1,4-DIOXANE:



Propane + Oxygen + Microbes = 1,4-Dioxane Treatment

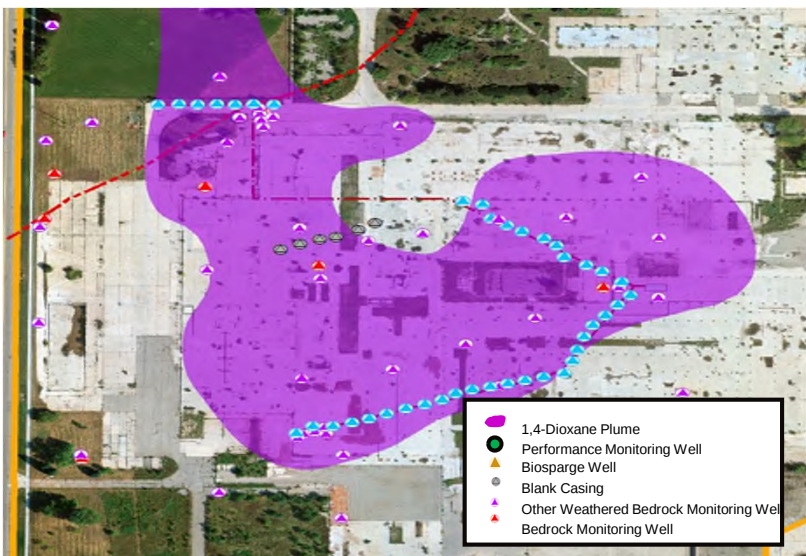


SYSTEM SETUP



- 2016 Pilot Test Biosparge Points
- 2018 Pre-Design Study Biosparge Points With Sand Enhancements
- Weathered Bedrock Monitoring Well

Plant 2 Biosparge Transect Layout



RACER Lansing Biosparge System

- Testing showed that biosparging is a low cost, effective, safe, and sustainable method for treating 1,4-dioxane at the Site and that the installation of sand enhancements improves treatment
- Biosparge system includes 5 treatment transects with 48 sparge wells across Plants 2 and 3
- Biosparge equipment buildings are located on Plant 2 and 3 with nearly 5 miles of hose to convey air/propane from the buildings to the injection wells
- Treated groundwater flows from northwest to southeast as it is cleaned by each treatment transect
- Network of monitoring wells is to track treatment progress
- After 4 to 5 years of operation, the biosparge system has reduced average 1,4-dioxane plume concentrations from a range of 160 - 485 µg/L down to a range of 20 - 50 µg/L and has met the treatment objectives



Plant 2 Biosparge Building, Propane Tank, Hoses, and Nutrient Injection Tanks