



# RACER TRUST LANSING PLANTS 2, 3, & 6

2024 First Quarter Progress Report | April 15, 2024

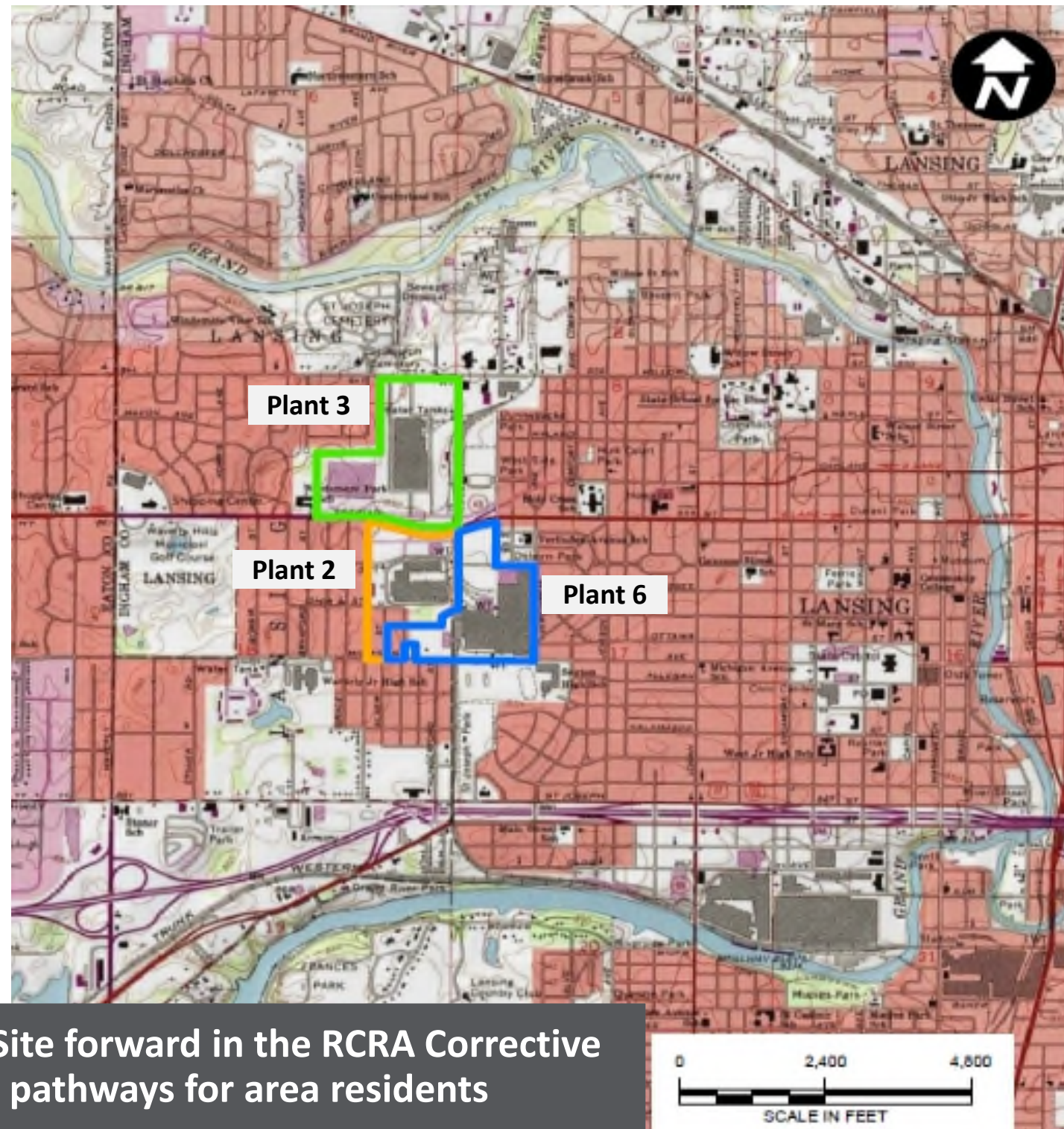
More detailed reports are available on RACER's Webpage for this Site:  
<https://www.racertrust.org/properties/lansing-plant-2-industrial-land>

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# Site Introduction

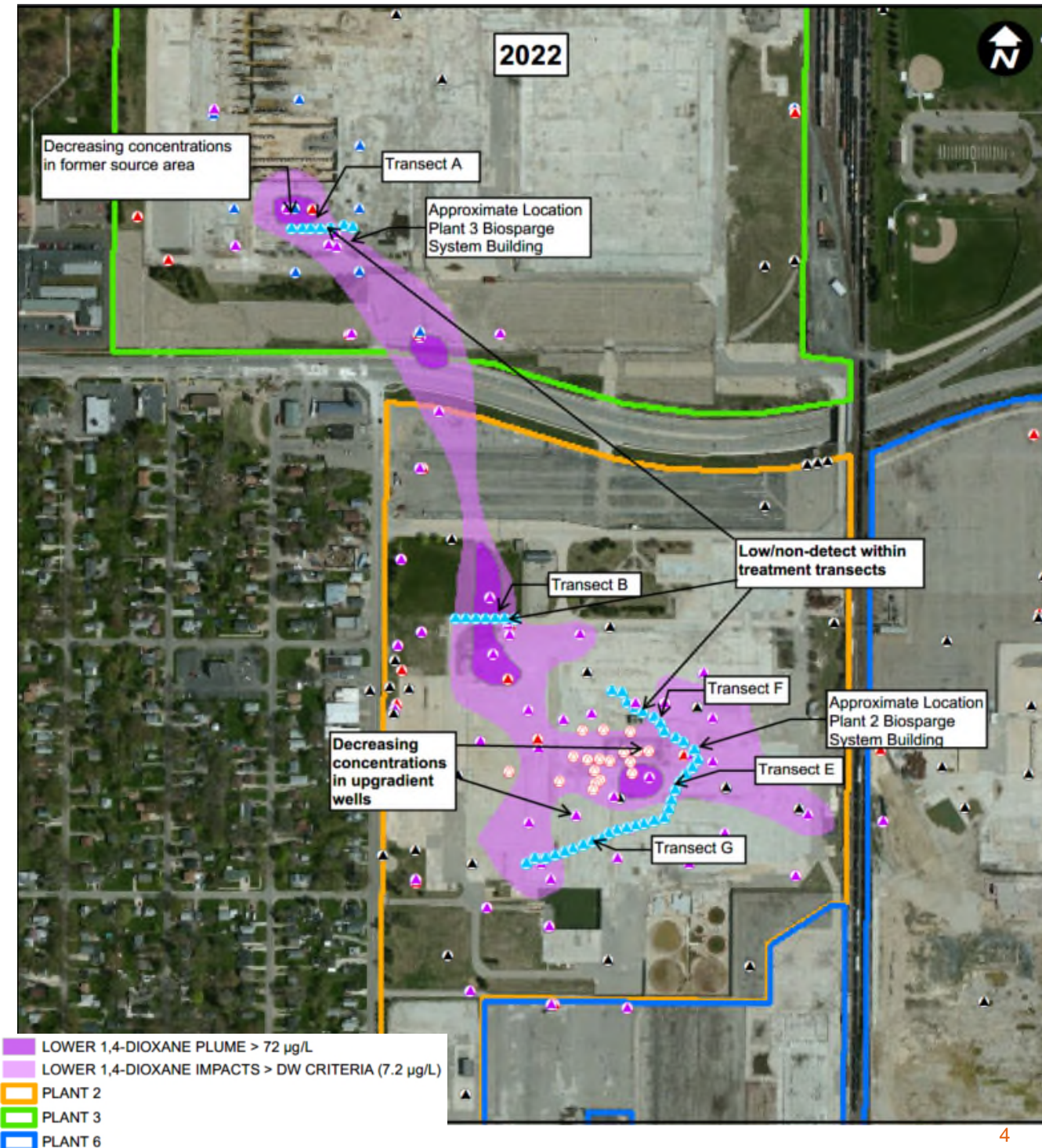
- Remediation at the RACER Lansing Site is being performed through the Resource Conservation and Recovery Act (RCRA) Corrective Action program under the oversight of the Michigan Department of Environment, Great Lakes, and Energy (EGLE). Current activities include focused site characterization, and interim 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. Efforts to assess if the system will continue to reduce concentrations are in progress. During this assessment period, portions of the system may be temporarily shut down. See the appendix at the end of this report for more information on biosparging.
- 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 many 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**

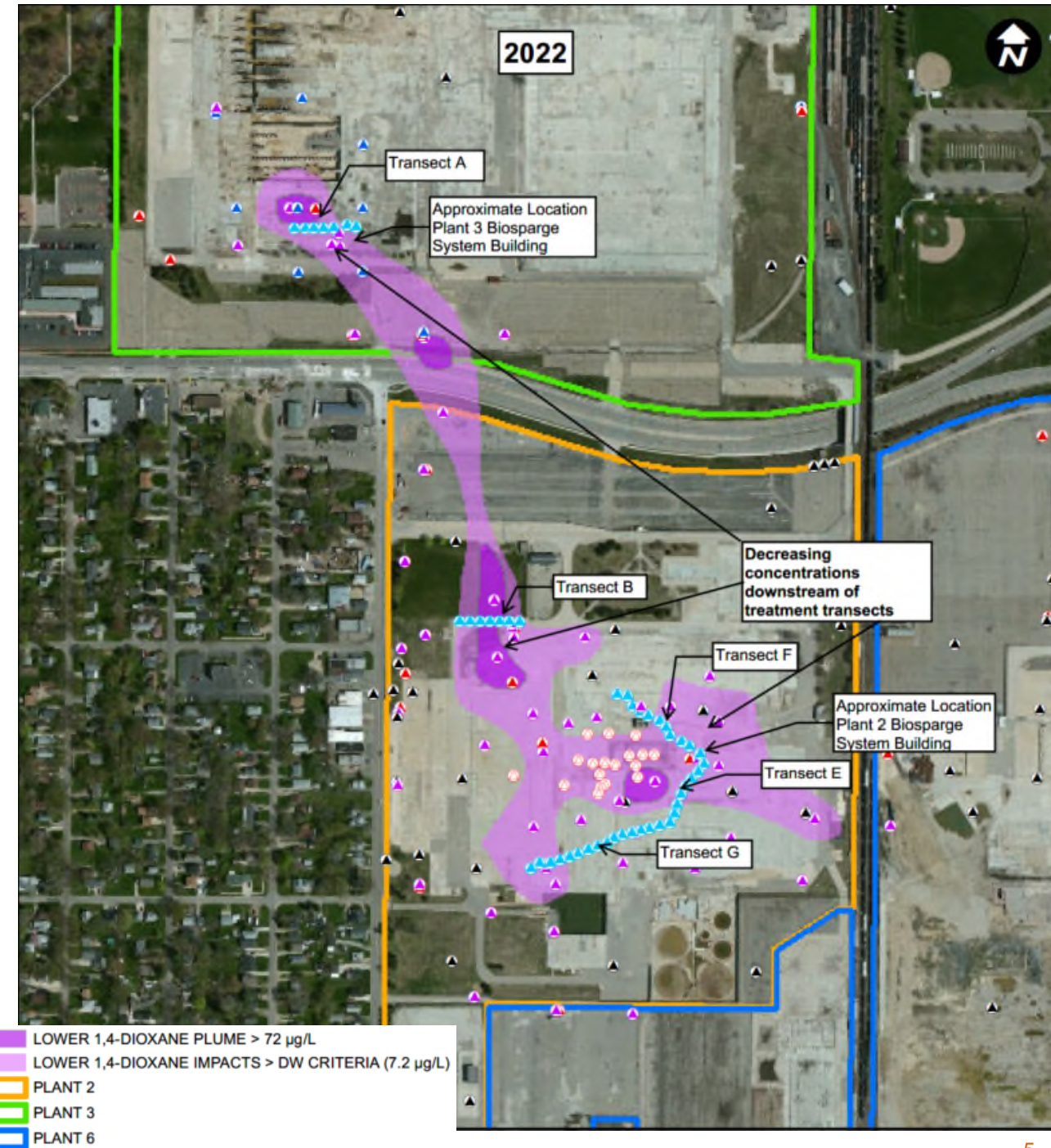
# Remediation of 1,4-Dioxane in Weathered Bedrock

- Biosparge systems at Plant 2 and Plant 3 are fully operational
  - Minimal downtime related to equipment repairs 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
- TW-14-06 on Plant 3 was abandoned in February 2024 to increase biosparge performance due to this well being damaged. Nearby AS-19-05 will be added to the performance monitoring schedule.
- Nutrient injection completed in March 2024



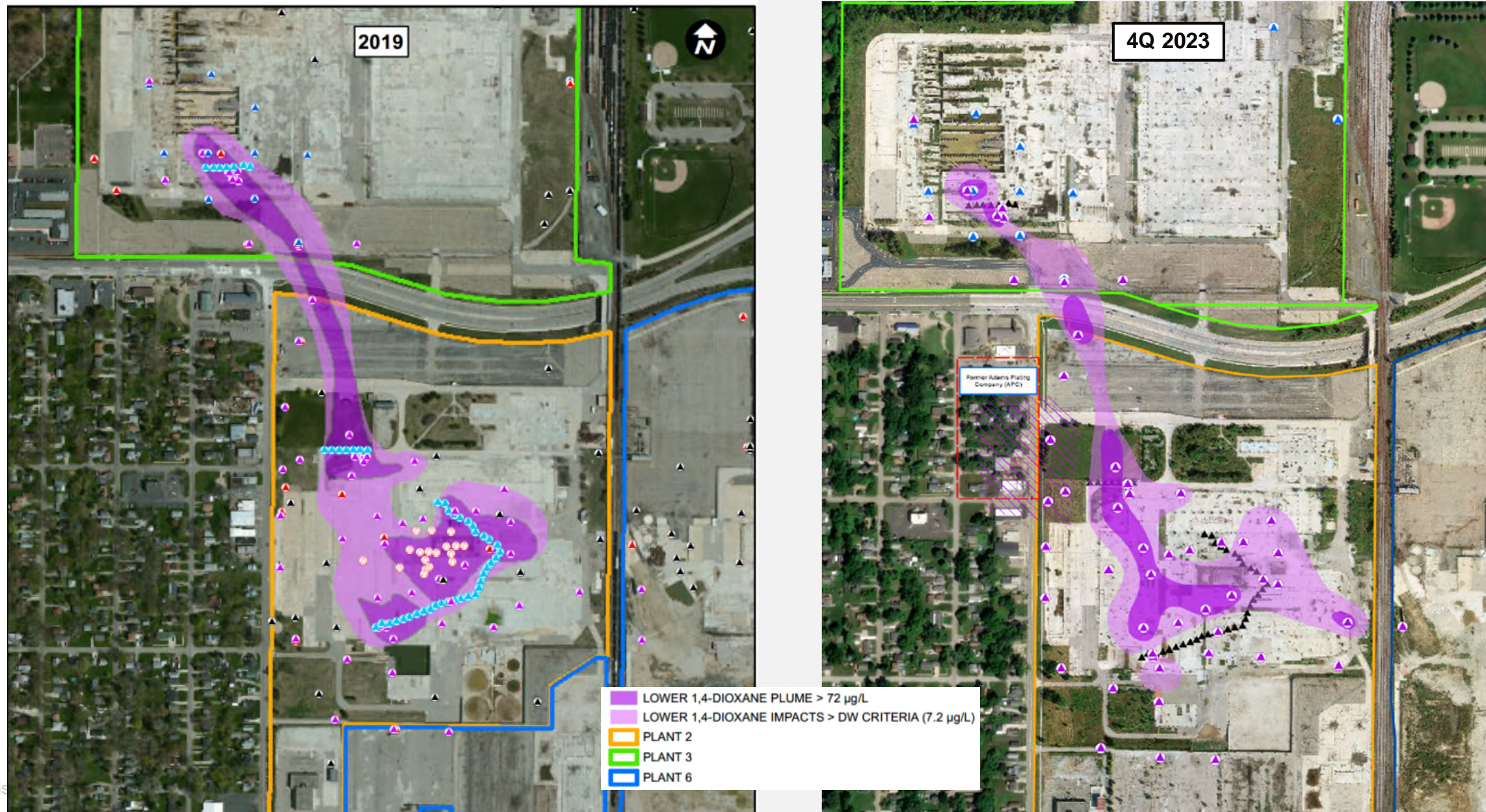
# Remediation of 1,4-Dioxane in Weathered Bedrock

- Supplemental performance monitoring was conducted in First Quarter 2024 and semi-annual performance monitoring will be conducted 2Q and 4Q 2024.
- Results from First Quarter 2024 supplemental sampling event will be provided in the 2Q progress report
- 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 is being proposed to temporarily shut down portions of the biosparge system to evaluate how the groundwater concentrations respond and to assess if the biosparge system is needed to reduce concentrations further



# Remediation of 1,4-Dioxane in Weathered Bedrock

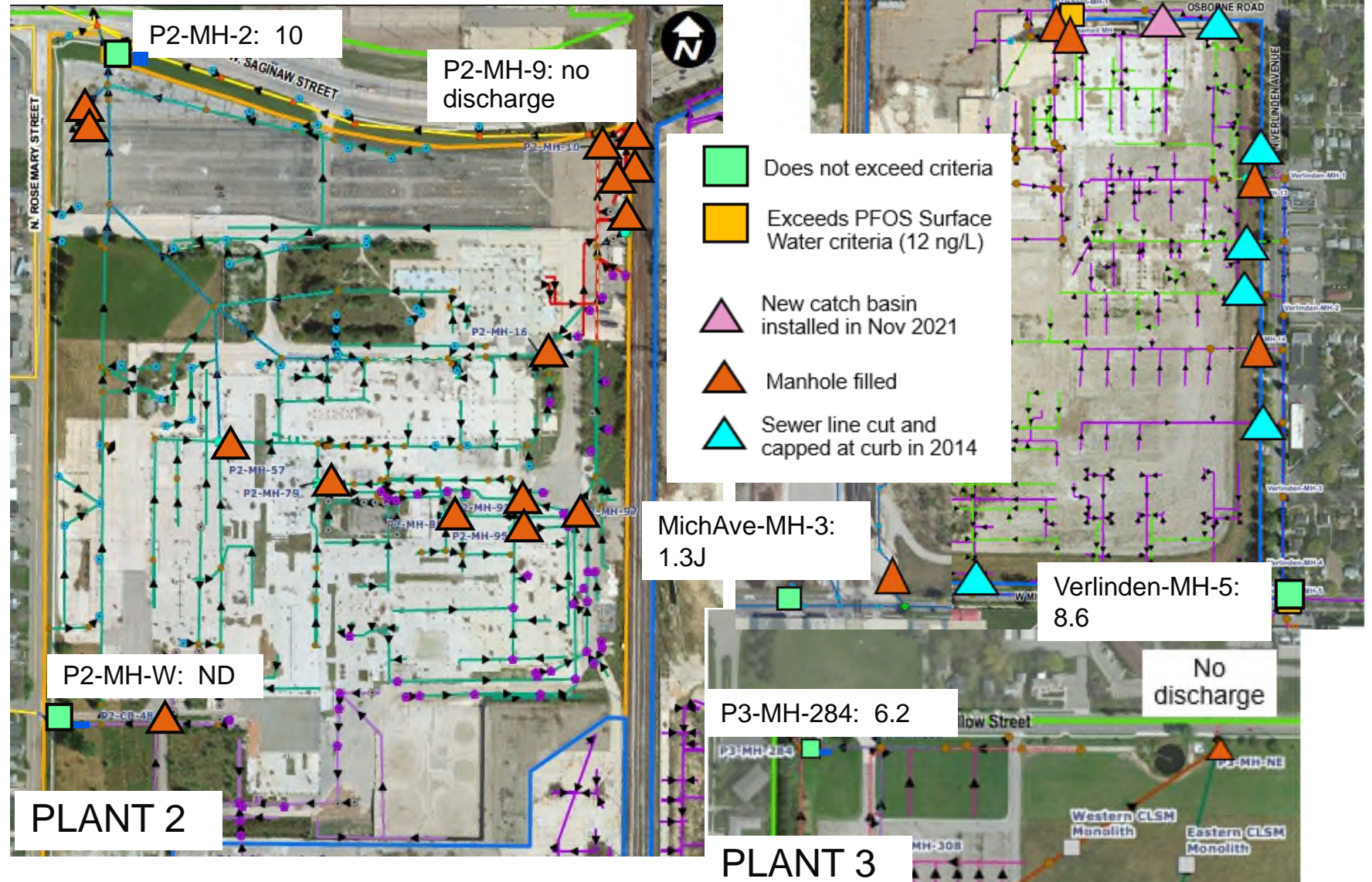
- Visual depiction of lower 1,4-dioxane plume (located within the deep overburden and weathered bedrock) distribution in 2019 vs. Fourth Quarter 2023



# Monitoring PFAS Impacts

## Sewer Monitoring

- First Quarter site wide monitoring of storm sewers was conducted in February 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.
- Second Quarter site wide monitoring of storm sewers is planned to be completed in April 2024. Results will be summarized in the 2Q Quarter Progress Report.



# Monitoring Well Abandonment

- The 2023 Monitoring Well Abandonment Proposal was approved by EGLE on September 13, 2023. The request to abandon one additional deep well (TW-14-06) was approved by EGLE on February 9, 2024.
- 16 perched monitoring wells were abandoned in December 2023.
- Due to driller availability two deep wells were later abandoned in February 2024.
- A memorandum summarizing the monitoring wells abandoned and the abandonment procedures was provided to EGLE on March 8, 2024, via email transmittal.



# Reports Submitted to EGLE First Quarter 2024

- Plant 2 MW-14-58R Area September 2023 Investigation Summary – Submitted on 1/19/24
- 2023-2024 Monitoring Well Abandonment Summary – Submitted on 3/8/24
- 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 Second Quarter of 2024



Activity	Schedule
<b>Remediation of 1,4-Dioxane in the Weathered Bedrock</b>	
<b>Plants 2 and 3 Biosparge System Operation</b>	<b>Ongoing</b>
<b>Biosparge Shut Down Test</b>	<b>Pending EGLE Concurrence</b>
<b>Investigation of 1,4-Dioxane</b>	
<b>Additional Groundwater Gauging and Sampling in vicinity of Rosemary Street (Coordinated Sampling with EPA for Adams Plating Property Adjacent to Site)</b>	<b>April 2024</b>
<b>Remediation and Investigation of PFAS</b>	
<b>Quarterly Storm Sewer Sampling</b>	<b>April 2024</b>
<b>Other investigations, Sampling and Reporting</b>	
<b>Plants 2 Area 2 Excavation and Plants 2 and 3 Exposure Barrier Placement Summary Report</b>	<b>Second Quarter 2024</b>
<b>Second Quarter 2024 Groundwater Monitoring</b>	<b>May 2024</b>
<b>Annual Groundwater Monitoring Report for 2023</b>	<b>Second Quarter 2024</b>

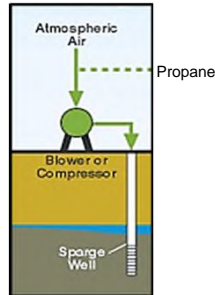
# Appendix

# BIOSPARGING TREATMENT OF 1,4-DIOXANE

## Lansing Industrial Land, Lansing and Lansing Township, Michigan

### WHAT IS BIOSPARGING?

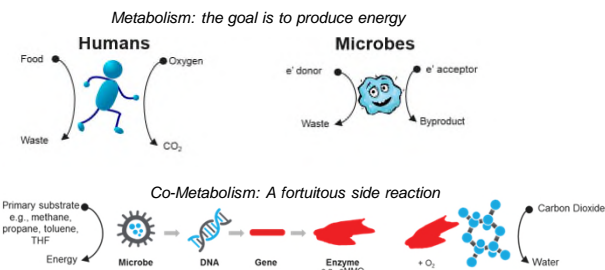
- Air and small amounts of propane are injected into the ground through wells
- Promotes biodegradation of chemicals in groundwater, much faster than it would occur naturally
- 1,4-dioxane is treated in the ground, so minimal waste is generated
- Nearby wells are sampled to make sure treatment is occurring



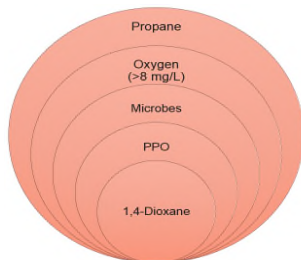
### TREATMENT OBJECTIVES

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

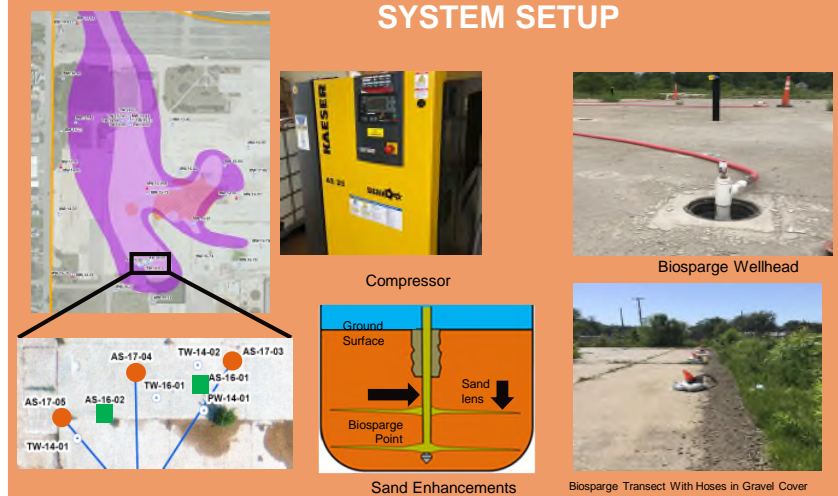
### CO-METABOLIC BIODEGRADATION OF 1,4-DIOXANE:



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

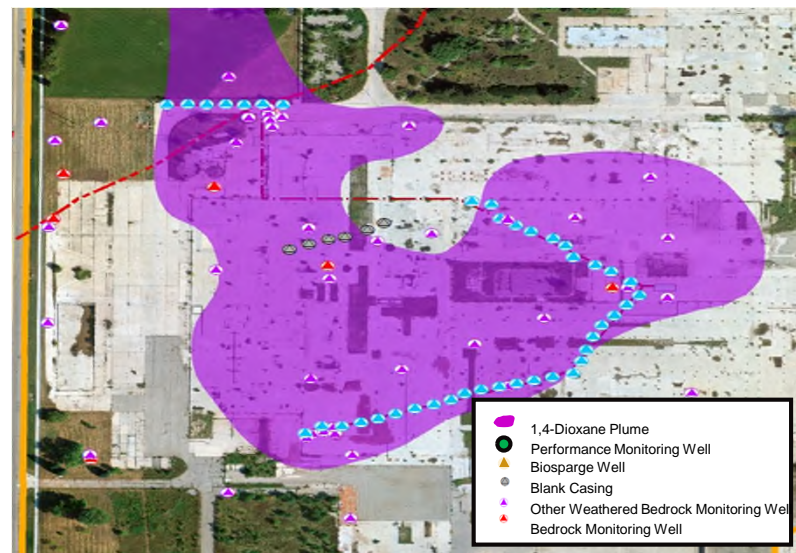


### SYSTEM SETUP



- 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