



# OU-1 TECHNICAL UPDATE: REMEDY CHANGES BASED ON INVESTIGATION AND DESIGN

West Lake Landfill Superfund Site  
Bridgeton, MO

August 29, 2024

OU-1 and OU-2 Remedy Changes



# Agenda

- **Introductions**
- **Opening Remarks and Key Takeaways**
- **Site Overview**
  - ▣ Background, Updated Maps, Design Investigation Data
- **Operable Unit 1 (OU-1) Changes to the Remedy**
  - ▣ 6 Changes
- **Next Steps**
  - ▣ Final Steps of the Remedial Design
  - ▣ Remedial Action
- **Question and Answer Session**

# Introductions



**Bob  
Jurgens**

Superfund and  
Emergency Management  
Division Director



**TJ  
Adkins**

Remediation Branch  
Manager



**Jessica  
Evans**

Community Involvement  
Coordinator

# Introductions (Cont.)



**Chris  
Jump**

Lead Remedial Project  
Manager



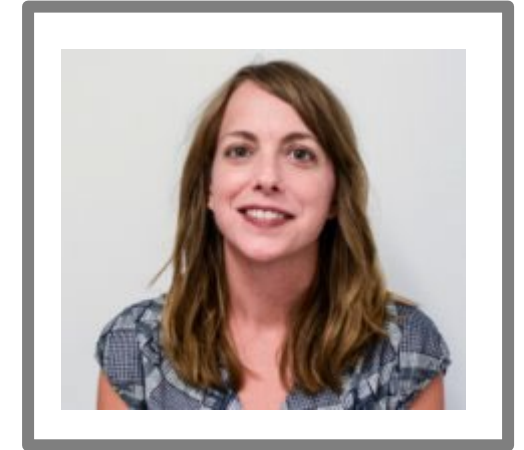
**Tom  
Mahler**

Remedial Project Manager  
(OU-1) & (OU-2)



**Snehal  
Bhagat**

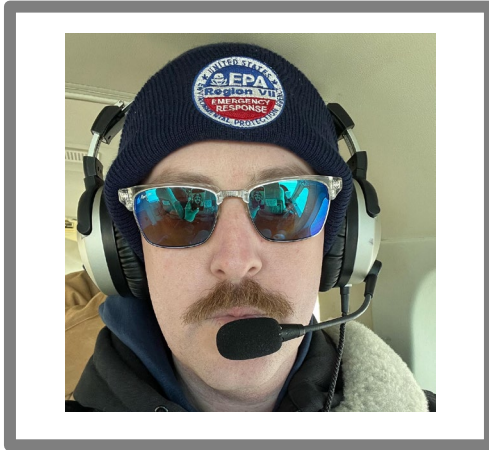
Remedial Project  
Manager (OU-3)



**Jessica  
Kidwell**

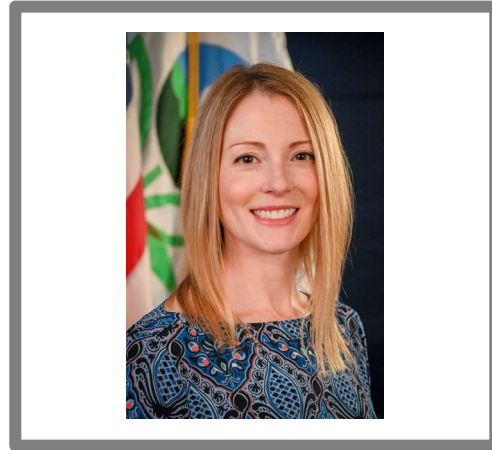
Hydrogeologist

# Introductions (Cont.)



**Kellen  
Ashford**

Superfund Press Officer



**Shannan  
Beisser**

Lead Press Officer



**Shaylee  
Borcsani**

Remedial Community  
Involvement Coordinator



**Karmen  
King**

Community  
Technical Advisor

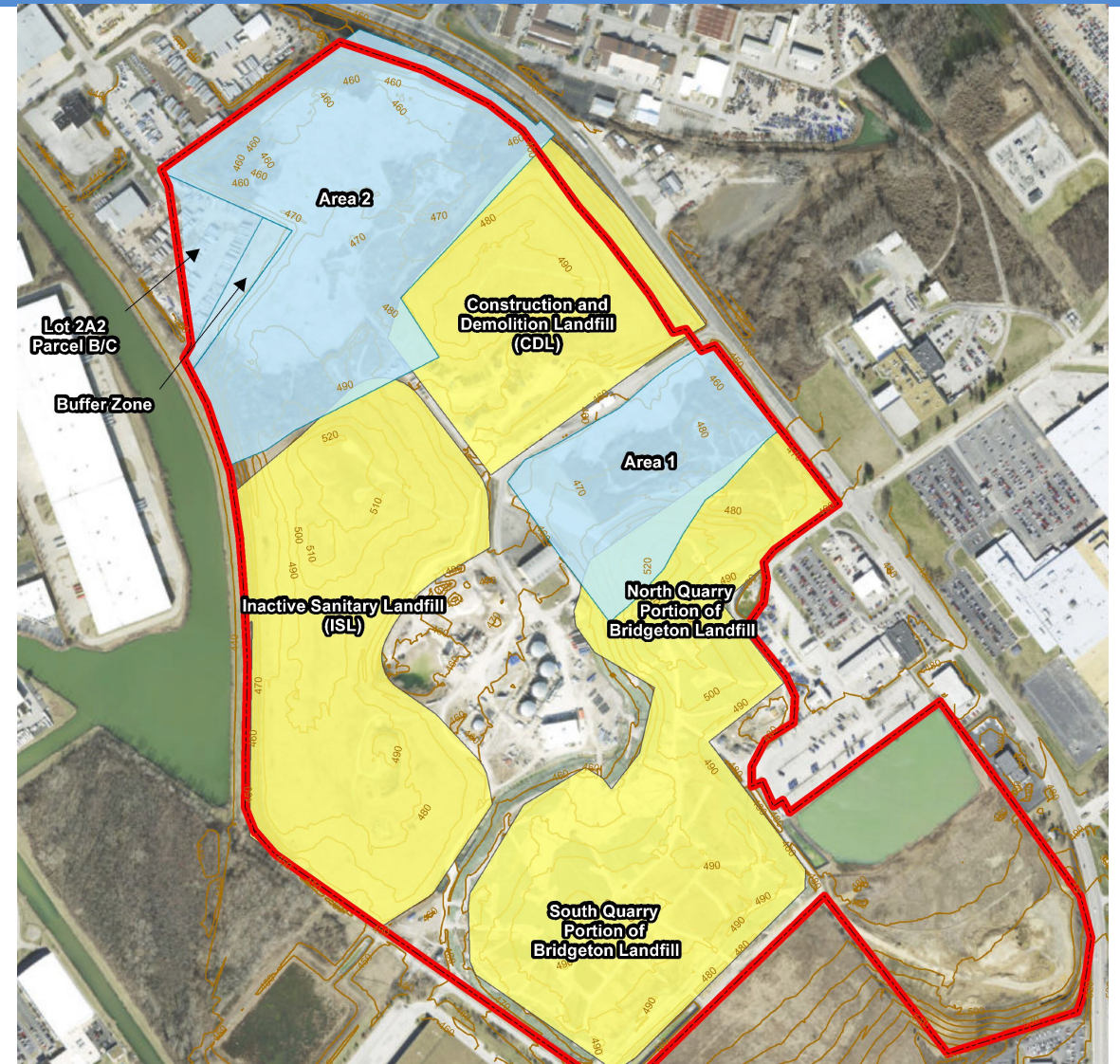


# Opening Remarks and Key Takeaways

- Remedial Design for Operable Unit 1
  - ▣ Final Steps/Approaching Completion
- The remedy described in the Record of Decision Amendment (RODA) remains fundamentally the same:
  - ▣ Partial Excavation with Offsite Disposal
  - ▣ Engineered cover over Radiologically Impacted Material (RIM) left on site
  - ▣ Excavation of Lot 2A2 to background
- Changes to the remedy are either necessary or will improve the remedy
- Air Monitoring
- Upcoming Listening Session

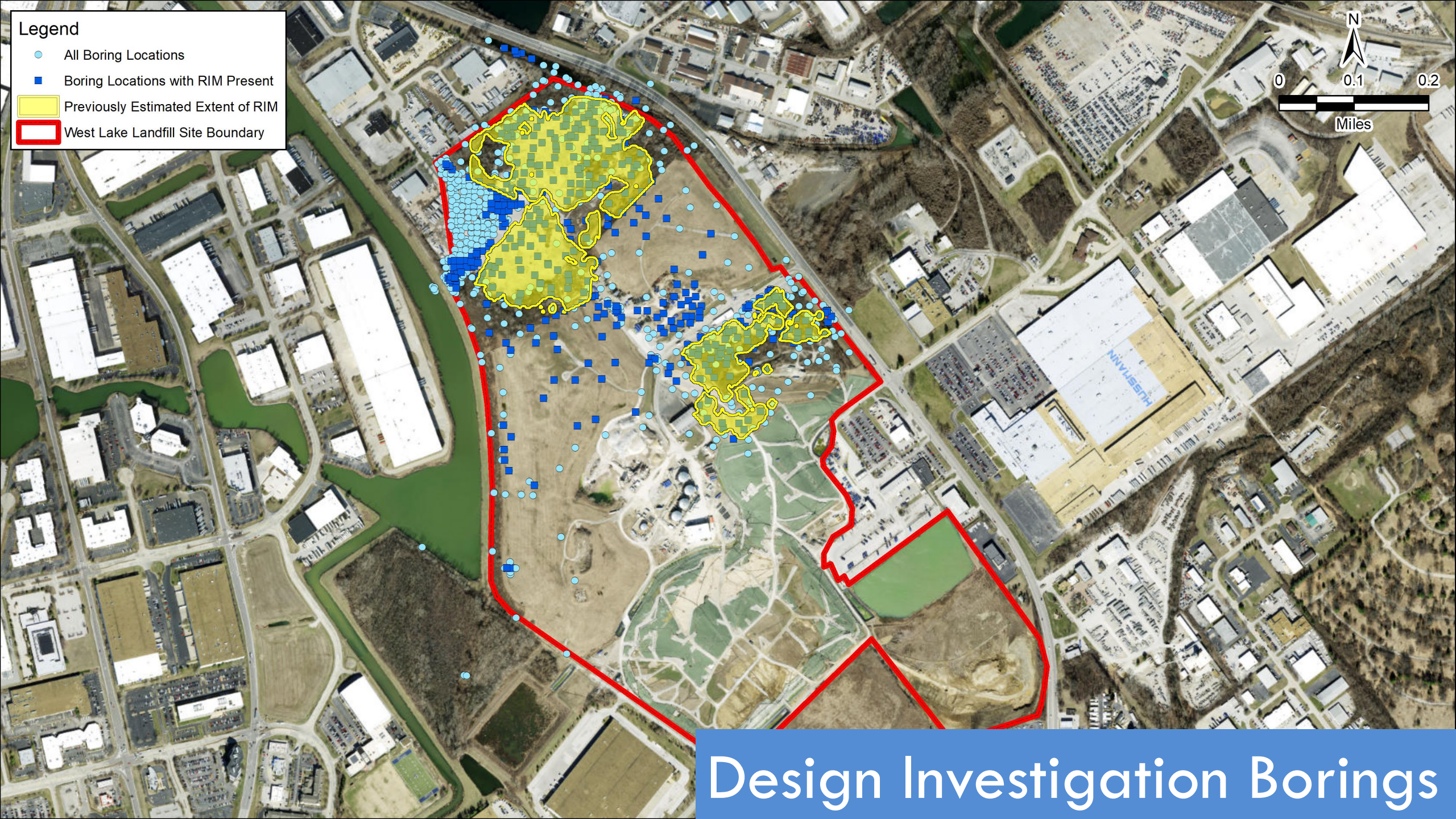
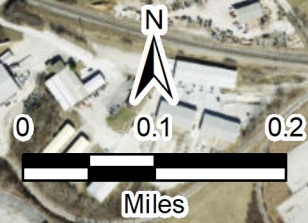
# Site Overview

- West Lake Landfill Operable Units
  - ▣ OU-1: Areas with Radiologically Impacted Materials (RIM)
  - ▣ OU-2: Landfilled Areas without RIM
  - ▣ OU-3: Sitewide Groundwater



**Legend**

- All Boring Locations
- Boring Locations with RIM Present
- Previously Estimated Extent of RIM
- ▭ West Lake Landfill Site Boundary

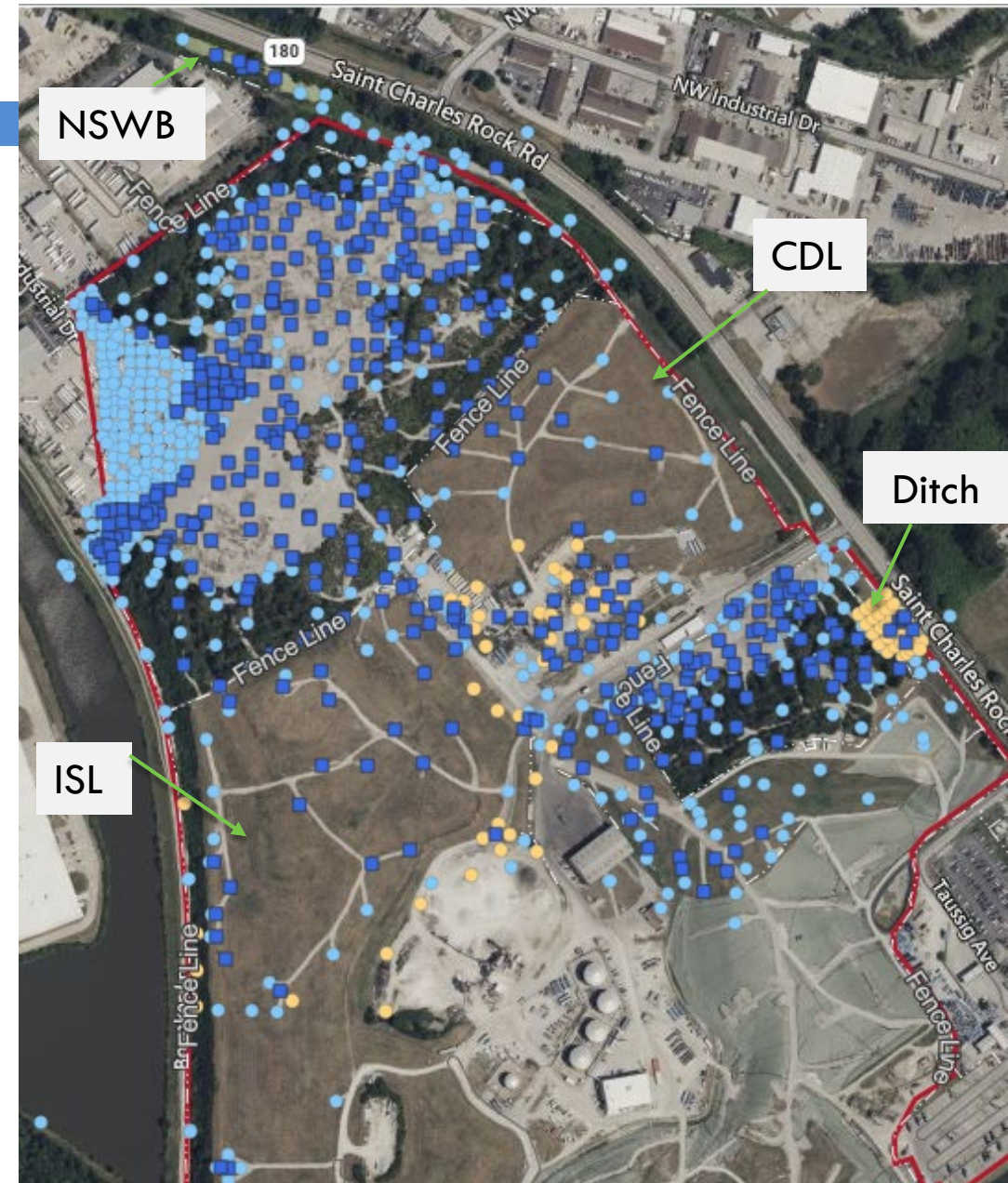


# Design Investigation Borings



# Site Overview

- Design Investigation (DI) Found RIM in Additional Areas:
  - Construction and Demolition Landfill (CDL)
  - Northern half of the Inactive Sanitary Landfill (ISL)
  - North Surface Water Body (NSWB) & ditch along St. Charles Rock Road
- DI also determined there is less high concentration RIM.
- Based on results of DI, there will be some modifications to the remedy selected in the 2018 RODA.



# Adjustments to the OU-1 Remedy

- The remedy described in the ROD Amendment remains fundamentally the same.
  - ▣ Partial excavation with off-site disposal.
  - ▣ Engineered cover over RIM onsite.
  - ▣ Excavation of Lot 2A2 to background.
- Changes to the remedy will be documented in an Explanation of Significant Differences (ESD).

EPA prepares an ESD when *"the differences in the remedial or enforcement action, settlement, or consent decree significantly **change but do not fundamentally alter the remedy selected in the ROD..."**"*



# Adjustments to the OU-1 Remedy

- Changes to OU-1 remedy selected in 2018 RODA
  - ▣ Expand OU-1
  - ▣ Increase in estimated cost.
  - ▣ Change in required slope for the top of the engineered cover
  - ▣ Direct RIM/waste loading – changing the need for RIM staging and loading building to conditional rather than required
  - ▣ Pre-excavation confirmation sampling rather than during and after the excavation of RIM
  - ▣ Elimination of the on-site laboratory requirement



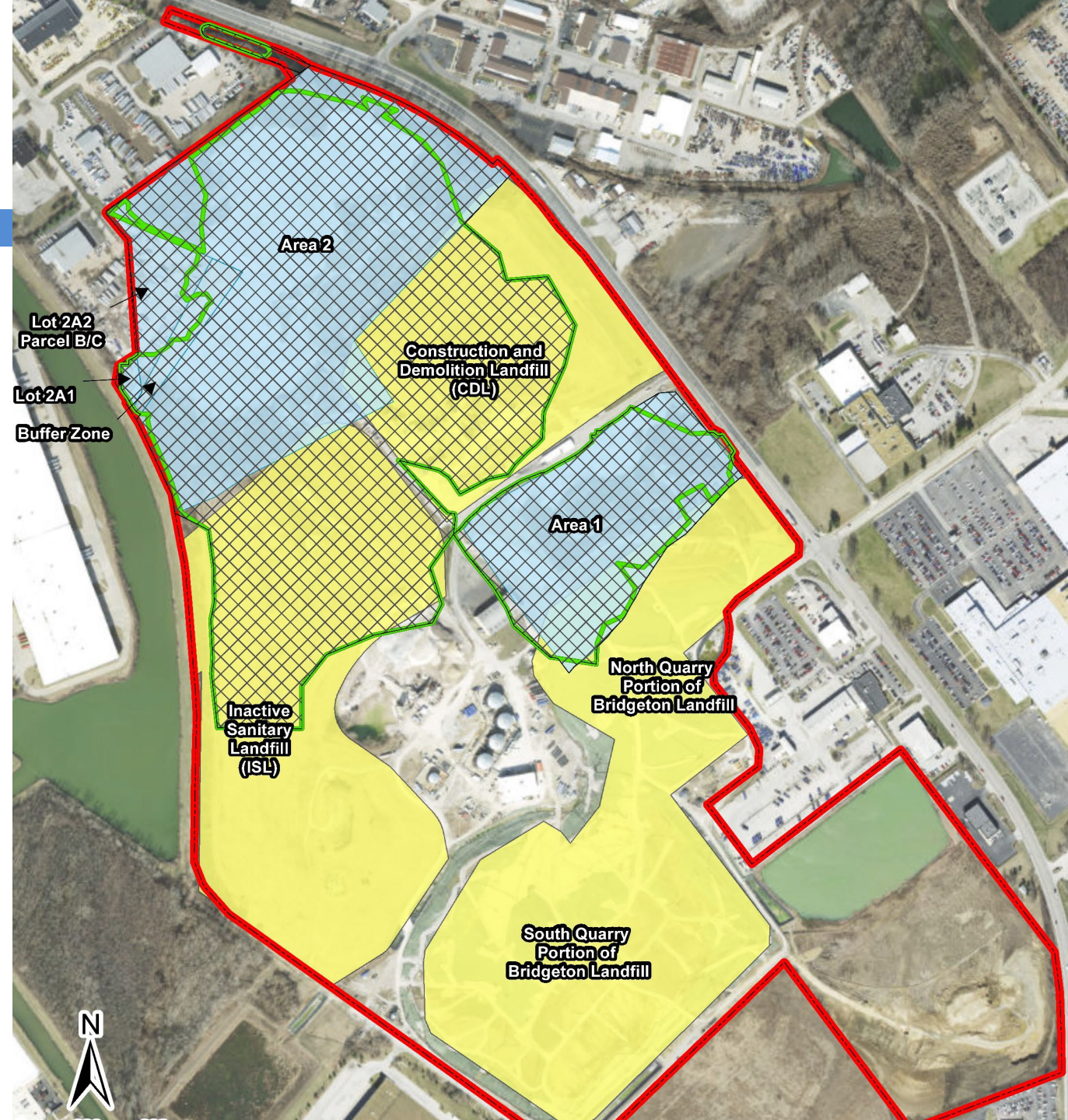
# 1<sup>st</sup> Change – Expansion of OU-1

- Expansion of OU-1 based on presence of RIM.
  - ▣ RODA Defines OU-1 as where RIM is present. Therefore OU-1 is expanding to incorporate all newly identified RIM.
  - ▣ The same remedy components of partial excavation and engineered cover will be applied to the larger OU-1 area.
  - ▣ 62% increase in size of OU-1 (about 40 acres), 48% increase in the size of the cover system and 25% increase in off-site disposal volume (about 20k cubic yards).

# Expansion of OU-1

## Results of Design Investigation

- Extent of RIM increased significantly into the CDL and ISL (and slightly in other areas).
- Some RIM in CDL now meets the requirements in the RODA for excavation (0-16 feet).
- Improved understanding to the distribution of RIM in landfill (2,000+ additional samples).





# 1<sup>st</sup> Change - Expansion of OU-1

- OU-1 Remedial Design will address each expanded RIM area.
  - ▣ Extends OU-1 engineered cover over RIM in the ISL and CDL.
  - ▣ Proposes to excavate RIM in drainage ditch and North Surface Water Body.
  - ▣ Excavation plan includes excavation of shallow RIM in the southwest corner of the CDL.



## 2<sup>nd</sup> Change - Increase in Cost

- Cost increase is consistent with the OU-1 expansion and inflation.
- The potentially responsible parties (PRPs) provided a revised cost estimate for OU-1.
  - ▣ Cost of the OU-1 expansion is about \$113.5 million
  - ▣ Revised total cost of OU-1 remedy about \$392 million (~\$229 million previously).



# 3<sup>rd</sup> Change - ARAR Waiver

- Applicable or Relevant and Appropriate Requirements (ARARs).
- It is important for a landfill to have enough slope on top so that water will drain off it, but not steep enough to cause erosion.
- Missouri solid waste regulations require a minimum top slope on the landfill cover of 5%.
  - ▣ The 5% top slope takes into consideration waste decomposition and settlement overtime while still maintaining a positive slope for drainage.
  - ▣ RODA states 5% minimum slopes may not be necessary at West Lake because the waste was landfilled 30 to 50 years ago so most of the decomposition and settlement has already occurred.
  - ▣ RODA says the Remedial Design will evaluate what the appropriate top slope is for the West Lake Landfill.





# 3<sup>rd</sup> Change - ARAR Waiver

- Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA) requires covers be designed to be effective for up to one thousand years to the extent reasonably achievable, and at least 200 years.
- Lower slopes reduce erosion, especially during high intensity rain events, and may increase the life expectancy of a cover.
- Evaluations performed during the Remedial Design process, indicate a top slope of 3% would still have positive drainage 1000 years from now.
- Based on this information, EPA is waiving the 5% minimum slope requirement because a lower slope of 3% to 4% is expected to achieve the same level of protectiveness but will potentially increase the longevity of the cover.



# 4<sup>th</sup> Change - Direct Loading RIM for Disposal

- Each waste disposal facility has a Waste Acceptance Criteria (WAC) that shipments must meet.
- During the Feasibility Study, It was expected that RIM would not meet WAC without being staged and blended, so the RODA required a RIM staging and loading building.
- Since the RODA, the Design Investigation determined there was less RIM that exceeded WAC than previously estimated, and some waste disposal facilities have or are in the process of increasing their WAC to accept higher concentrations.
- Therefore, direct loading of RIM may now be a viable option.



# 4<sup>th</sup> Change - Direct Loading RIM for Disposal

- Direct loading into shipping containers allows the RIM to be removed from the site faster.
- Direct loading decreases the potential for worker exposure and improves overall health and safety.
- Direct loading results in less handling of the RIM.
- Therefore, the use of a RIM Staging and Loading Building is being made conditional based on the need to blend RIM or stage it for more than 24 to 48 hours or prior to loading.
- The building will still be required if direct loading cannot meet WAC requirements without blending.



# 5<sup>th</sup> Change - Confirmation Sampling

- Confirmation Sampling is typically required during excavation remedies to confirm the contamination was removed as required.
- Typically, samples are collected from the sides and bottoms of an excavation and then the excavation is either expanded or backfilled based on the analytical results.
- For West Lake we do not want to have open excavations any longer than necessary.



# 5<sup>th</sup> Change - Confirmation Sampling

- PRPs have proposed pre-excavation confirmation sampling
  - ▣ Confirmation samples are collected outside the proposed excavation boundary by drilling borings to collect samples before excavation begins.
  - ▣ The excavation boundary will be divided into decision units.
  - ▣ If the average concentration of samples in a decision unit exceeds the excavation criteria (52.9 pCi/g), the excavation boundary will be expanded, and additional samples will be collected.
  - ▣ This process would continue until the proposed excavation is confirmed as accurate.
  - ▣ Excavation would proceed along the confirmed boundary and backfilling would occur as the excavation moves forward.
  - ▣ This means additional sampling would occur before excavation begins.

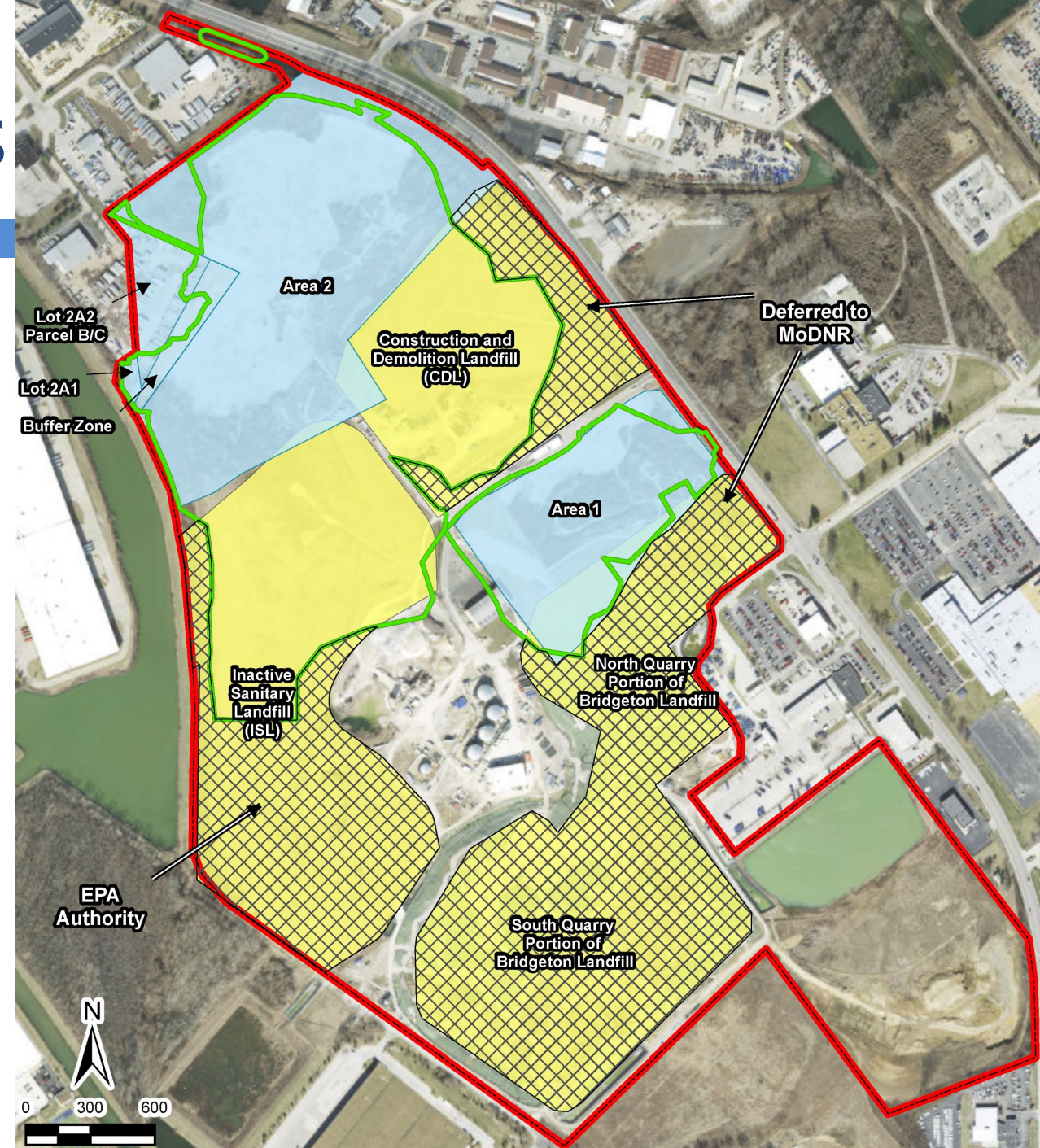


# 6<sup>th</sup> Change - No requirement for On-site Lab

- EPA required an on-site lab in the RODA when confirmation sampling was expected to be performed during the excavation in order to expedite the analytical results.
- Pre-excavation confirmation sampling would make the on-site laboratory unnecessary.

# OU-2 Post ROD Changes

- Decrease in extent of OU-2
- Parts of CDL no longer deferred to state due to the presence of RIM
- Decrease in cost
  - ▣ Revised estimate for the cost of the OU-2 Remedy is \$3.3 million, approximately a 50% decrease from the original cost estimate in the 2008 ROD of \$6.7 million





# Remedial Design Process

EPA Negotiating Enforceable Order

## Discussions on Design Elements for 90% Design

- Cover Design
- Final Grading
- Stormwater Management
- Waste Excavation and Loading

Design Investigation Fieldwork

Modeling of RIM Extent and RIM Activity

Design Investigation Evaluation Report

Revised Excavation Plan

90 % Design

100 % Design

EPA Approves Final RD

Completed

Ongoing

Future



# Next Steps: Remedial Action





# Summary

- Remedial Design is approaching completion
  - ▣ Final Steps
- The Remedy described in the Record of Decision Amendment (RODA) remains fundamentally the same:
  - ▣ Partial Excavation with Offsite Disposal
  - ▣ Engineered cover over radiologically impacted material (RIM) left on site
  - ▣ Excavation of Lot 2A2 to background
- Changes to the remedy are either necessary or will improve the remedy



# Questions and Discussion

- Resources:
  - West Lake Landfill Site Profile  
Page: [www.epa.gov/superfund/westlakelandfill](http://www.epa.gov/superfund/westlakelandfill)
  - West Lake Landfill Dashboard:  
[www.epa.gov/mo/west-lake-landfill-dashboard](http://www.epa.gov/mo/west-lake-landfill-dashboard)
  - EPA Region 7 Facebook:  
[www.facebook.com/eparegion7](http://www.facebook.com/eparegion7)
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