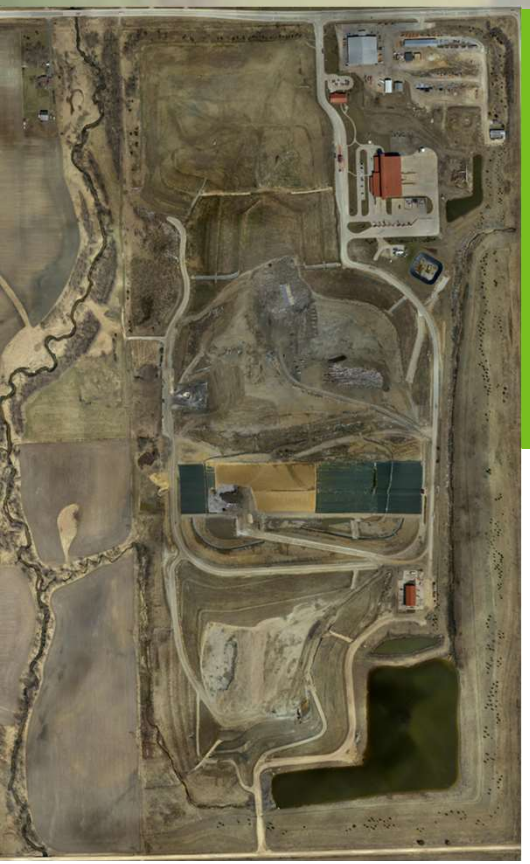

2022 Environmental Services, Groundwater Monitoring, & Corrective Measure Assessment Update

Cedar Rapids Linn County Solid Waste Agency Site 2

Solid Waste Agency
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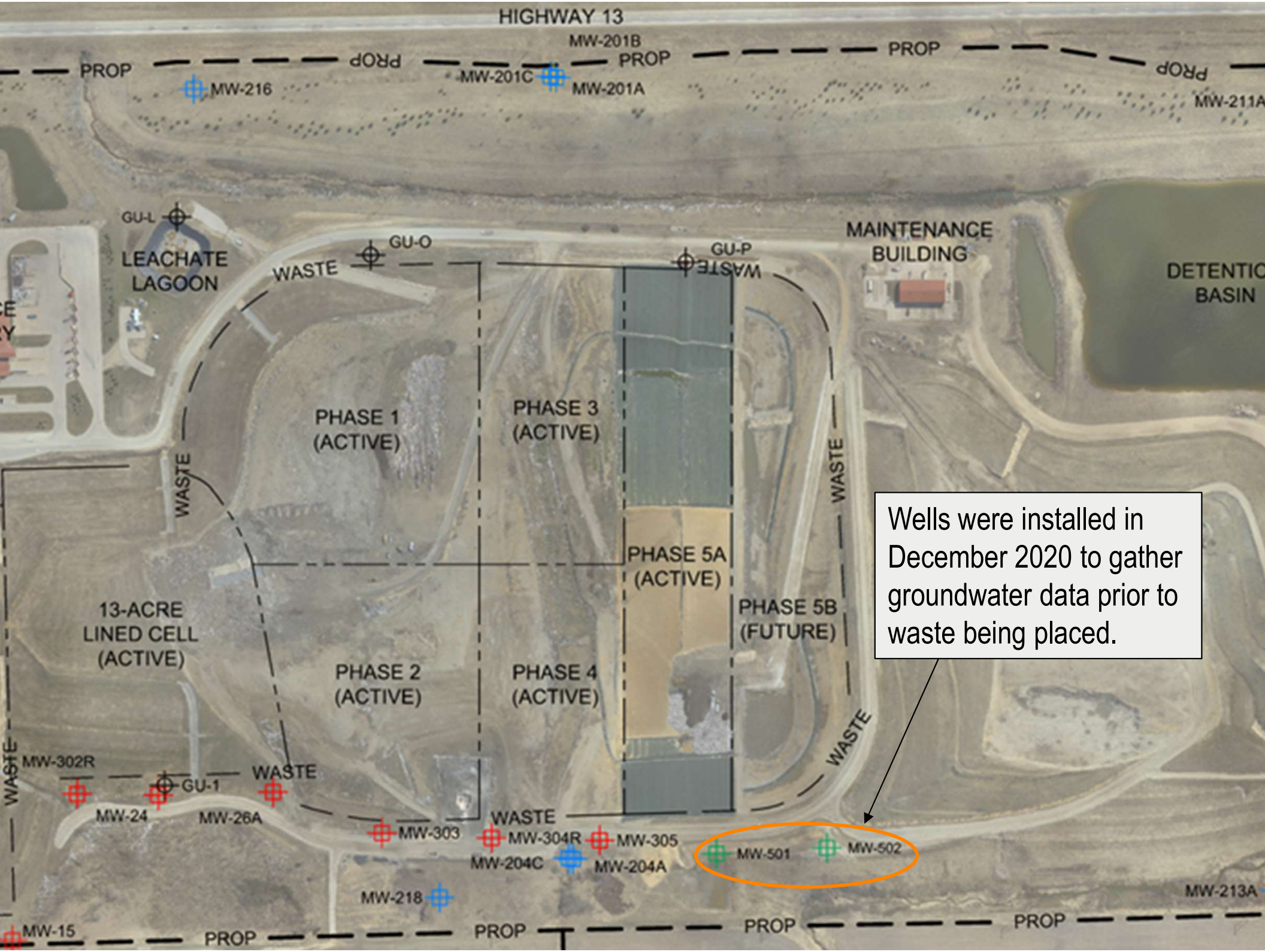
1 Introduction & Background

2 Compliance Groundwater Monitoring Program

3 Update on Corrective Action Progress & Findings

1 Introduction & Background


COUNTY HOME ROAD
SITE 2 PROPERTY BOUNDARY
CLOSED
ACTIVE
CEMETARY
HIGHWAY 13
INDIAN CREEK


HIGHWAY 13
PROP
MW-216
MW-201B
MW-201C
MW-201A
MW-211A
GU-L
LEACHATE LAGOON
GU-O
GU-P
WASTE
MAINTENANCE BUILDING
DETENTIO BASIN
PHASE 1 (ACTIVE)
PHASE 3 (ACTIVE)
PHASE 5A (ACTIVE)
PHASE 5B (FUTURE)
13-ACRE LINED CELL (ACTIVE)
PHASE 2 (ACTIVE)
PHASE 4 (ACTIVE)
MW-302R
GU-1
MW-24
MW-26A
MW-303
MW-304R
MW-305
MW-204C
MW-204A
MW-501
MW-502
MW-218
MW-213A
MW-15
Wells were installed in December 2020 to gather groundwater data prior to waste being placed.

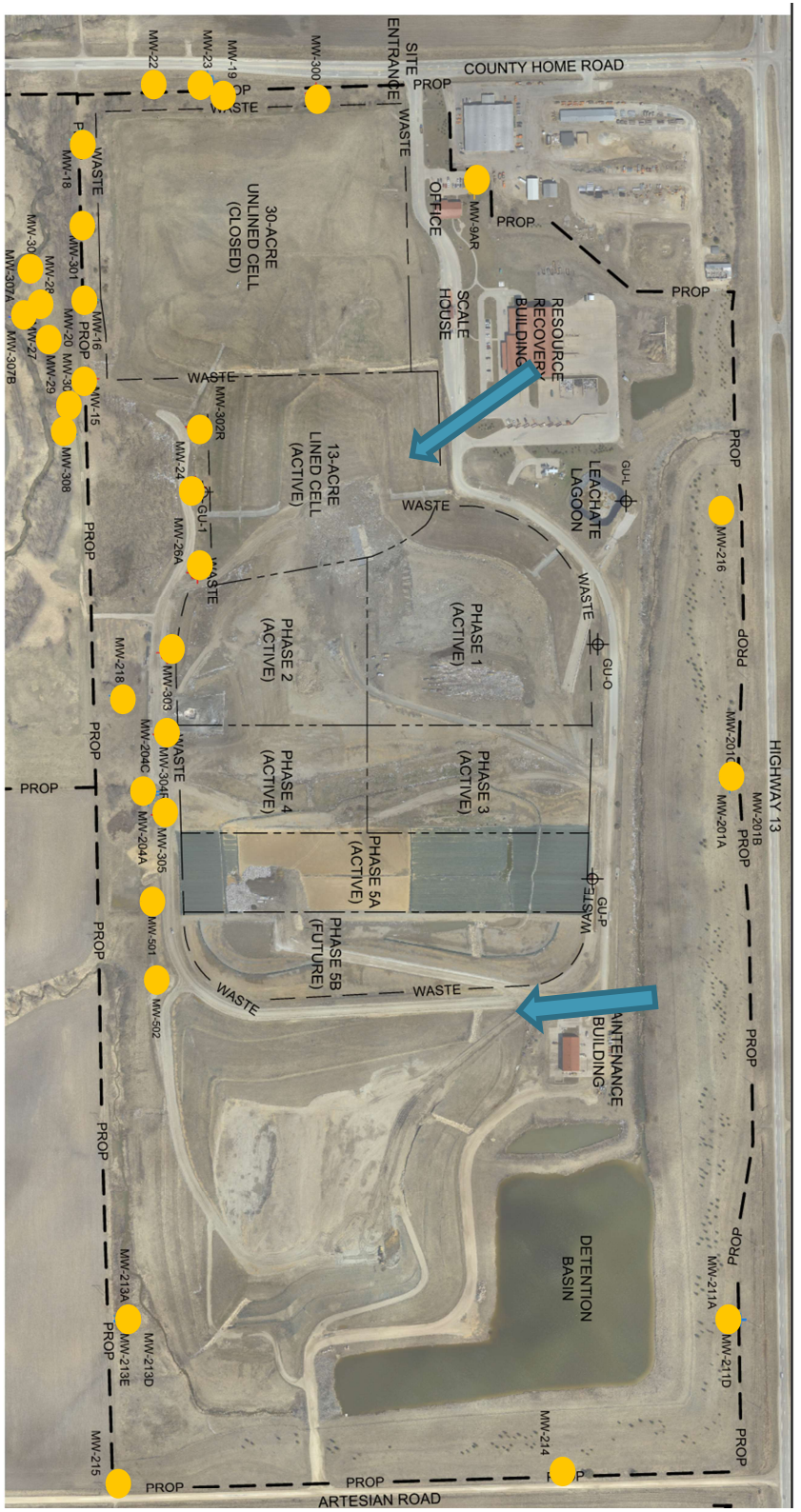
2 Compliance Groundwater Monitoring Program

Groundwater Monitoring Network

- Groundwater monitoring network is set up by installing monitoring wells in the uppermost source of groundwater (uppermost aquifer)
  - 19 monitoring wells sampled
  - 4 groundwater underdrains
  - Water level measurements collected in 40 monitoring wells
  - Wells are approximately 15-60 feet below the ground surface

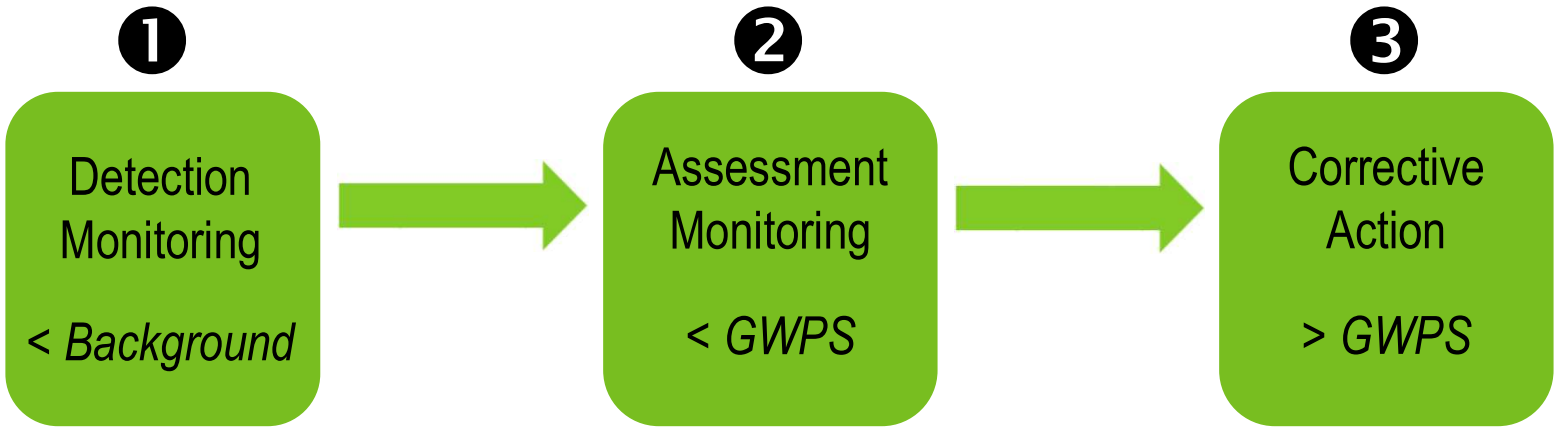
- Evaluate groundwater upgradient and downgradient of the landfill

- Semiannually monitored (at a minimum) for IAC program required constituents.



Groundwater Monitoring Program

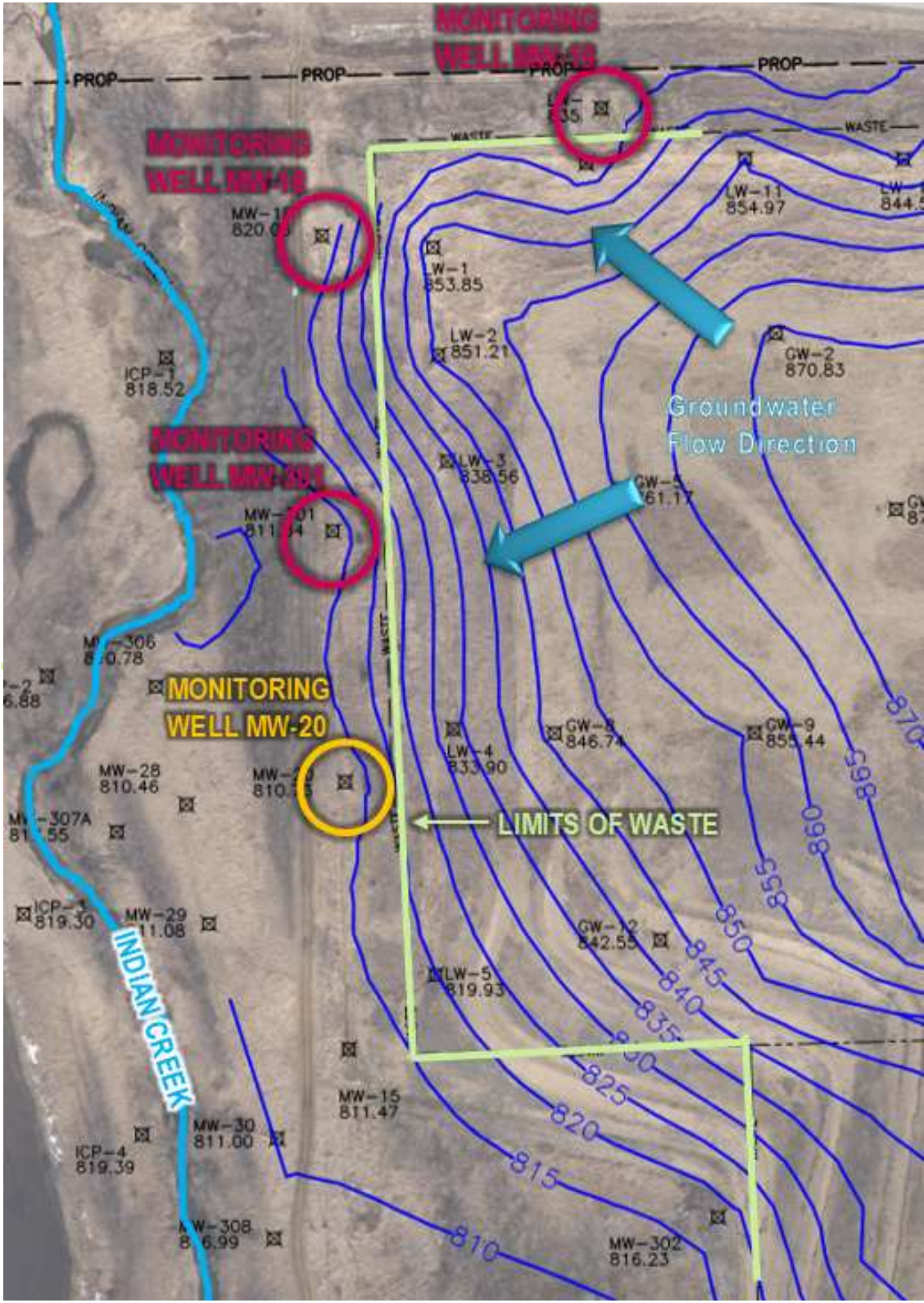
- **Phase I: Detection** – Compare concentrations found in downgradient monitoring wells to background concentrations (completed semiannually).
- **Phase II: Assessment** – Begins when a concentration is detected above the background concentration (completed semiannually).
  - Compare concentrations to groundwater protection standards (GWPS) to determine if concentrations exceed the GWPS at a statistically significant level (SSL).
- **Phase III: Corrective Action** – Begins when a constituent concentration is detected above the GWPS at an SSL.
  - Action begins to control the source of the release and prevent further release
  - Current status of MW-20 for Benzene and MW-18, 19, MW-20, & 301 for Cobalt



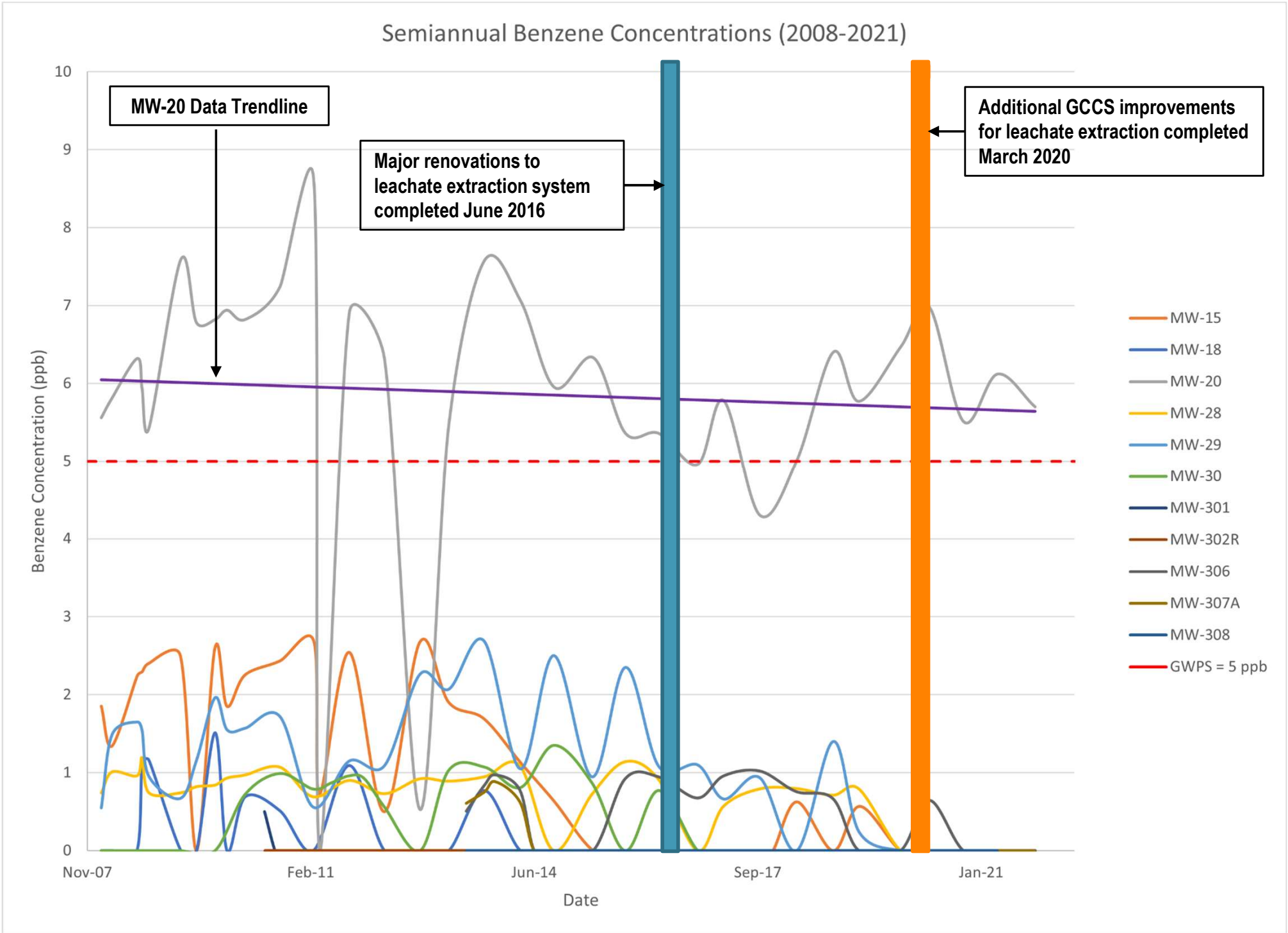
Review Past Findings – Benzene & Cobalt

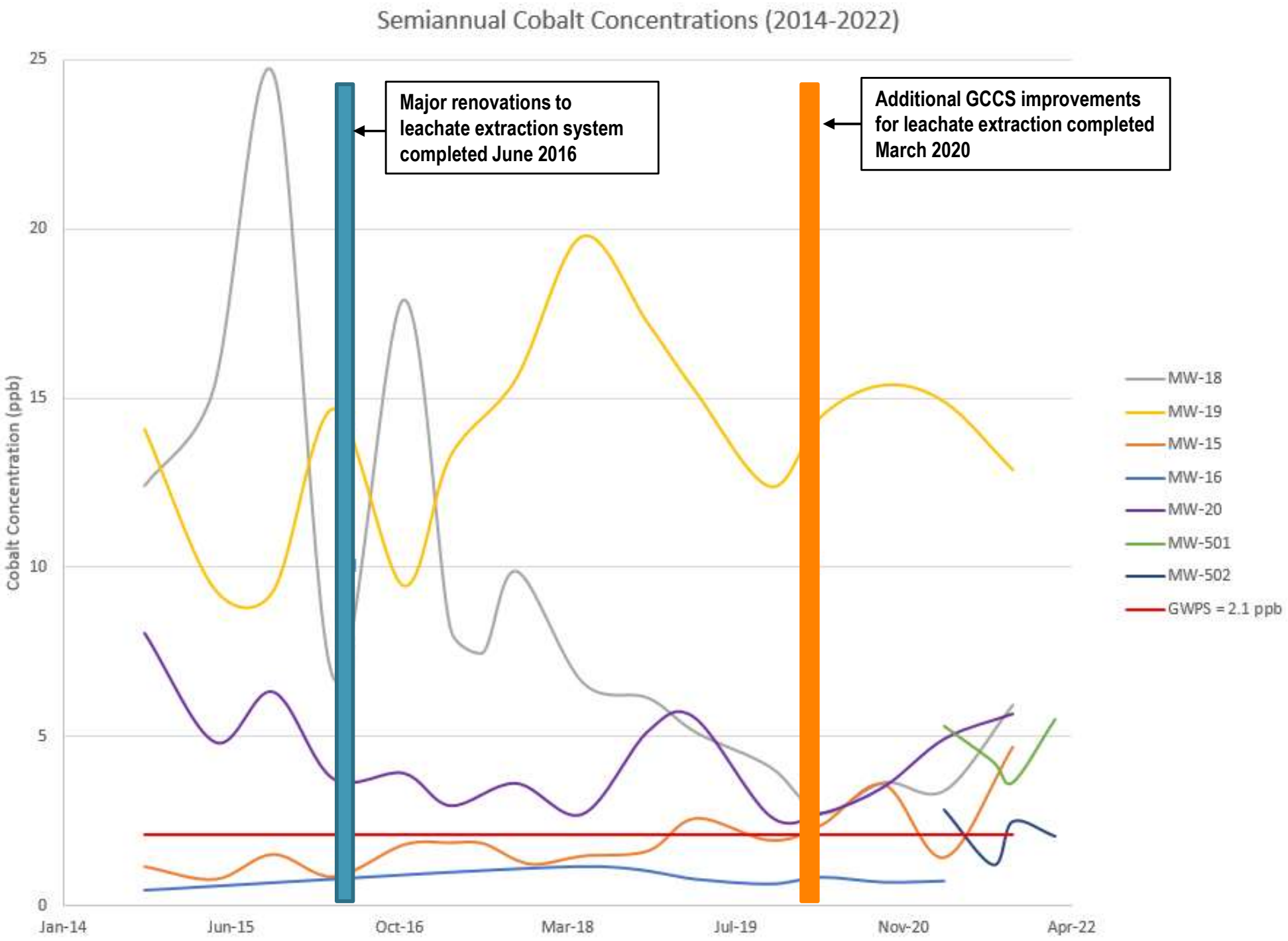
- Exceedances are proximal to the old closed landfill
  - Benzene at MW-20
  - Cobalt at MW-18, MW-19, MW-20 and MW-301

- Implementation of Assessment of Corrective Action Program
  - Reduction through natural processes & control of source by reducing leachate within old landfill
  - Long-term groundwater monitoring to provide evidence of improvement



3 Update on Corrective Action Progress & Findings


Semiannual Benzene Concentrations (2008-2021)
MW-20 Data Trendline
Major renovations to leachate extraction system completed June 2016
Additional GCCS improvements for leachate extraction completed March 2020
Benzene Concentration (ppb)
Date
Nov-07
Feb-11
Jun-14
Sep-17
Jan-21
0
1
2
3
4
5
6
7
8
9
10
MW-15
MW-18
MW-20
MW-28
MW-29
MW-30
MW-301
MW-302R
MW-306
MW-307A
MW-308
GWPS = 5 ppb


Semiannual Cobalt Concentrations (2014-2022)
Major renovations to leachate extraction system completed June 2016
Additional GCCS improvements for leachate extraction completed March 2020
Cobalt Concentration (ppb)
25
20
15
10
5
0
Jan-14
Jun-15
Oct-16
Mar-18
Jul-19
Nov-20
Apr-22
MW-18
MW-19
MW-15
MW-16
MW-20
MW-501
MW-502
GWPS = 2.1 ppb

Ongoing/Future Compliance Monitoring

- Continuation of Benzene & Cobalt monitoring until concentration remains below the MCL/GWPS at all monitoring points for 3 consecutive years.

- Evaluate Cobalt levels across the site
  - Evaluate additional data collected from upgradient and cross-gradient monitoring wells and look for trends in the data
  - Determine if a site-specific cobalt level can be established based on higher concentrations observed at new wells onsite

Key Takeaways: Benzene & Cobalt

1. Limited to shallow groundwater table – not a source of drinking water.
2. Benzene concentrations exceeding the EPA and Iowa DNR MCL/GWPS for drinking water are only measured in groundwater samples collected from MW-20.
3. Benzene & Cobalt plume is receding and is contained on Agency property east of Indian Creek.
4. Corrective action measures implemented in the old, closed landfill appear to be reducing the extent of the plume. Additional work done to help speed up the process.

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