Renew Harbor Island

Work today, protect tomorrow.

Former J.B. Sims Generating Station/Harbor Island

Presentation for Public Release

November 10, 2026

Prepared by HDR

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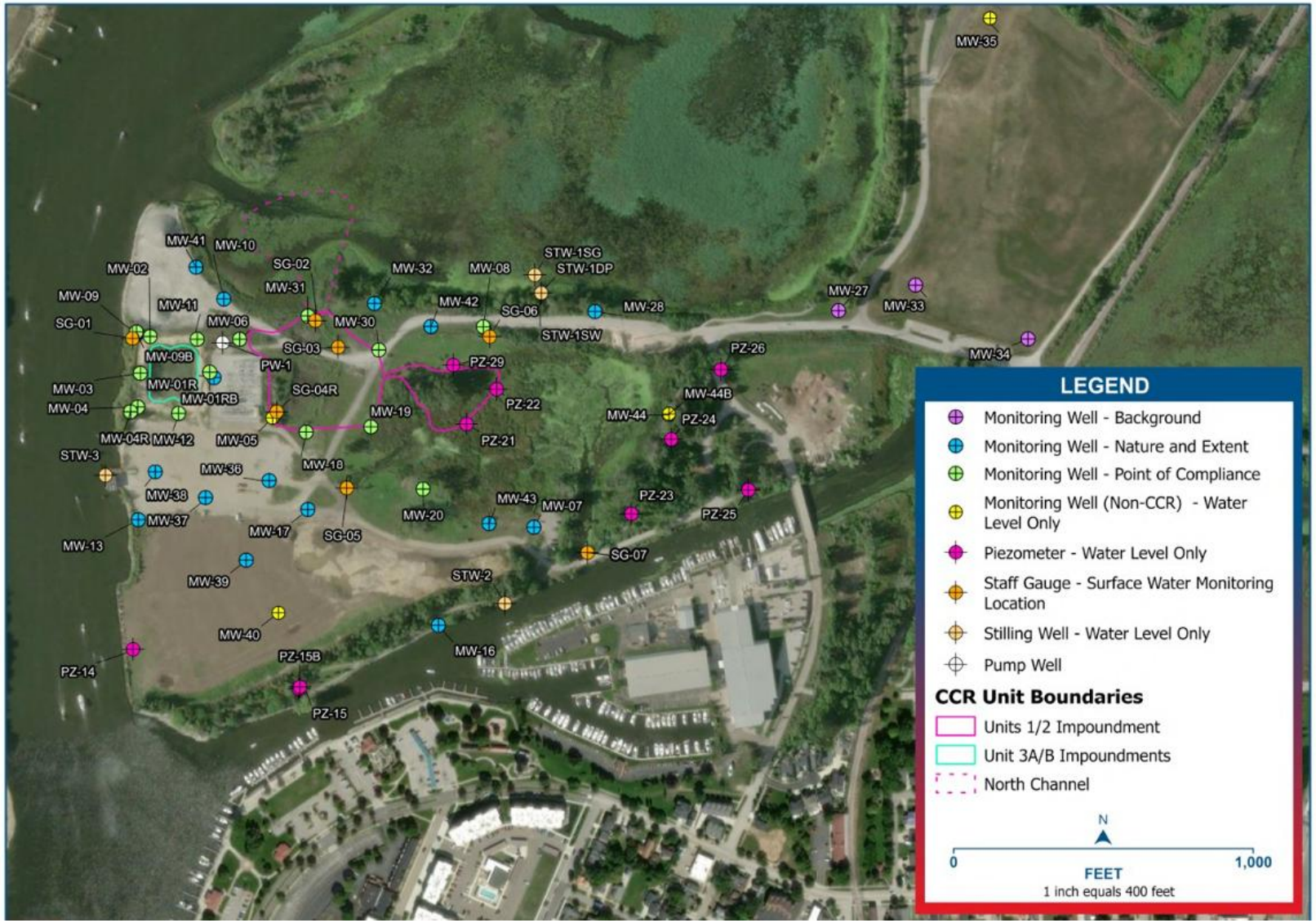
Site Overview



Former J.B. Sims Generating Station
City of Grand Haven

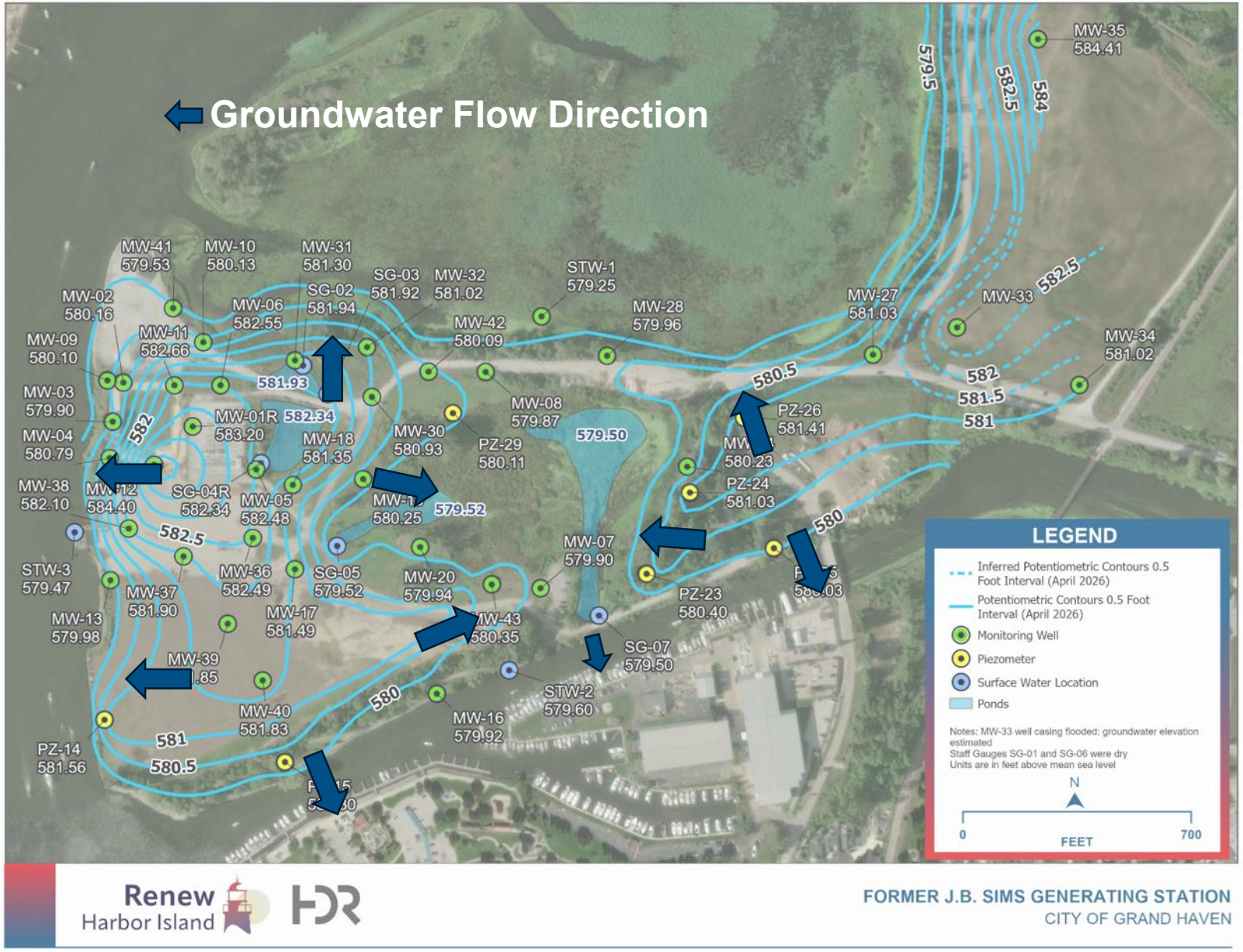
Site Overview

- Comply with CCR Rule and Part 115 groundwater monitoring and investigation requirements
- Evaluate PFAS occurrence on the island
- Characterize site hydrogeology
- Develop an integrated, site-wide remediation strategy to address identified impacts

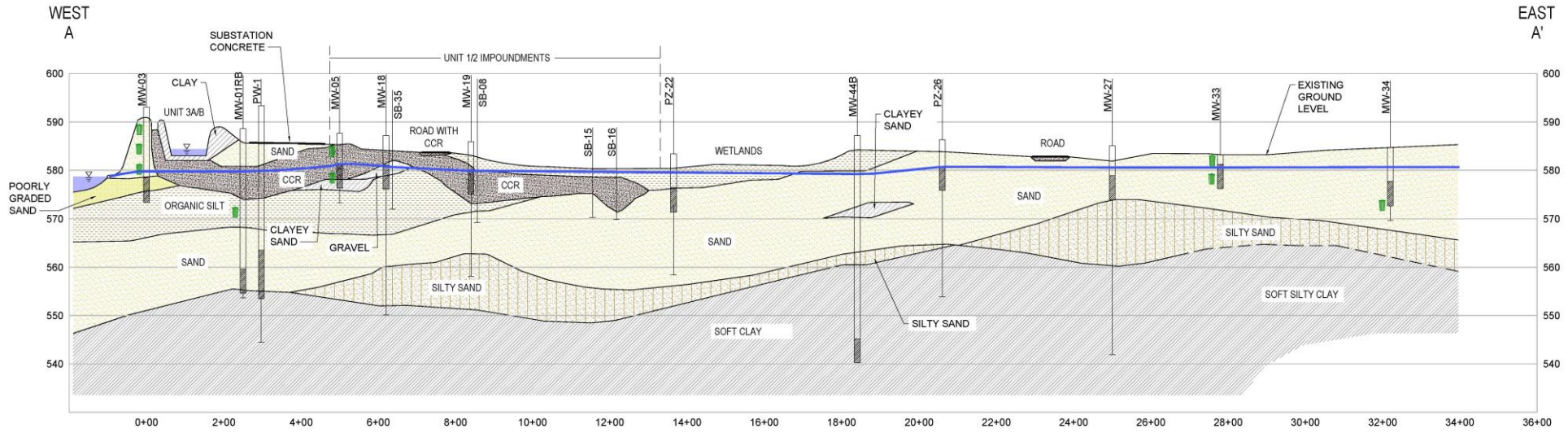


Site Overview

- Groundwater Flow Directions
- Groundwater Surface Water Interaction
- Aquifer Properties
  - Pump Test
- Base of the Aquifer
- Developed 3-D Groundwater Flow Model



FORMER J.B. SIMS GENERATING STATION
CITY OF GRAND HAVEN
GEOLOGIC CROSS SECTION A-A'



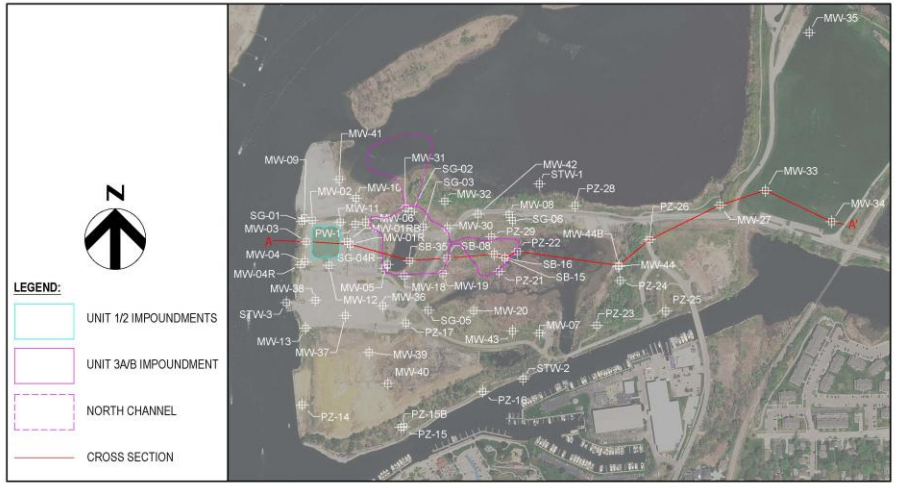
LEGEND:

- TOPSOIL
- SAND
- SILTY SAND
- CLAY
- SILTY GRAVEL
- POORLY GRADED SAND
- SOFT CLAY
- ORGANIC SILT
- GRAVEL
- PEAT
- CCR
- FILL/DEBRIS
- SILT
- SILTY CLAY
- CLAYEY SAND
- COAL
- WATER
- WELL SCREEN

NOTES:

1. MONITORING WELLS PW-1, MW-05, MW-18, AND MW-19 ARE NOT ON THE ALIGNMENT FOR CROSS SECTION A-A'. THESE MONITORING WELLS ARE PROJECTED ON CROSS SECTION A-A' FOR UNDERLYING GEOLOGY.
2. TRASH CAN SYMBOL (🗑) INDICATES REFUSE FOUND DURING DRILLING.

Potentiometric Surface 4/20/2026



FORMER J.B. SIMS GENERATING STATION
CITY OF GRAND HAVEN
A-A' GEOLOGIC CROSS SECTION

DATE: JUNE 2026
FIGURE: 1

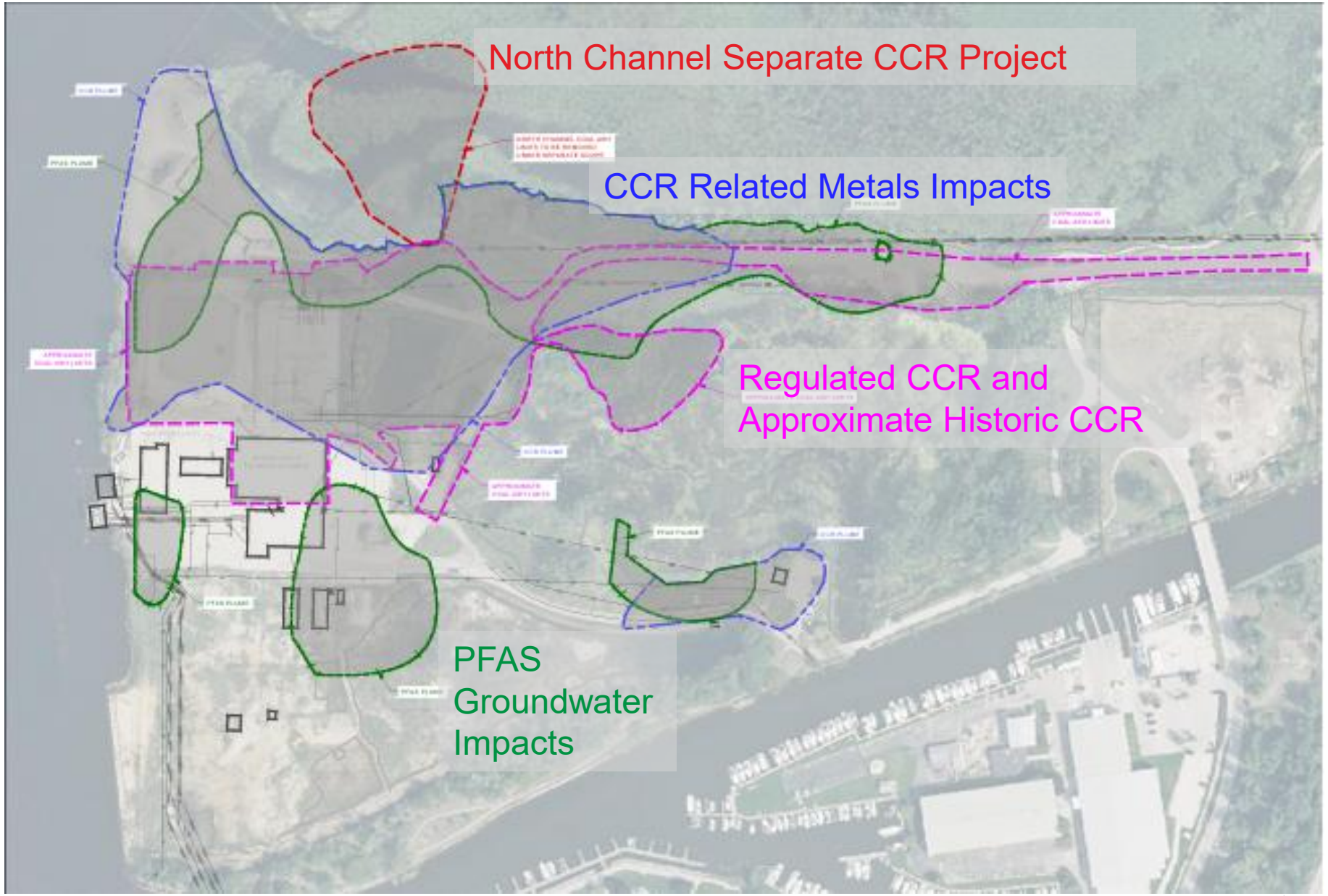
Site Overview

- Developed Groundwater Protection Standards for CCR-related parameters and PFAS
  - Site-Specific Background Water Quality
  - Drinking Water Maximum Contaminant Levels
  - Part 201 Cleanup Standards

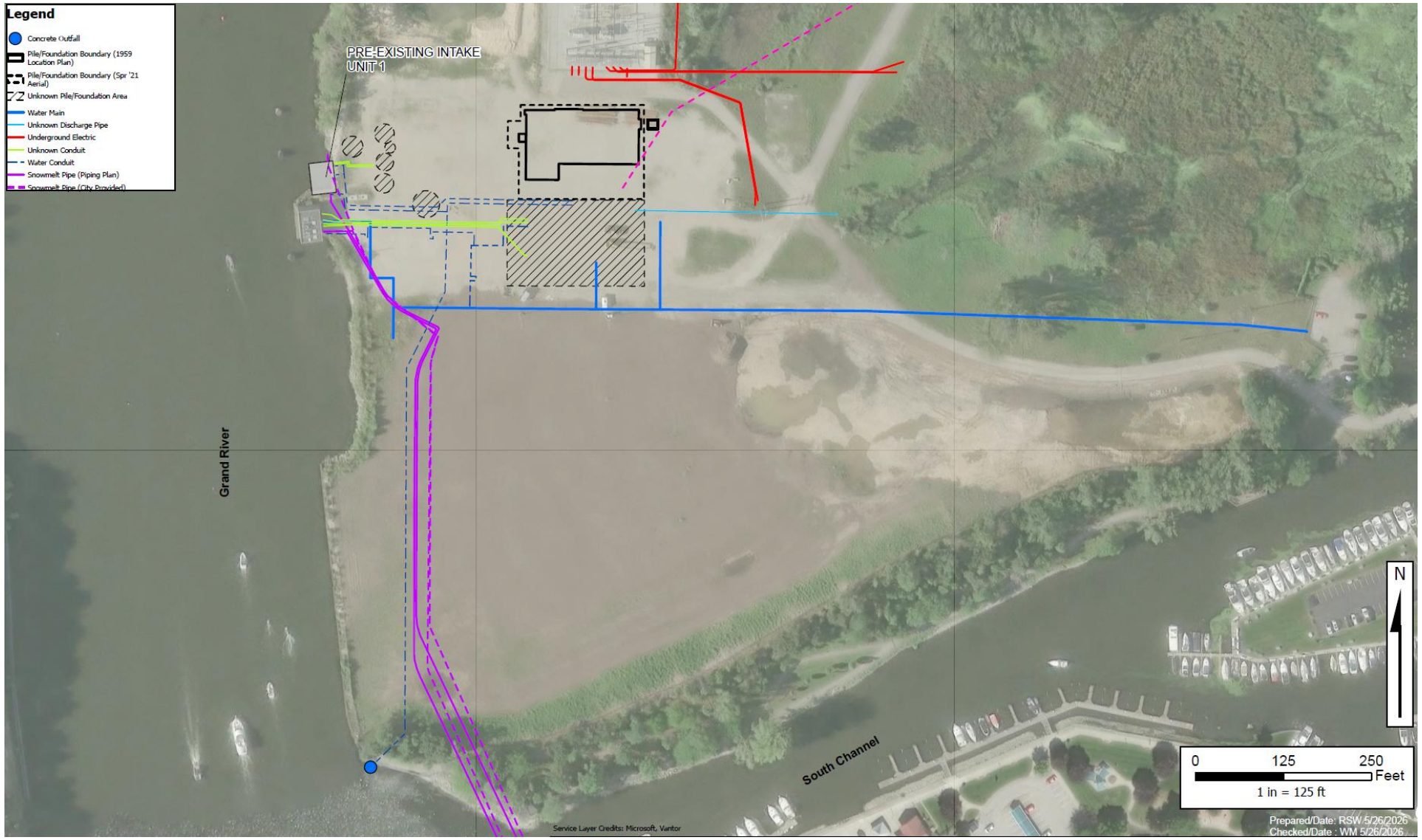
Groundwater Protection Standards			
Site Background and Part 201 Cleanup Standards to be Compared	**Lithium**		**Groundwater Protection Standard (mg/L)**
Site-Specific Background Level (UTL) (mg/L)	0.10		0.10
Maximum Contaminant Level (mg/L)	0.040		
State Non-Residential Drinking Water Cleanup Criteria for Groundwater (mg/L)	0.35		
Groundwater Surface Water Interface (mg/L)	0.44		

Site Overview

Source Areas and Impacts to Groundwater



Site Overview - Utilities



Regulatory Requirements for Remedy Selection

Remedy Selection Standards from 40 CFR § 257.97 and Mich. Admin. Code R. 299.4444. Remedies must:

- Be protective of human health and the environment.
- Attain groundwater protection standard(s) pursuant to 40 CFR §257.95(h)
- Control the source(s) of releases to reduce or eliminate, to the maximum extent feasible, further releases of Appendix IV constituents into the environment
- Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible
- Comply with standards for management of wastes as specified in 40 CFR §257.98(d).

Additional CCR Closure Regulations in 40 CFR § 257.102



Regulatory Requirements for Remedy Selection

Consider the following evaluation factors when selecting a remedy:

- The long- and short-term effectiveness and protectiveness
  - (i) Magnitude of reduction of existing risks
  - (ii) Magnitude of residual risks in terms of likelihood of further releases
  - (iii) Type and degree of long-term management required
  - (iv) Short-term risks posed to the community or the environment
  - (v) Time until full protection is achieved
  - (vi) Potential for exposure to remaining wastes
  - (vii) Long-term reliability of the engineering and institutional controls
  - (viii) Potential need for replacement of the remedy
- Effectiveness of the remedy in controlling the source to reduce further releases
- Ease or difficulty of implementing based on
  - (i) Degree of difficulty associated with constructing the technology
  - (ii) Expected operational reliability of the technologies
  - (iii) Need to coordinate with and obtain necessary approvals and permits
  - (iv) Availability of necessary equipment and specialists
  - (v) Available capacity of needed treatment, storage, and disposal services
- The degree to which community concerns are addressed by a potential remedy(s)

Remedial Action Objectives CCR & PFAS

SOURCE MATERIAL	Minimize recreator exposure to source material.
	Minimize industrial worker exposure to source material.
	Minimize construction worker exposure to source material.
	Limit groundwater impacts from source material.
GROUNDWATER	Limit off-site plume migration from Harbor Island.
	Prevent consumption of Harbor Island groundwater (drinking water, irrigation).
SURFACE WATER	Protect surface water (aquatic life) from groundwater impacts.

Remediation Alternative Selection Process

- Identification and screening of potentially applicable remedial technologies
- Development of corrective action alternatives using retained technologies
- Evaluation of alternatives based on:
  - Performance
  - Reliability
  - Implementability
  - Environmental and Community Impacts
  - Implementation timeframe
  - Life-cycle cost

Additional Considerations for Selecting and Design of Remediation Alternatives

- Existing Utilities and Substation
- On-Site Wetlands
- Challenges Remediating Close to the River
- Groundwater Model Findings
  - Capping
- Pathway Controls (Engineering and Institutional Controls (ICs), Restrictive Covenant)
- NPDES Permit Requirements
- Groundwater Storage Capacity
- On-Site Containment or Off-Site Disposal
- Future Land Use for Harbor Island
- Off-Site Impacts (Aggregate Dock)

Remedial Technologies

Technologies Considered

- Source Control – Removal and In Situ Stabilization in combination with additional measures
- Slurry Wall in combination with additional measures
- Groundwater Extraction and Treatment (GWET) in combination with additional measures
- Capping in combination with additional measures

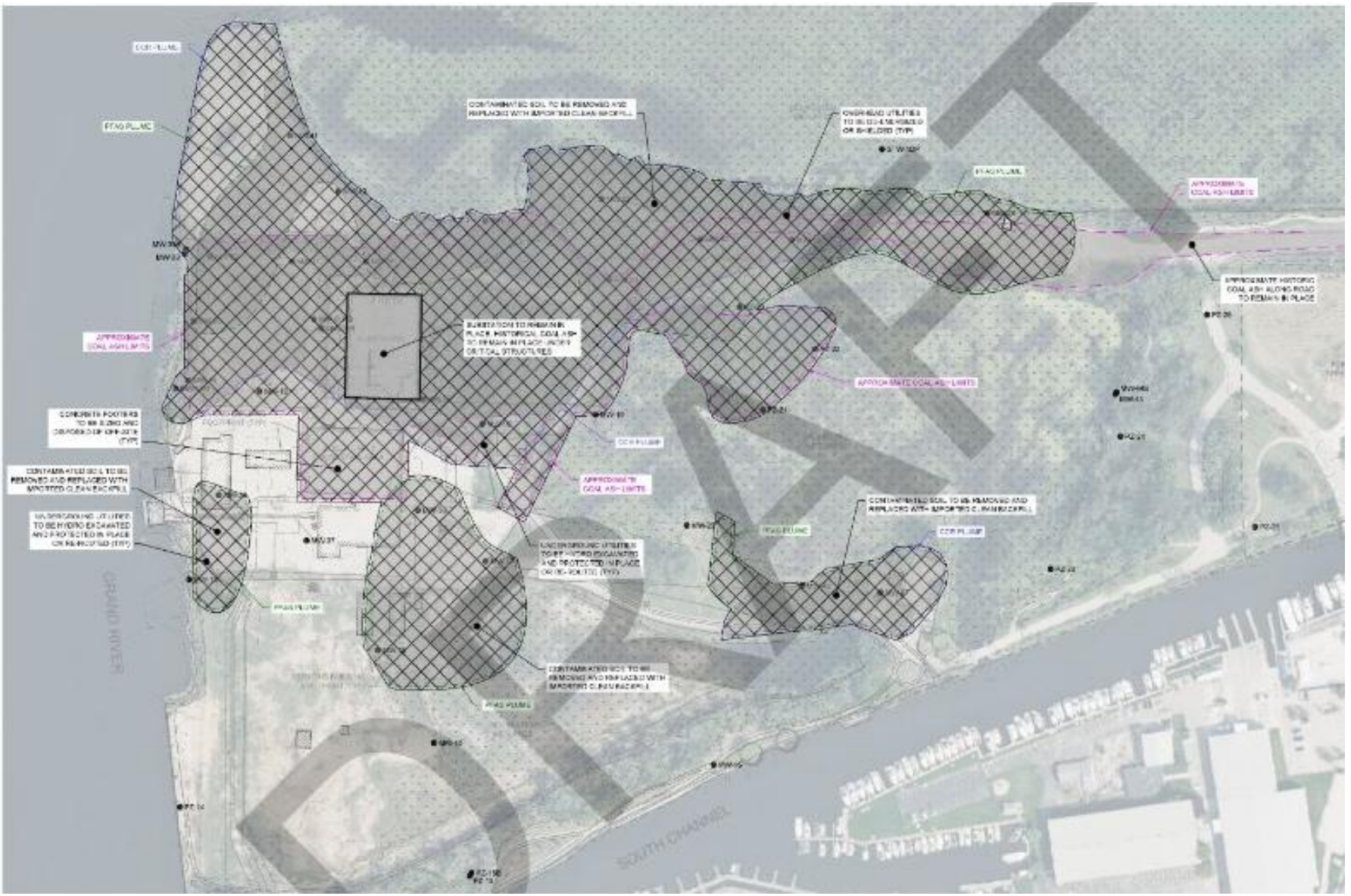
Eliminated from Consideration

- Monitored Natural Attenuation – Does not Address PFAS
- In Situ Treatment by injection or Permeable Reactive Barrier – No proven technology for PFAS in site

Alternatives

Alternatives Considered

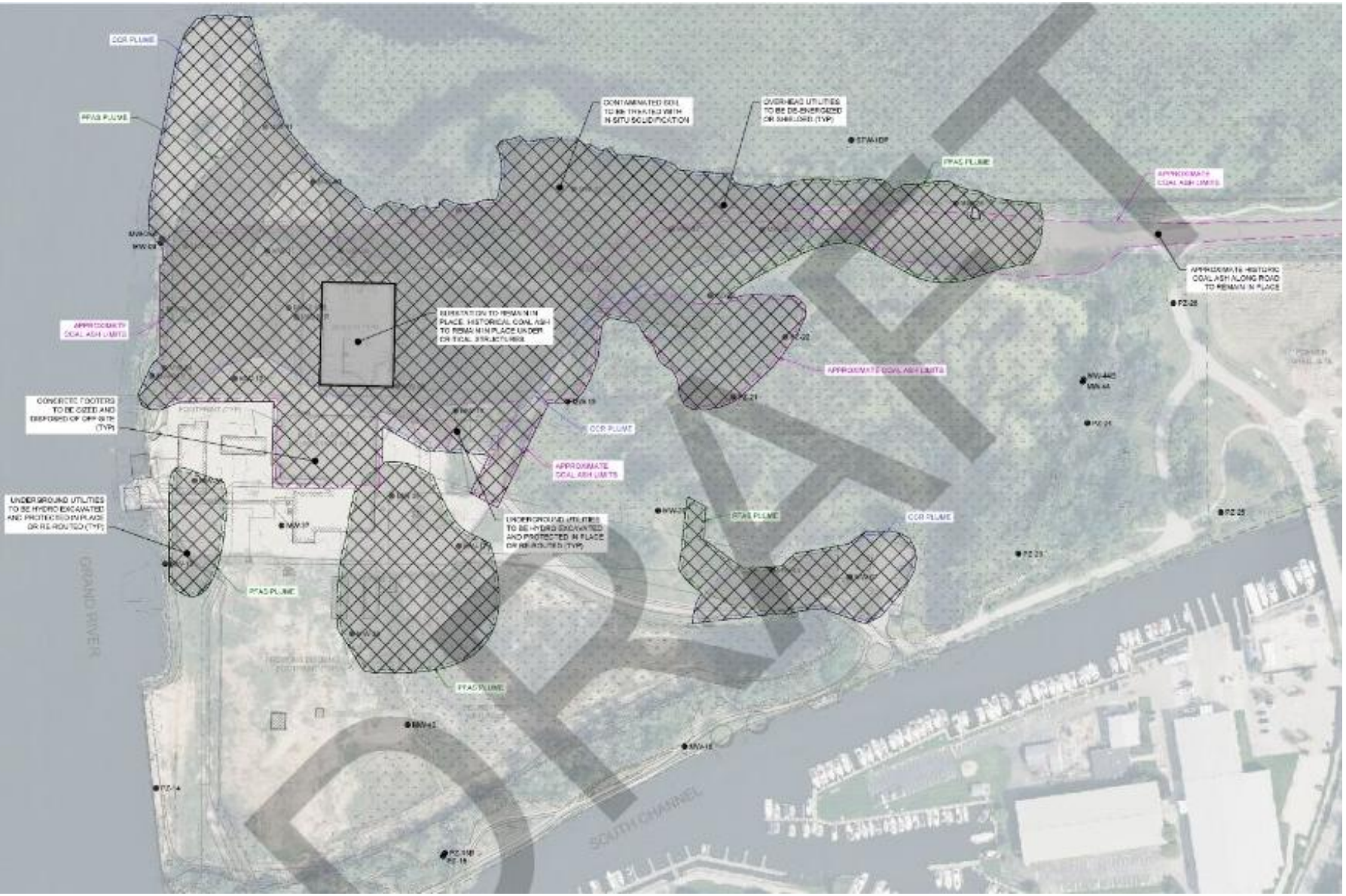
- Alternative 1 – Excavation
- Alternative 2 – In Situ Stabilization (ISS)
- Alternative 3 – Full Containment
- Alternative 4 – Hybrid Containment
- Alternative 5 – Reduced-Footprint Containment



Alternative 1: Excavation

Design Elements:

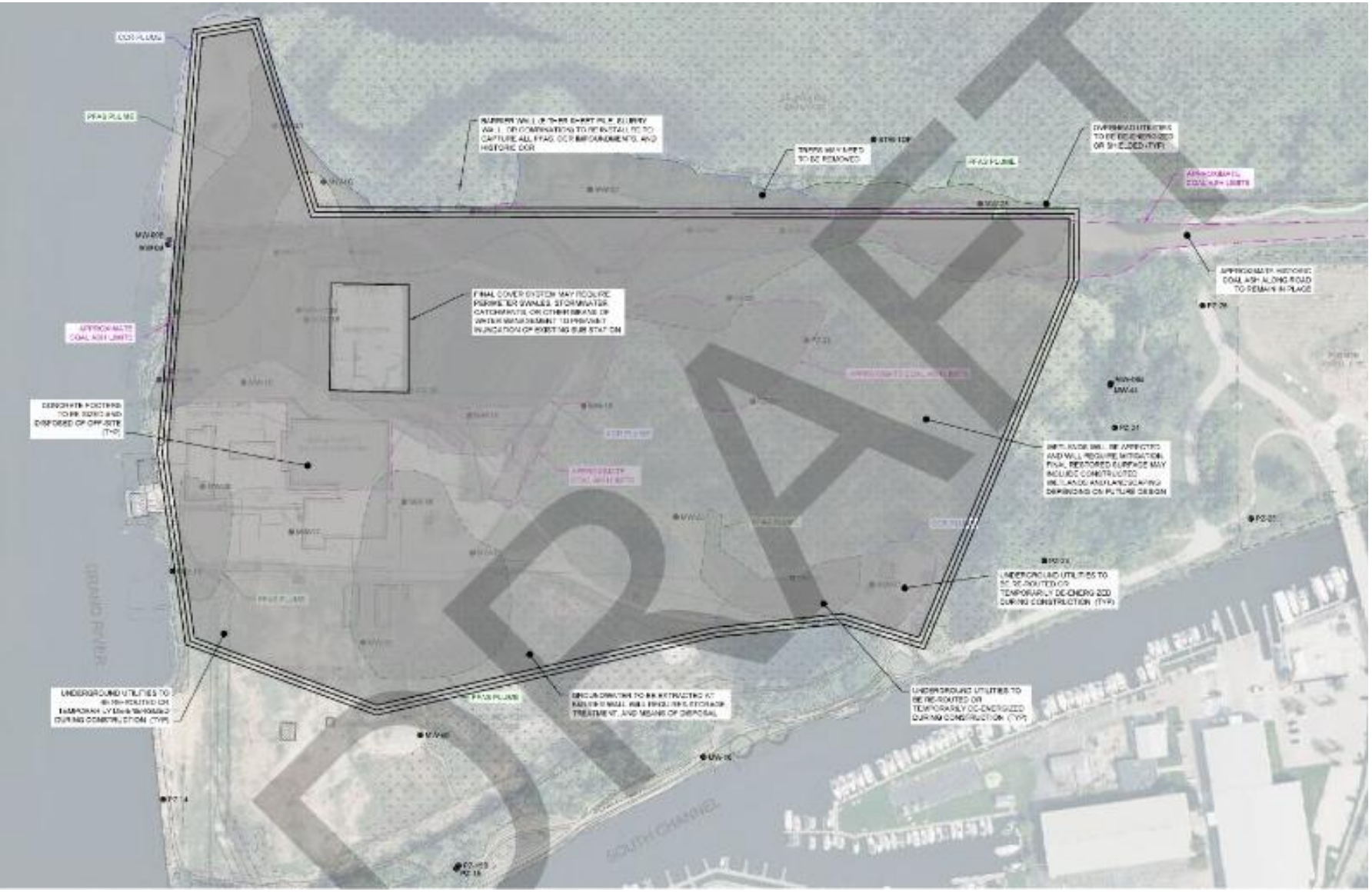
- Off site disposal and import backfill.
- ICs for groundwater use restriction.
- Substation will remain in place.
- Abandonment or protection of underground and overhead utilities.
- Concrete will be transported with excavated materials.
- Construction dewatering and treatment.
- Sheet piles adjacent to the Grand River.



Alternative 2: In-Situ Stabilization

Design Elements:

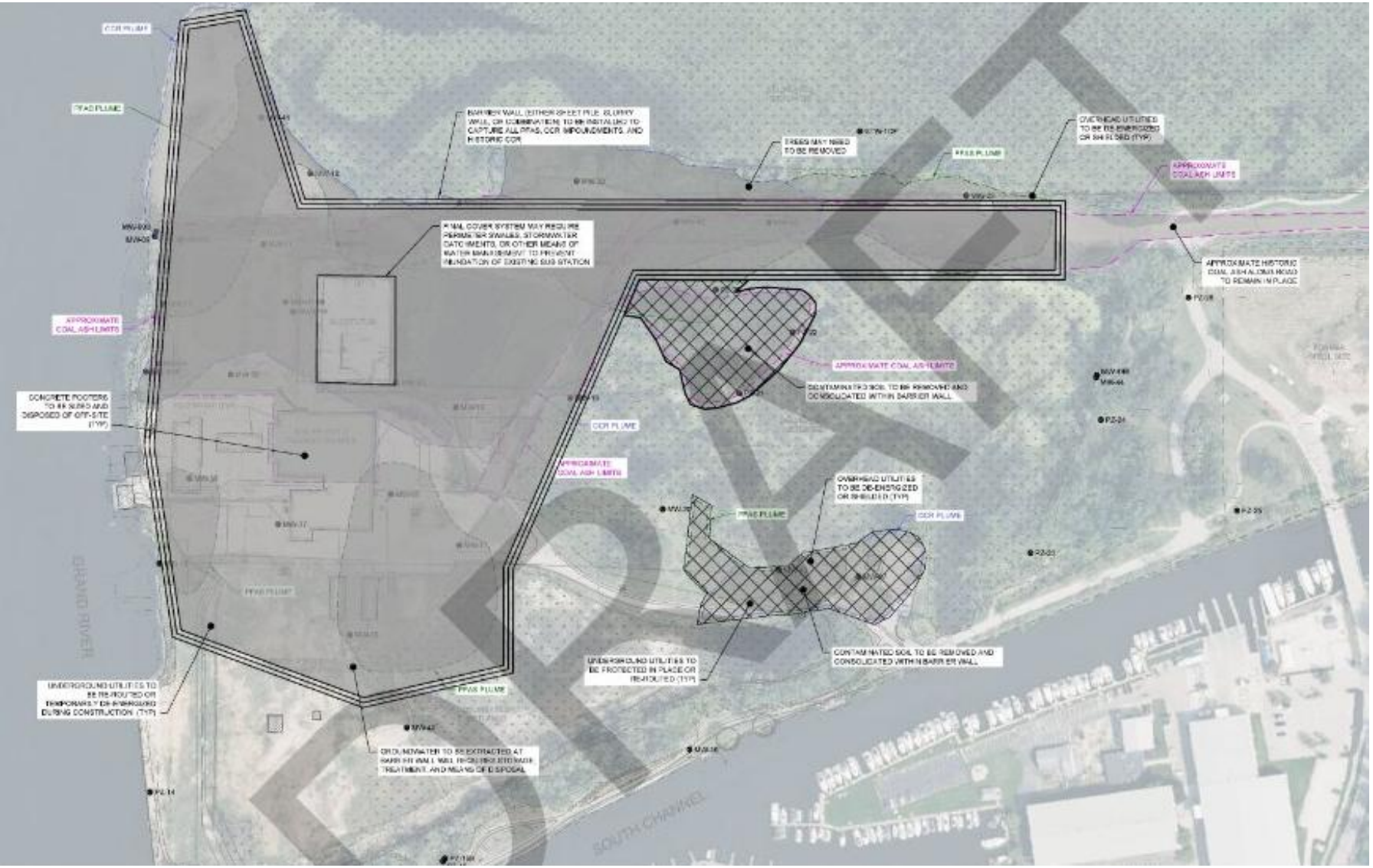
- Portland cement and carbon for stabilization amendments.
- GWET and ICs for groundwater impacts.
- Substation will remain in place.
- Abandonment or protection of underground and overhead utilities.
- Amendments will be mixed in on-Site construction equipment.
- Amendments adequately address PFAS.
- Sheet piles adjacent to the Grand River.



Alternative 3: Full Containment

Design Elements:

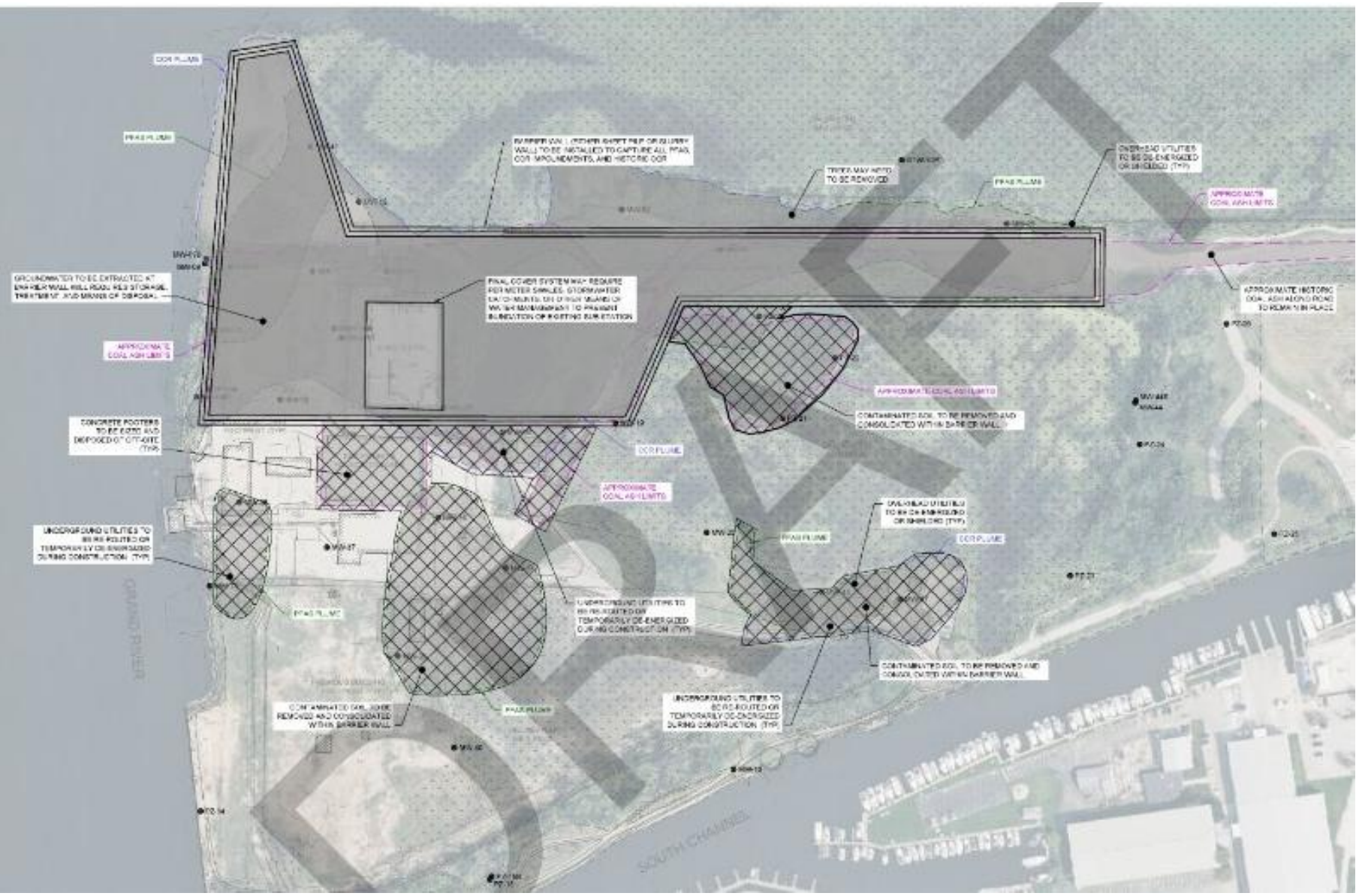
- Combination slurry wall and sheet pile surrounding all contamination with engineered cap.
- ICs for groundwater use restriction.
- Substation will remain in place.
- Abandonment or protection of underground and overhead utilities.
- GWET to control hydraulic gradient and treat groundwater within containment footprint.



Alternative 4: Hybrid Containment

Design Elements:

- Combination slurry wall and sheet pile surrounding most of the contamination with engineered cap.
- Excavation and consolidation of source material.
- ICs for groundwater use restriction.
- Substation will remain in place.
- Abandonment or protection of underground and overhead utilities.
- GWET to control hydraulic gradient and treat groundwater within containment footprint
- Most of wetland unaffected.



Alternative 5: Reduced-Footprint Hybrid

Assumptions:

- Combination slurry wall and sheet pile surrounding smaller portion of the contamination with engineered cap.
- Excavation and consolidation of source material.
- ICs for groundwater use restriction.
- Substation will remain in place.
- Abandonment or protection of underground and overhead utilities.
- GWET to control hydraulic gradient and treat groundwater within containment footprint
- Most of wetland unaffected.

Alternative Comparison

Alternative	Performance	Reliability	Implementability	Environmental & Community Impacts	Schedule	Cost
1 – Excavation						$86,211,000
2 – In Situ Stabilization						$84,393,400
3 – Full Containment						$74,878,400
4 – Hybrid Containment						$69,732,300
5 – Reduced-Footprint Hybrid						$59,187,300

Most favorable relative to the other alternatives

Generally acceptable but includes limitations, tradeoffs, or uncertainty

Least favorable relative to the other alternatives

O&M Estimates

Alterative	Annual Operations and Maintenance Costs (per year)	Total Operations and Maintenance Costs (Annual & Periodic) (30 years)
1 – Excavation	$17,000	$328,000
2 – In Situ Stabilization	$365,000	$9,150,000
3 – Full Containment	$418,000	$9,700,000
4 – Hybrid Containment	$383,000	$8,000,000
5 – Reduced-Footprint Hybrid	**$352,000**	**$6,800,000**

Annual O&M Costs: Includes routine costs required to operate and maintain the engineered cover and GWET system over its service life, such as labor, utilities, consumables, inspections, and minor repairs.
Periodic O&M Costs: Includes non-annual costs such as major maintenance, equipment replacement, or rehabilitation activities that occur at defined intervals during project life.
Net Present Value: Represents the total life-cycle cost of alternative, calculated by discounting capital, O&M, and periodic costs over a 30-year evaluation period to present-day dollars.

Cost estimates were developed to support comparison of corrective action alternatives and do not represent final design or construction costs.
Actual implementation costs may vary based on final remedy design, permitting requirements, utility modifications, treatment system requirements, material management decisions, and Site-specific construction conditions.

Next Steps

- **November 10** - Public Release of the RAA
- **December 1** – Public Meeting with RAA Presentation
- **December 2** – Parks and Rec Commission Meeting
- **December 10** – Sustainability and Energy Commission Meeting
- **December 17** – BLP Board Support
- **January 4** – Council Resolution to Select Alternative

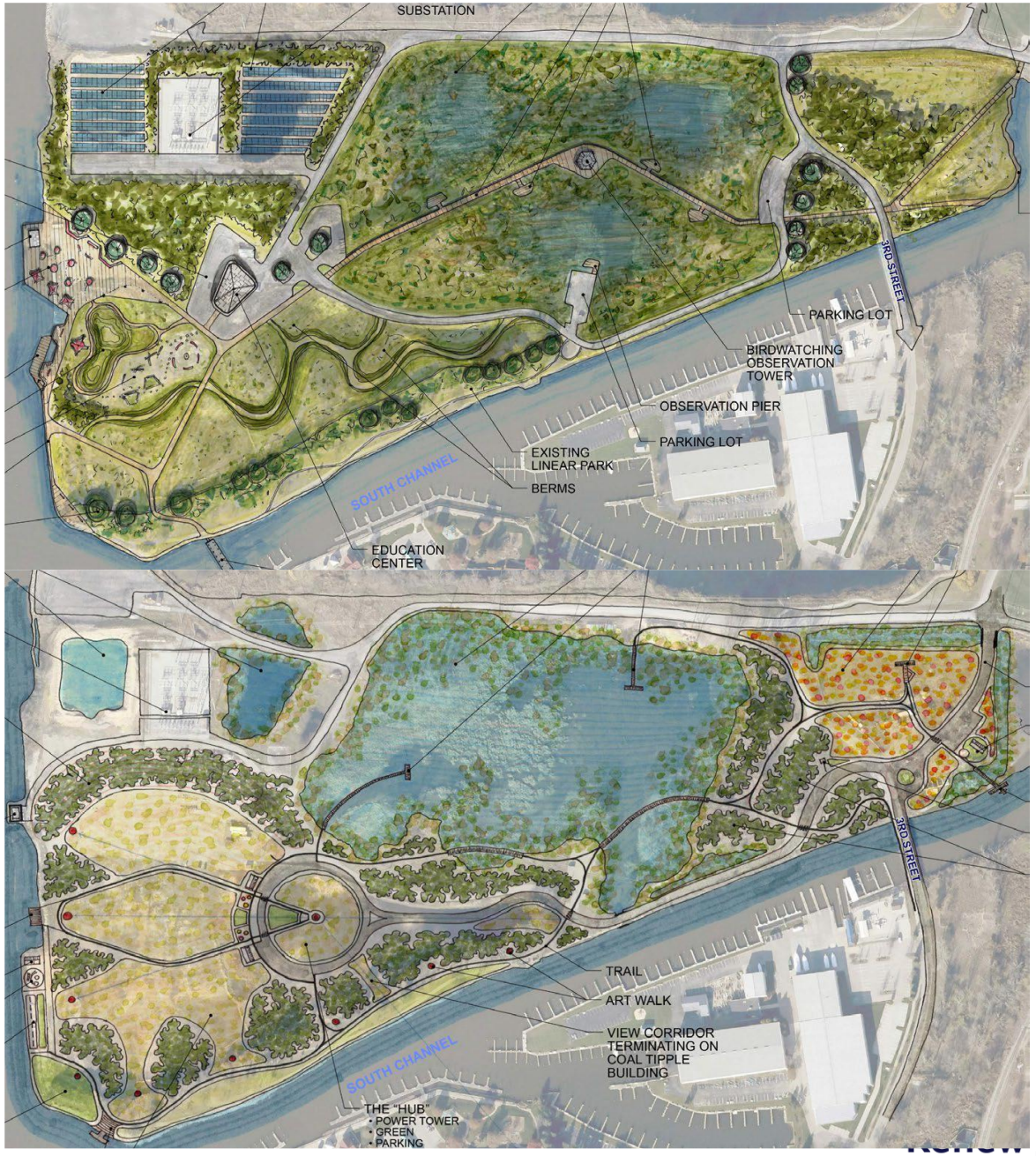
- Remedy Selection Report/Remedial Action Plan (RSR/RAP)
- Pre-Design Investigation (PDI)
  - Geotechnical and environmental studies
  - Design level Utility survey
  - Treatability studies based on selected alternative
- Permitting
- Design
- Construction
- Implementation
- O&M

Harbor Island Future Use

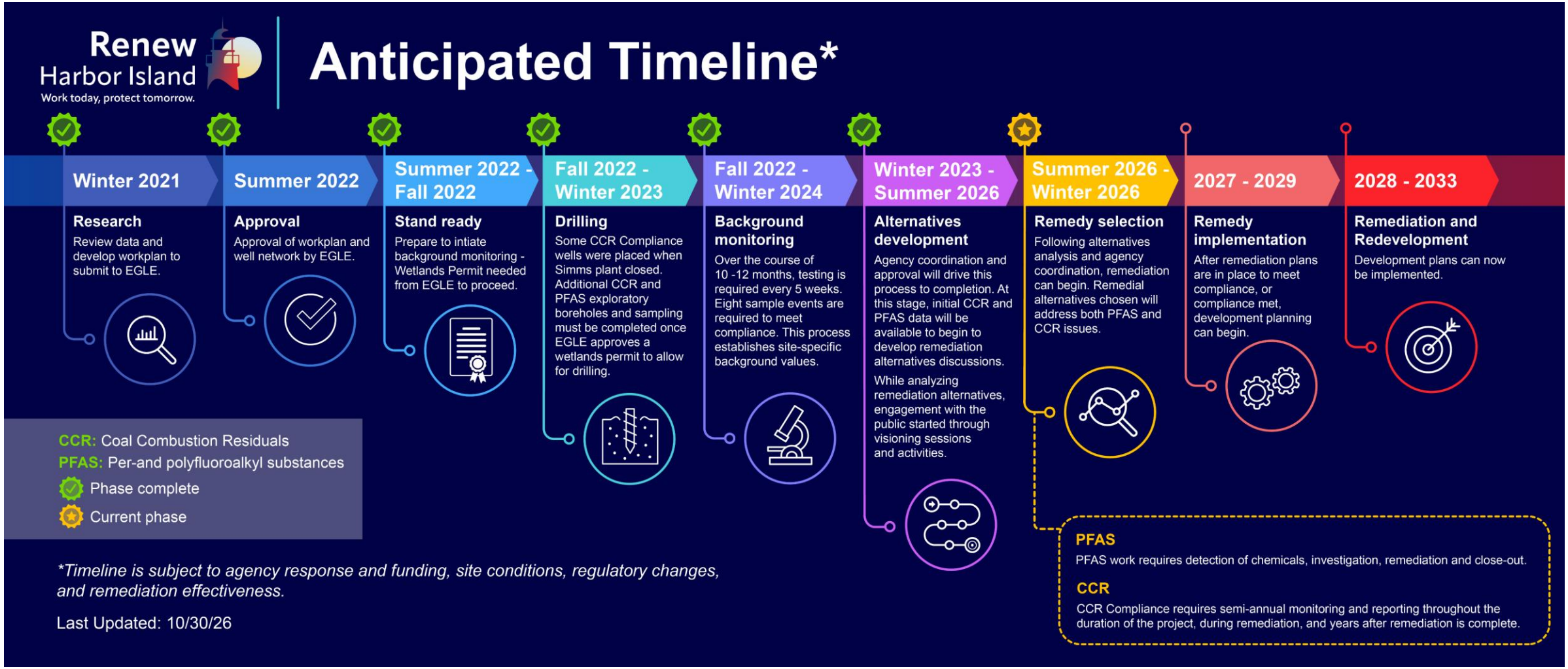
2024 Future Use Visioning Results

- Heavily supported to redevelop the island for:
  - Recreational use
  - Natural areas supporting wildlife
  - Passive uses
  - Alternative energy options

- The preferred alternative supports and compliments many of the options and amenities the public desires for the future of Harbor Island
- The preferred alternative allows the community re-envision the majority of the island while maintaining critical infrastructure and current required access/use.



Timeline


Renew Harbor Island
Work today, protect tomorrow.
Anticipated Timeline*
Winter 2021
Research
Review data and develop workplan to submit to EGLE.
Summer 2022
Approval
Approval of workplan and well network by EGLE.
Summer 2022 - Fall 2022
Stand ready
Prepare to intiate background monitoring - Wetlands Permit needed from EGLE to proceed.
Fall 2022 - Winter 2023
Drilling
Some CCR Compliance wells were placed when Simms plant closed. Additional CCR and PFAS exploratory boreholes and sampling must be completed once EGLE approves a wetlands permit to allow for drilling.
Fall 2022 - Winter 2024
Background monitoring
Over the course of 10 -12 months, testing is required every 5 weeks. Eight sample events are required to meet compliance. This process establishes site-specific background values.
Winter 2023 - Summer 2026
Alternatives development
Agency coordination and approval will drive this process to completion. At this stage, initial CCR and PFAS data will be available to begin to develop remediation alternatives discussions.
While analyzing remediation alternatives, engagement with the public started through visioning sessions and activities.
Summer 2026 - Winter 2026
Remedy selection
Following alternatives analysis and agency coordination, remediation can begin. Remedial alternatives chosen will address both PFAS and CCR issues.
2027 - 2029
Remedy implementation
After remediation plans are in place to meet compliance, or compliance met, development planning can begin.
2028 - 2033
Remediation and Redevelopment
Development plans can now be implemented.
CCR: Coal Combustion Residuals
PFAS: Per-and polyfluoroalkyl substances
Phase complete
Current phase
*Timeline is subject to agency response and funding, site conditions, regulatory changes, and remediation effectiveness.
Last Updated: 10/30/26
PFAS
PFAS work requires detection of chemicals, investigation, remediation and close-out.
CCR
CCR Compliance requires semi-annual monitoring and reporting throughout the duration of the project, during remediation, and years after remediation is complete.

Renew Harbor Island

Work today, protect tomorrow.

Thank you!

Get in touch with us.

Grand Haven City Hall: 519 Washington Ave, Grand Haven, MI 49417

Phone: 616-842-3210