

VOLUNTARY EARLY REMOVAL OF SEDIMENTS COMPLETED AT FORMER GREEN BAY MGP

S.L. Goetz¹, R. Paulson², J.M. Hagen¹, C. Simmons¹, and E. Hritsuk¹

¹ Ramboll

² Wisconsin Public Service

OUTLINE

Introduction &
Background

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Site Characterization

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Remedial
Action

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Post-Remedial Action
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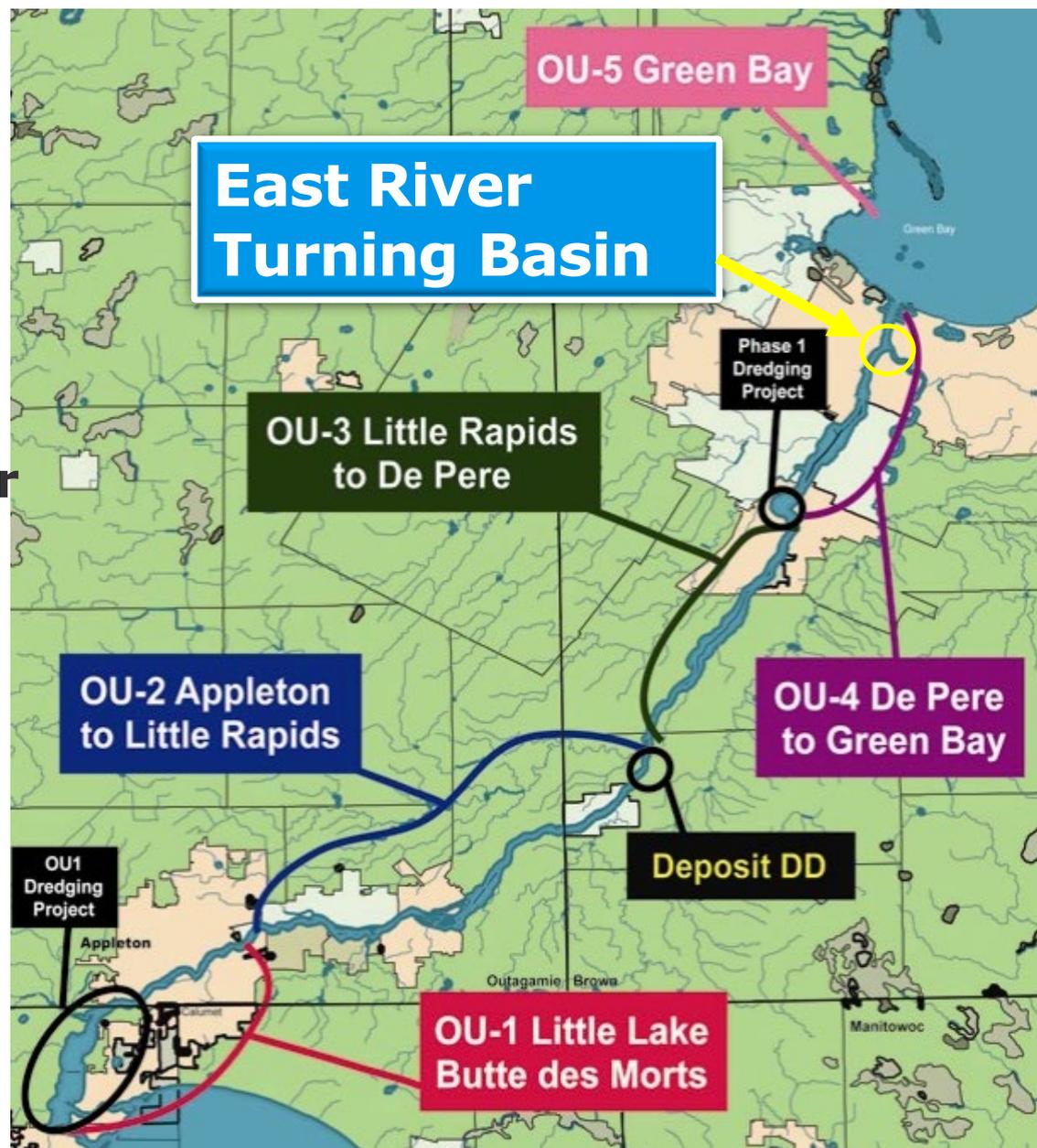
The Tale of Two Sediment Superfund Remediation Projects

PCB Dredging Project

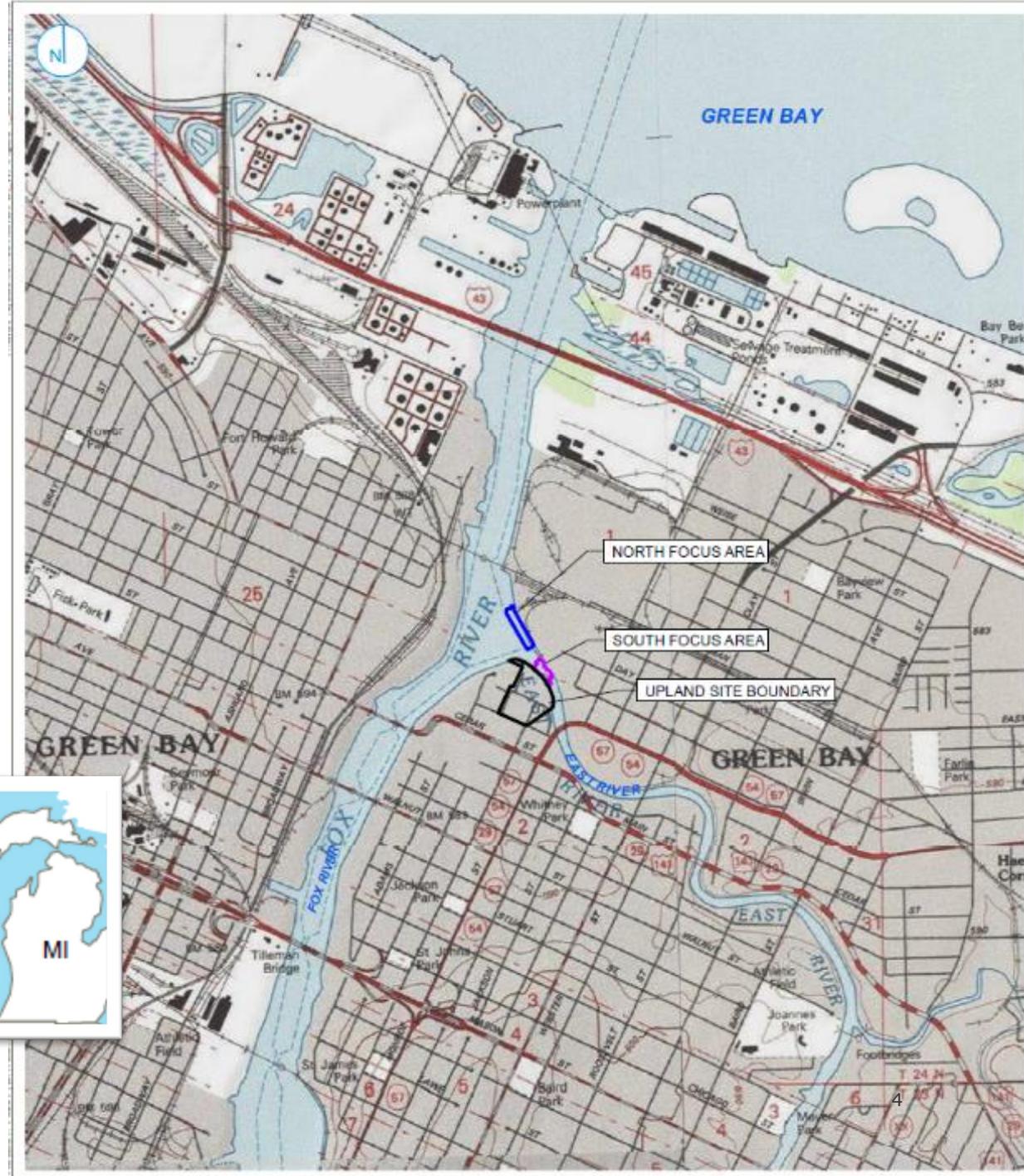
- Progressing upstream to downstream
- Downstream areas cannot be “closed” if areas upstream still require remediation or residual management
- Dredging in last two river miles 2018-2019

Wisconsin Public Service Corp. (WPSC) Former Green Bay Manufactured Gas Plant (MGP)

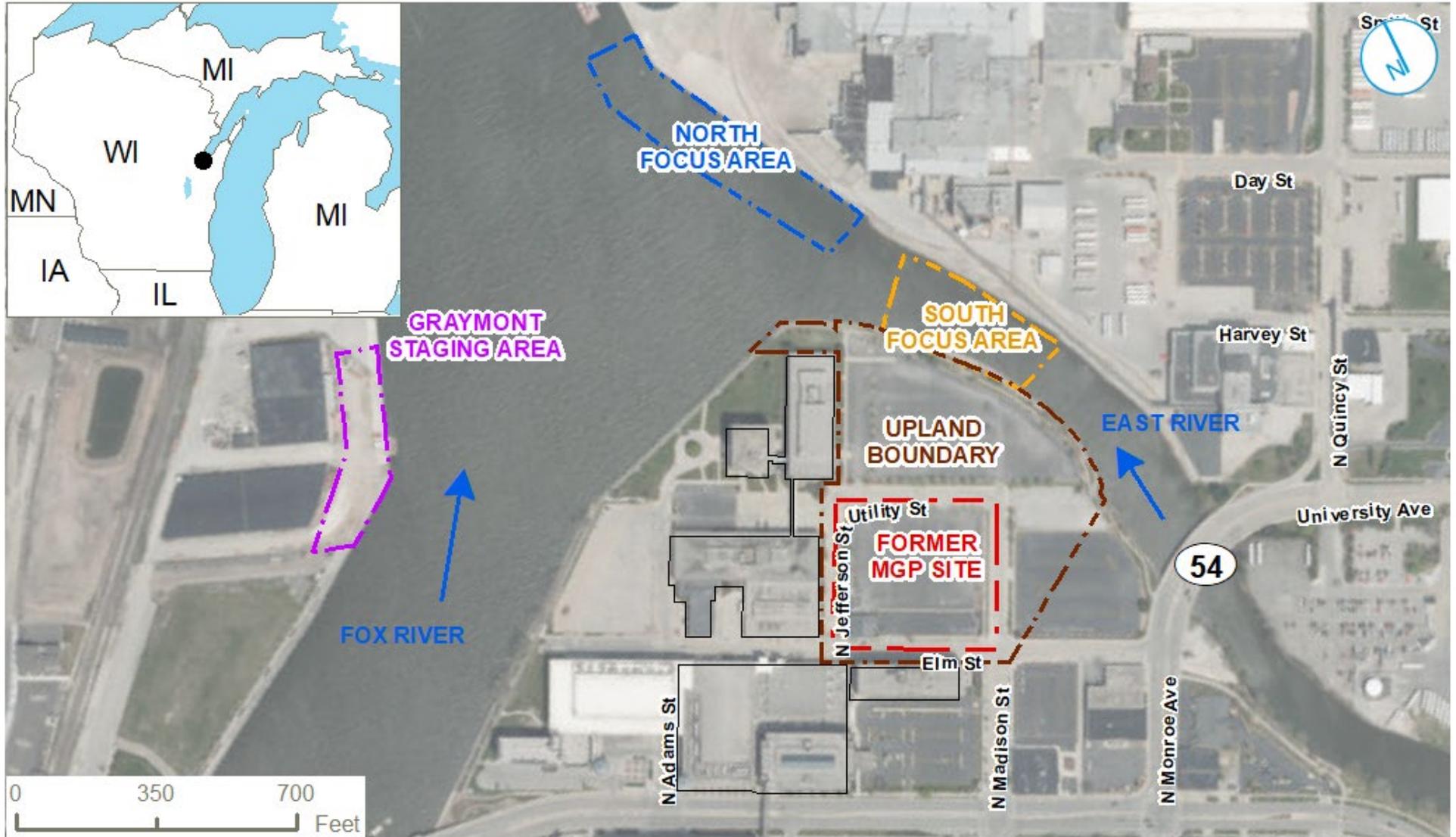
- Operated from approximately 1871 to 1947 at the confluence of the East and Lower Fox River
- Historic releases likely affected sediments in portions of the East River and Lower Fox River



SITE SETTING LOCATION & POSITION OF THE FORMER MGP

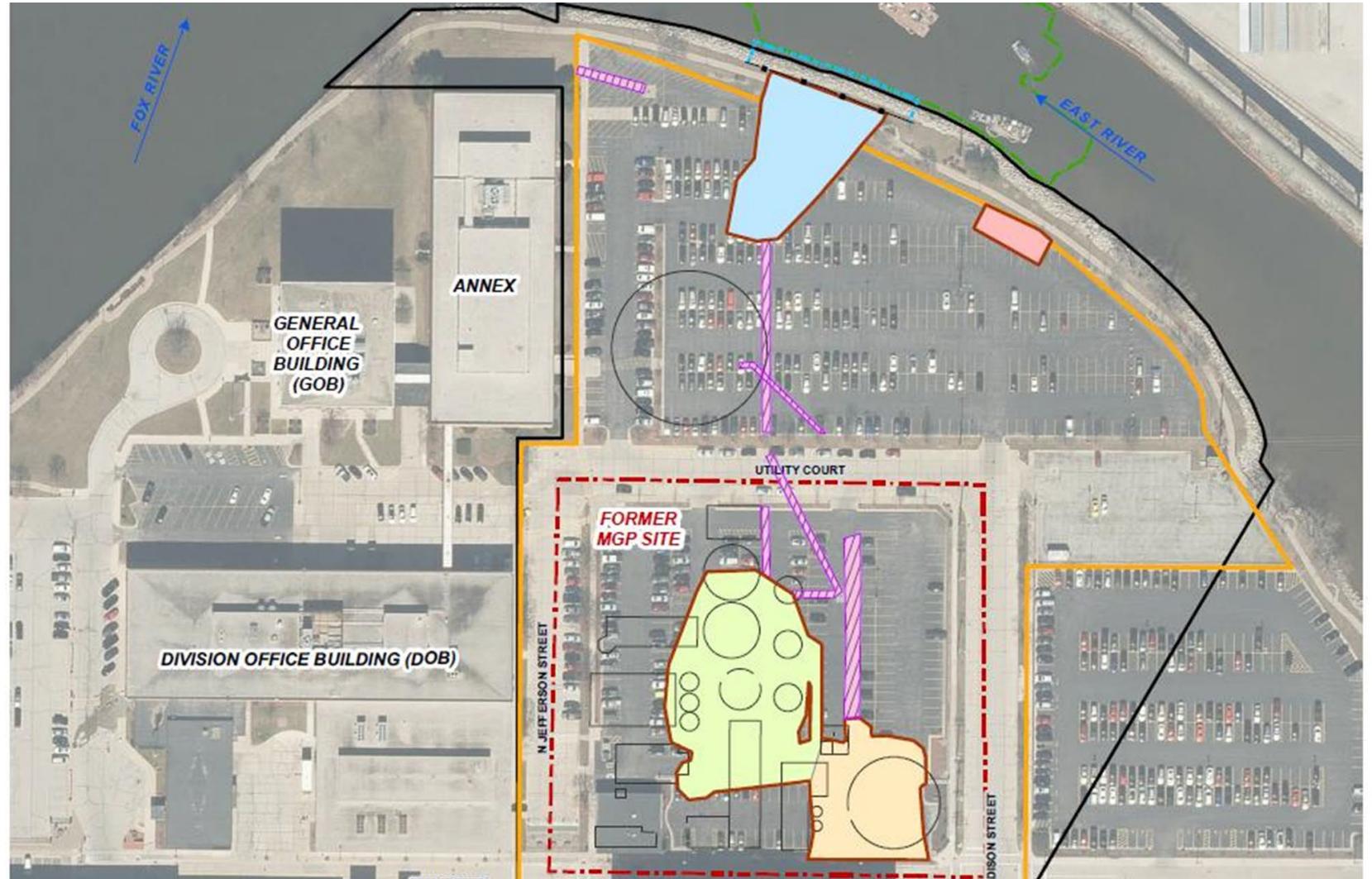


SITE LOCATION



PREVIOUS REMEDIAL ACTIONS

- SHEET PILE WALL
- - - SHORELINE EXCAVATION EXTENT (REMEDIAL ACTION COMPLETED IN 2018)
- FORMER STRUCTURE
- SOIL REMEDIATION EXCAVATION AREAS (2003)
- SOIL REMEDIATION MGP PIPING RUNS (2003)
- EXCAVATION AREA 1 (6-8 FT)
- EXCAVATION AREA 2 (8-14 FT)
* TAR WELL (12-22 FT)
- EXCAVATION AREA 3 (8-12 FT)
- EXCAVATION AREA 1 (7 FT)
- EXCAVATED PIPING RUN
- CAP MAINTENANCE
- SOUTH FOCUS AREA (REMEDIAL ACTION COMPLETED IN 2018)
- ← RIVER FLOW DIRECTION
- FORMER MGP SITE
- UPLAND SITE BOUNDARY



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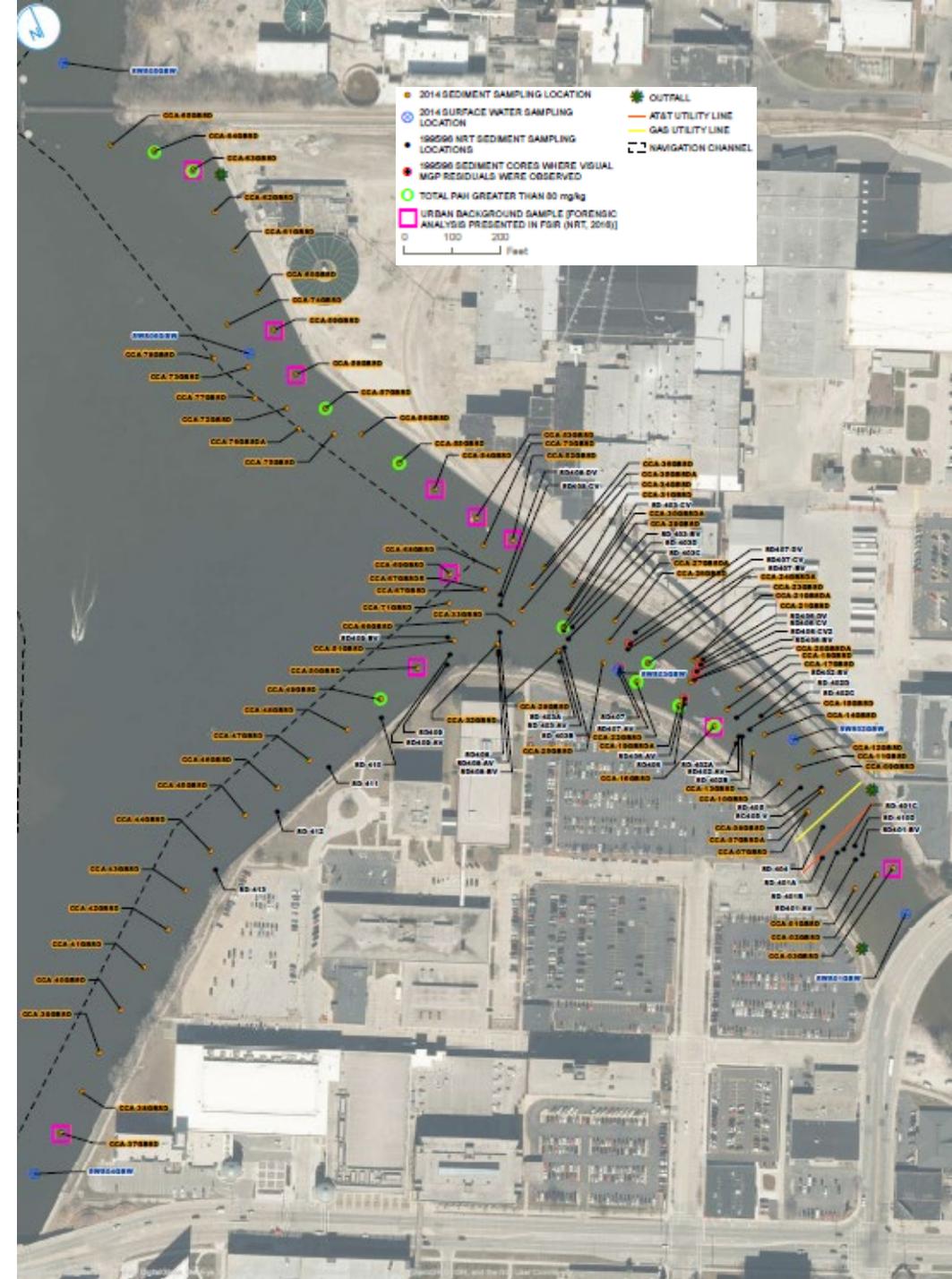
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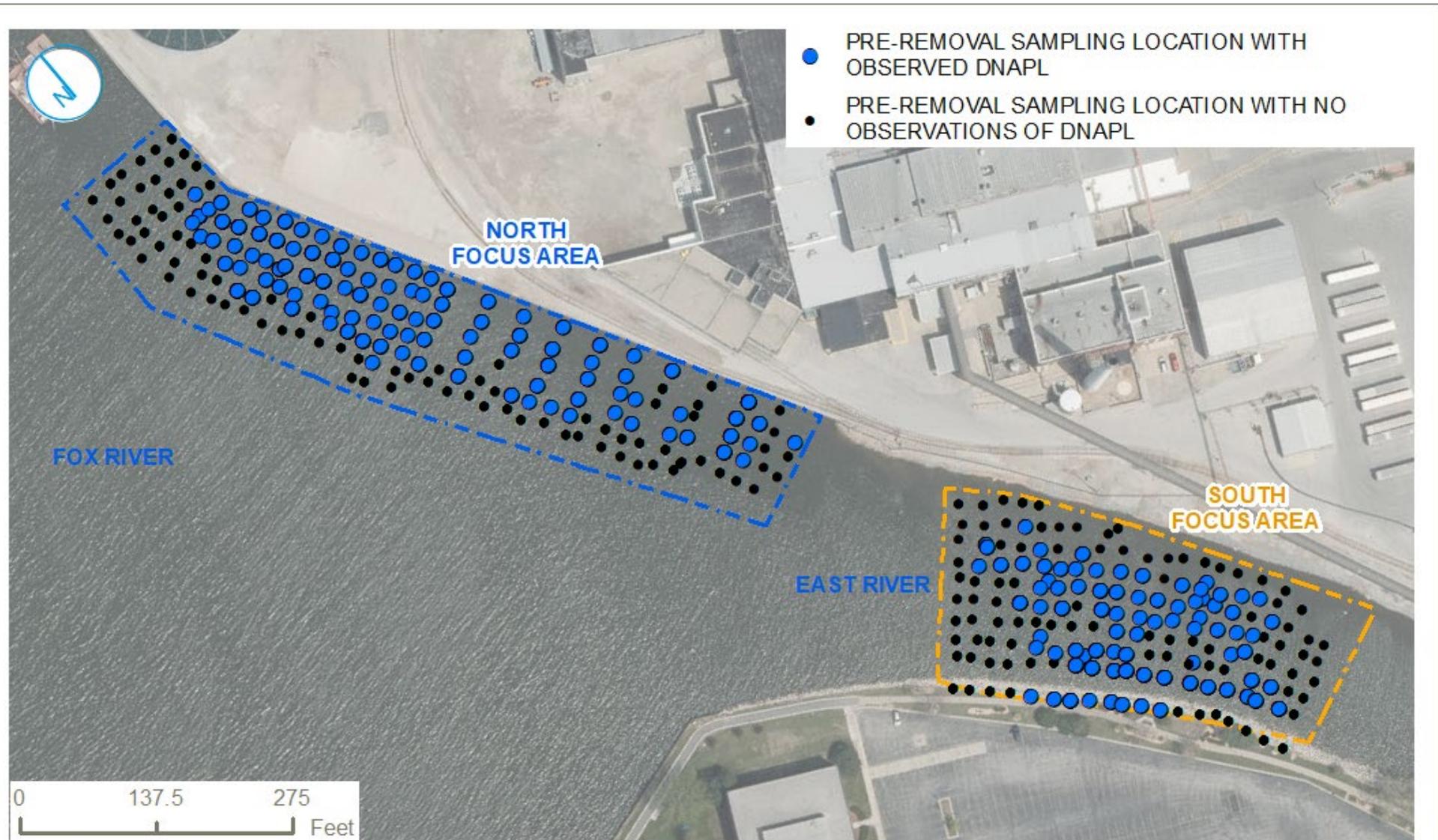
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2014 SITE INVESTIGATION

- 78 sediment locations
 - 9 Locations with total PAHs > 80 mg/kg
 - 6 Locations with observations of oil-wetted/oil-coated non-aqueous phase liquid
- 6 surface water locations
 - No exceedances of ecological surface water screening levels
- Led to 2016- 2017 visual observation investigation and identification of co-mingling with PCB impacted sediments



2017 VISUAL OBSERVATIONS OF DENSE NON-AQUEOUS PHASE LIQUID



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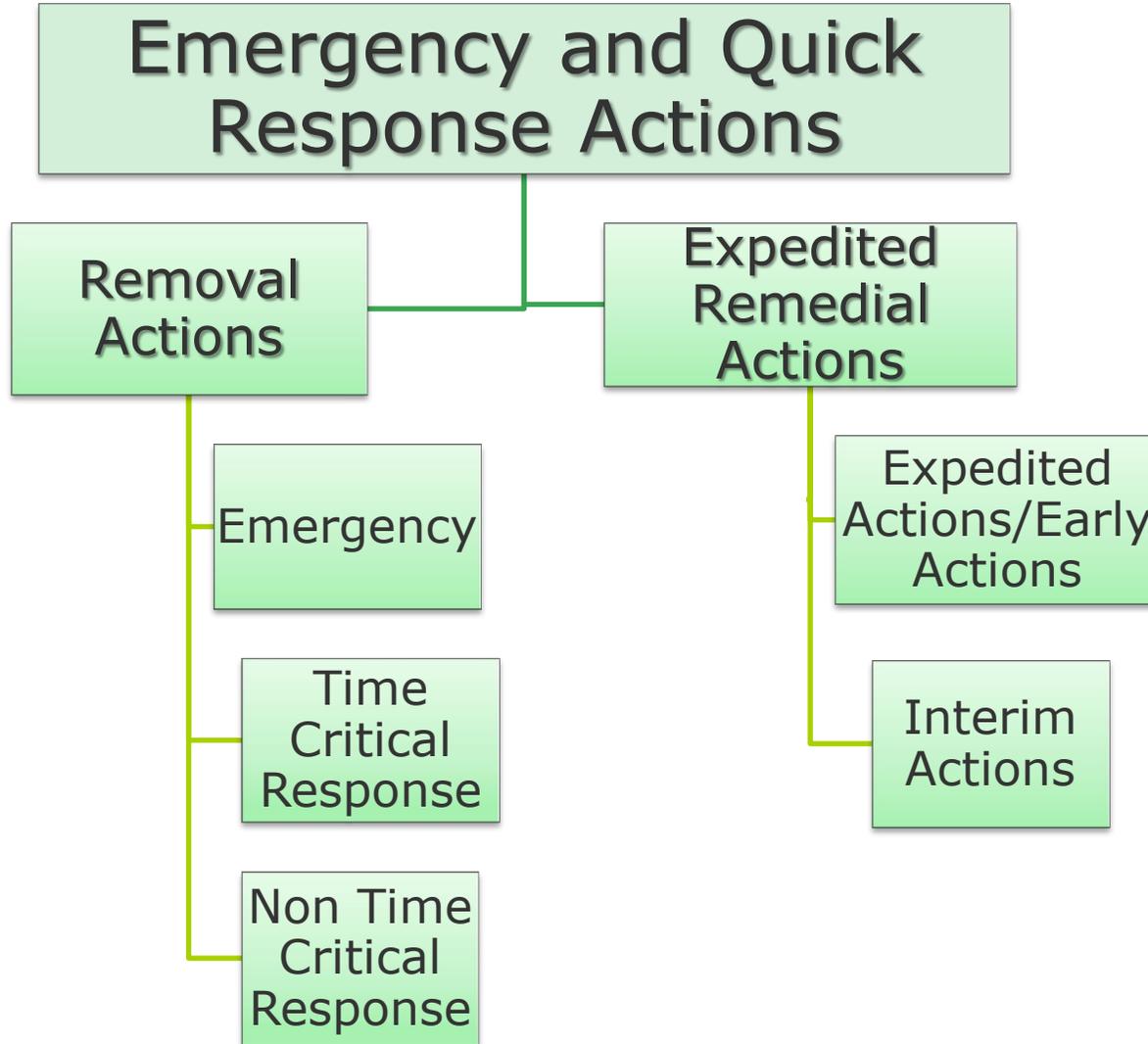
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EARLY ACTIONS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE
NOW THE
OFFICE OF LAND AND
EMERGENCY MANAGEMENT

AUG 23 2019

MEMORANDUM

SUBJECT: Use of Early Actions at Superfund National Priorities List Sites and Sites with Superfund Alternative Approach Agreements

FROM: James E. Woolford, Director *James E. Woolford*
Office of Superfund Remediation and Technology Innovation

TO: Superfund National Program Managers, Regions 1-10
Superfund Branch Chiefs, Region 1-10
Regional Superfund and Technology Liaisons, Regions 1-10
Regional Counsels, Region 1-10

PURPOSE

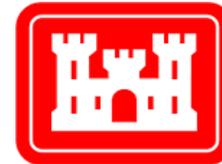
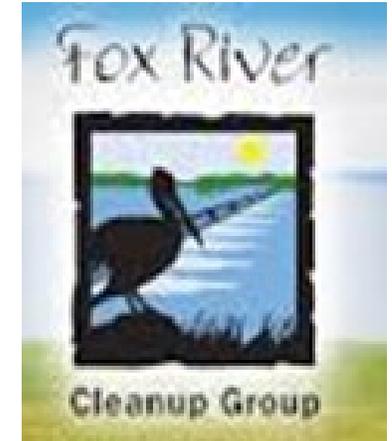
The purpose of this memorandum is to further the use of early actions at sites on the Superfund National Priorities List (NPL) and at sites with Superfund Alternative Approach (SAA) agreements consistent with the expectations in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).¹ Early actions include non-time-critical removal actions and early remedial actions (either interim or final) selected before completion of a remedial investigation (RI) and feasibility study (FS) for a given operable unit (OU). Such actions facilitate site cleanup by addressing immediate risks to human health and the environment or by controlling migration of contaminated media. Emergency or time-critical removal actions may also be appropriate as "early actions;" however, this memorandum does not address their use.

This memorandum also encourages the consideration of early action as part of an overall site strategy. The Superfund program has long encouraged the use of "strategic planning to identify the optimal set and sequence of actions necessary to address the site problems."² Such actions may include, as appropriate, early actions.

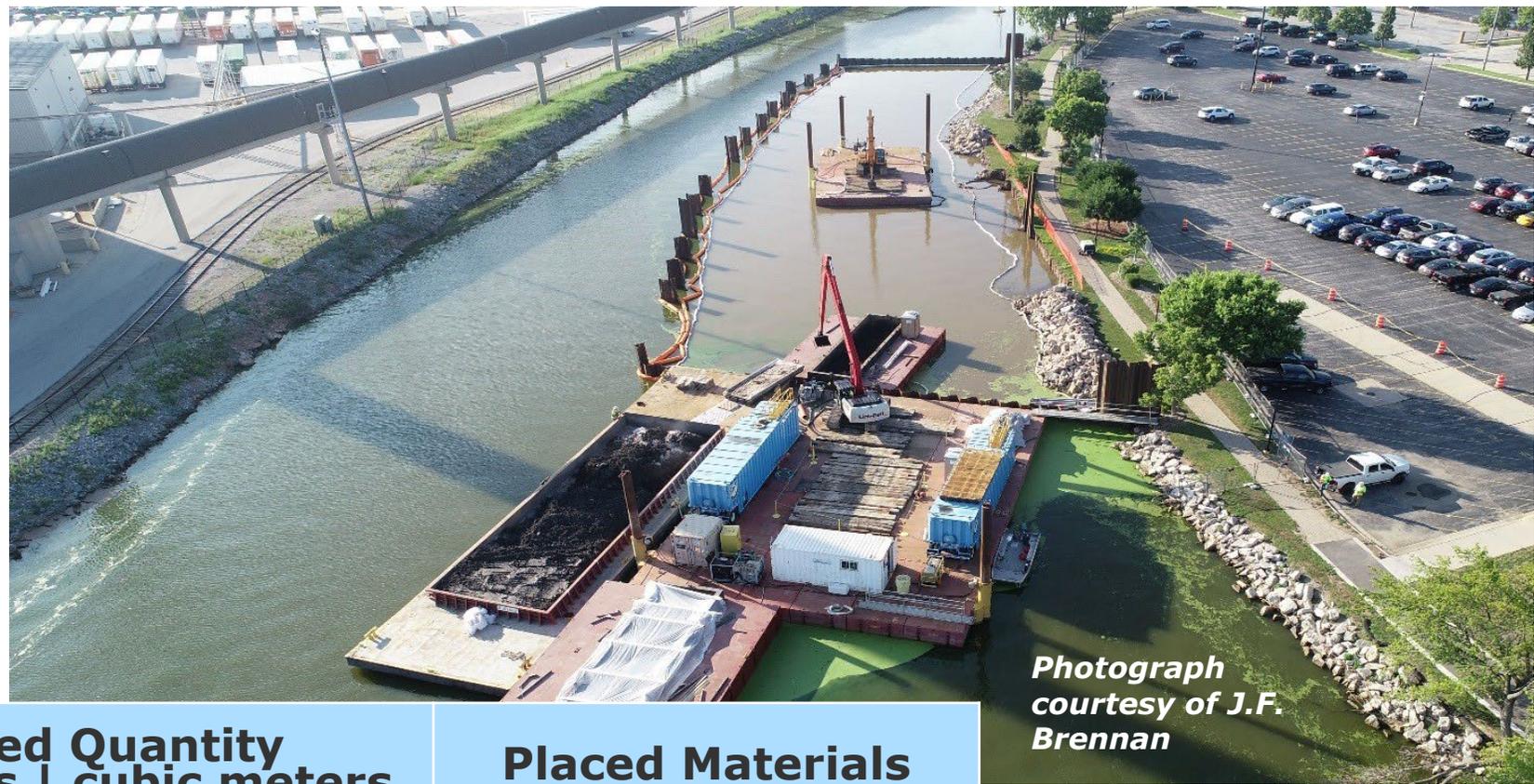
¹ "Sites should generally be remediated in operable units when early actions are necessary or appropriate to achieve significant risk reduction quickly, when phased analysis and response is necessary or appropriate given the size or complexity of the site, or to expedite the completion of total site cleanup." NCP §300.430(a)(1)(ii)(A)

² Preamble to the NCP, 55 Fed. Reg. 8706, March 8, 1990

KEY PROJECT COORDINATION



SOUTH FOCUS AREA - 2018



*Photograph
courtesy of J.F.
Brennan*

	Dredged Quantity cubic yards cubic meters		Placed Materials
WPSC Shoreline	1,245	952	0.1 AC (405 m ²) clean gravel
East River Soft sediment	5,246	4,011	1.07 AC (4,330 m ²) clean sand/residual cover
East River Clay	1,637	1,252	

NORTH FOCUS AREA - 2019



*Photograph
courtesy of
Ramboll*

	Dredged Quantity cubic yards cubic meters		Placed Materials
PCB Overburden Material	8,600	6,575	<ul style="list-style-type: none"> • 375 cy (287 m³) clean sand backfill • 1.02 AC (4,128 m²) GAC sand area
MGP Soft sediment and clay	28,900	22,096	<ul style="list-style-type: none"> • 1.45 AC (5,868 m²) Organoclay • 1.56 AC (6,313 m²) residual sand • 1.27 AC (5,140 m²) of grouted mattress

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POST REMOVAL EVALUATION

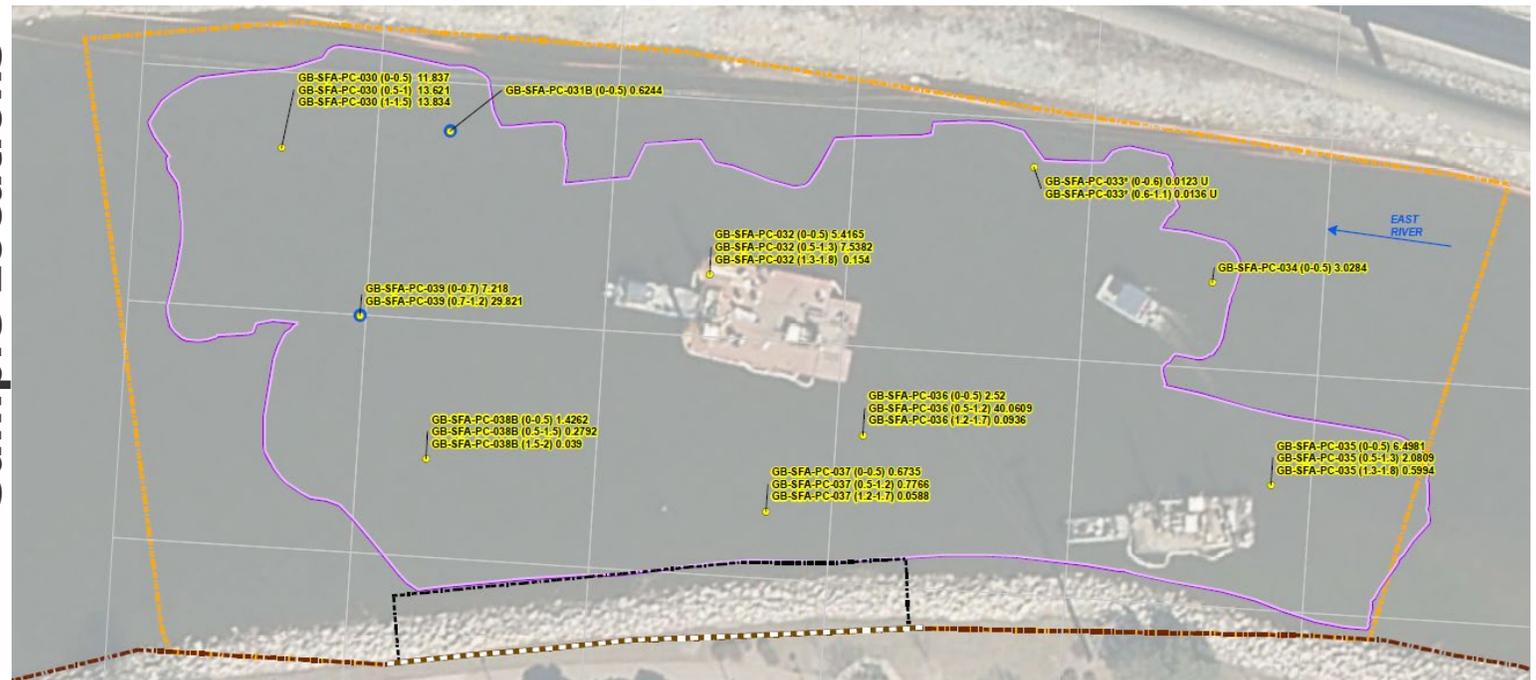
- SFA sampled in 2018 before residual sand cover placement
- SFA sampled in 2019 1-year post-cover placement
- Surface sediments reduced in concentration by 90% on average
- Natural recovery is demonstrated in SFA



2018 SFA Post-RA
Sample Locations

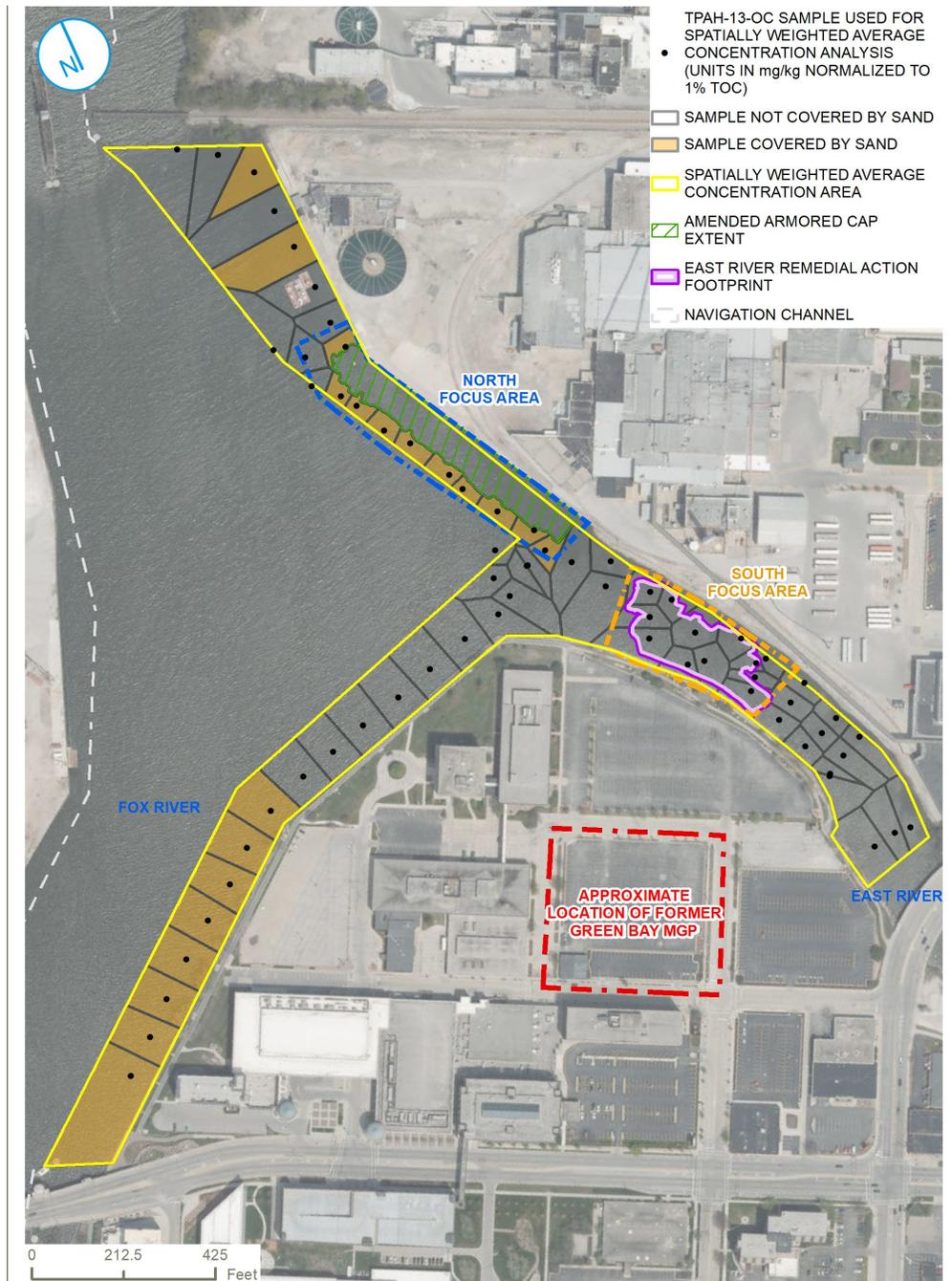


2019 SFA Post-RA
Sample Locations



SWAC APPROACH

- OU is 15 AC (60,703 m²)
- 1 core per 0.25 AC (1,012 m²)
- Applied surface weighted average concentration
 - Thiessen polygons
 - tPAH-13 concentrations normalized to 1% total organic carbon
 - Applied 90% dilution factor if sand covered
 - 2019 results used for SFA, no dilution applied
 - Assumed tPAH-13 = 0 mg/kg for amended armored cap in NFA
- Average SWAC = 1.13 mg/kg tPAH-13_{oc}



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SUMMARY OF BENEFITS TO WPSC

Cost Savings

- Contractor mobilization savings
- In-place dredging project infrastructure
- Seamless regulatory communication structure

Programmatic Efficiencies

- Streamlined characterization before/during/after
- Streamlined RI/FS process

Contractor Work Quality

- Degree of oversight meant less error



Photograph courtesy of J.F. Brennan