CHALLENGES ASSOCIATED WITH DREDGING SMALL WATERWAYS IN URBAN SETTINGS

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PRESENTATION OUTLINE

Site Background

Administrative Challenges

Physical Challenges

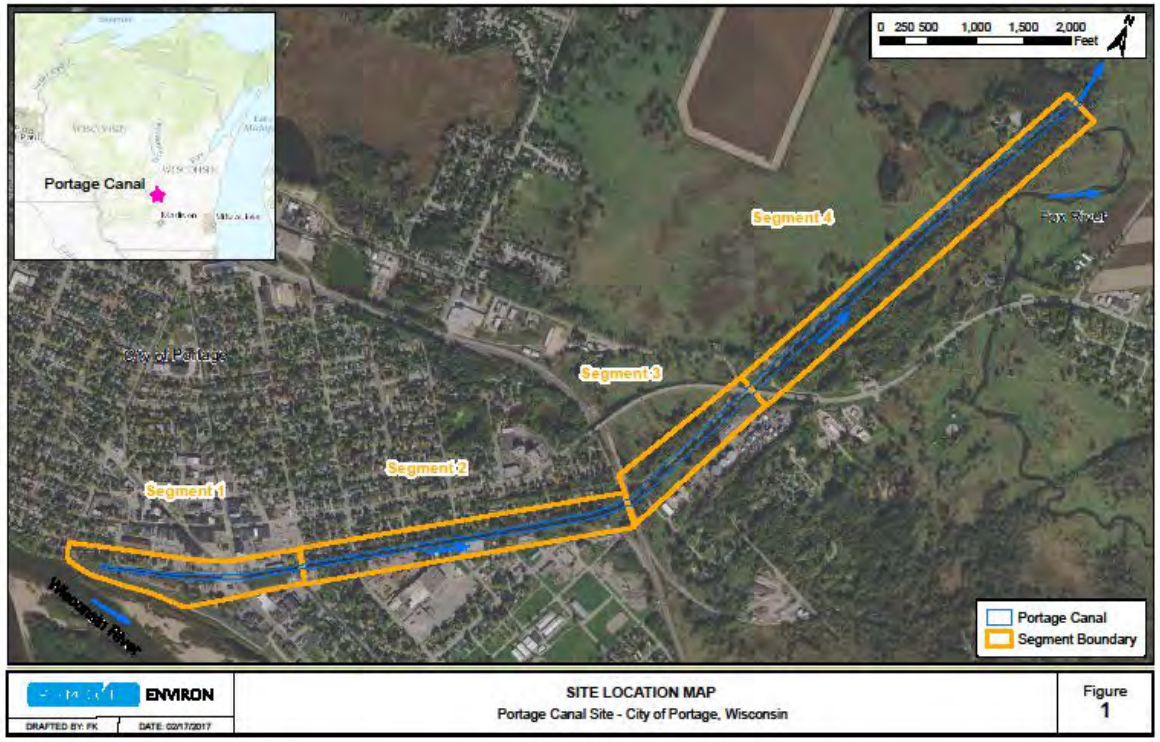
Conclusions

SITE BACKGROUND

Canal was constructed in mid 1800s as a portage between the Fox and Wisconsin Rivers which allowed access from Great Lakes to the Mississippi River.

SITE BACKGROUND

- Runs through City of Portage, Wisconsin surrounded by commercial, industrial, residential and rural settings.
- Locks on either end were deactivated in early 1960s and the canal began to fill with sediment.
- The entire canal placed on the National Register of Historic Places in the 1960s.
- Wisconsin Department of Natural Resources took control of canal from the USACE in 1970s.



SITE BACKGROUND CONTINUED

- Contamination including heavy metals, petroleum constituents and PCBs identified during upgrades to the canal in 2002.
- The upgrades performed along segment 1 included new revetment walls and adjacent bike/pedestrian path. Initial dredging closer to Wisconsin River.
- Sediment removal in this area could not be performed during the upgrades due to budget constraints.
- Plans initially projected performing remedial action throughout the remainder of the canal in one project.
- However, due to plans for construction of County office buildings on each side of canal with two walkways across the canal, WDNR made a push to remediate this area on a compressed schedule.

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MULTIPLE PARTY INTERACTION

- Since the construction was to be performed concurrently, an intergovernmental agreement was drawn up between State of Wisconsin, Columbia County and the City of Portage.
- Agreement identified in kind services from each entity to achieve the desired remedial action.
  - The WDNR as site owner allocated funding along with contracting the design and construction oversight.
  - Columbia County had their general contractor Findorff subcontract the dredging contractor Infrastructure Alternatives, Inc.(IAI) to expedite contracting process.
  - City of Portage disposed of the waste water through their treatment plant after pre-treatment by IAI.

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COMMUNITY INVOLVEMENT

- Based on the history and location of the Canal, the public was very involved in wanting the project to maintain the Canal as a visual amenity to the City.
- Multiple public notices and public meetings to describe activities.
- Wisconsin Historical Society allowed input on any changes to Canal.
- Perimeter of site kept accessible for public to monitor progress while keeping onlookers at a safe distance from construction activities.
- Minimal negative response from public.

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LIMITED WORK SPACE / TRAFFIC CONTROL

- Project site surrounded by roadways- City required some access on all roads during construction. Single lane access allowed.
- Sanitary discharge location at middle of intersection northeast of property.
- Construction of County buildings limited dredging footprint to eastern end of property.
- IAI was able to install geotubes for dewatering along with water treatment in minimal area.

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DREDGING EQUIPMENT

- The canal in this segment is only 50ft wide and water depths of 2-3 feet. Depth of sediment removed up to 4 feet.
- Walls were not constructed to allow heavy equipment or dewatering of canal.
- IAI supplied small horizontal auger hydraulic dredge which allowed site crane to set equipment while maintaining safe distance from walls.
- Dredge moved with drive cables installed along canal

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SETTING DREDGE INTO CANAL

BURIED DEBRIS

- Based on visual observation and previous sampling minimal debris anticipated.
- Due to the actual amount of debris encountered, dredging stopped and a raking operation brought in by IAI.
- Debris encountered included bicycles, bottles, cables, concrete, deer antlers, brake pads, wood, garbage bags, retaining wall bricks, scooters, shoes, socks, tires and traffic cones.
- Debris raking operation from modular barges throughout canal also allowed loosening compacted material for easier dredging.

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BURIED DEBRIS

- Five roll off boxes of debris removed from site.

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SEDIMENT DEWATERING

- Based on site location sediment required on site dewatering.
- Dewatering pad scheduled for dismantling and redevelopment within two weeks of completion of dredging.
- Dewatering included
  - Construction of dewatering pad limited to 15,000 sf. Filter tubes constructed to fit within dewatering pad.
  - Dredge slurry pumped into bags through polymer injection system.
  - Excess water from filter tubes collected within sump in lined pad
  - Water pumped from sump to sanitary manhole and to City treatment plant

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CAPPING CONSTRAINTS

- Initial sand supplied by City had a large amount of debris and clay clumps
- Had to switch to quarry run material.
- Due to construction activities and wall weight restrictions had to be placed from water.
- Able to utilize same dredge barge equipped with pan for even placement
- Sand put into slurry and pumped to dredge

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CONCLUSIONS

- Keeping lines of communication open allowed multiple parities to operate on site with minimal conflict
- Some better up front planning may have eliminated some of the issues related to debris and cover materials
- Community involvement early and often kept public complaints to a minimum
- Contractor (IAI) reacted quickly to issues to keep construction on schedule.

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QUESTIONS?