



Rethinking Traditional Dredge Operations: A History of Innovation and Teamwork on the Fox River

Presented to:



June 16th, 2016

Safety
Quality
Efficiency





Overview

- Remediation began in 2004
 - Little Lake Butte Des Morts (OU1): 2004-2009
 - Lower Fox River Remediation (OU2-OU5): 2009-Present
- Challenges with each project
- Technical innovations
- Questions



Safety Catch

5 Sun Safe Tips to **Block the Blaze:**

- 

1
Apply Sunscreen
- 

2
Put on a Hat
- 

3
Wear Sunglasses
- 

4
Cover with Clothing
- 

5
Seek Shade



History of the Fox River

- Lower Fox River is a 39 mile section stretching between Little Lake Butte des Morts to the bay of Green Bay.
- Consists of 19 locks due to the 168 foot change of elevation
- High Concentration of Paper Mills
- From 1950s to 1970s Polychlorinated Biphenyls (PCBs) were used to make carbon copied paper.
- About 250,000 pounds of PCBs discharged from 1957-1971
- In the early 1990s fish and soil testing showed heavy contamination.
- Remediation began in 2004 in Little Lake Butte des Morts (OU1)



Lower Fox River





OU-1 (Little Lake Butte Des Morts)

- Remediation began in 2004
- 371,600 CY of sediment removed
- 114 Acres of caps placed
- 144 Acres sand cover placed
- Remediation completed in 2009
- Fish consumption ban has been greatly reduced



Equipment Deployed

- 2 – 8” swinging ladder dredges
 - DSC Morays
- 2 – Broadcast Capping Systems (BCS)



OU1 Challenges

- Thin cuts of material over hard clay bottom
- Cap placement over soft sediment
- Relatively shallow water throughout the project site.



Vic Vac

- Little Lake Butte Des Morts consisted of hard clay bottom
- Vic Vac was able to target thin layers of sediment over the clay efficiently
- Greatly reduced residual management





Thickeners

- Very thin cuts of material led to low percent solids
 - 3 to 5 inches
- Thickeners increased percent solids to bags
- Reduced water to bags by 75%





Broadcast Capping System (BCS)

- Able to spread thin layers of material accurately
- Reduced sediment mixing
- Ability to spread in shallow water while maintaining high production





Lower Fox River Remediation Project (OUs 2-5)

- The lower most 17 miles of the Fox River
 - Stretching from just south of Little Rapids Dam to the Bay of Green Bay
- Remediation began in 2009 and is expected to be completed late 2017/early 2018.
 - Though 2015 work complete up to GP Broadway Mill
 - 3.7 M Cy dredged
 - 133 Acres Capped
 - 427 Acres Sand Cover Placed



Equipment Deployed

- 3 Dredges
 - 1 – 12 inch swinging ladder dredge
 - 2 – 8 inch swinging ladder dredge
- 2 – Broadcast Capping Systems
- 1 – Mechanical Placement Barge
- 1 – Debris Removal Plant



Project Challenges

- Overall project distance
 - Shell site approximately 10 miles north of southernmost dredge area.
 - Material location and composition throughout the site
- Thin cuts of material over soft sediment
- Utilities throughout project site
- River used both residentially and commercially
- Dredging, separation and WTP working as a team



Combined Dredge Lines

- Reduced equipment
- Lowers Fuel Consumption
- Increased efficiency
- Maintained production





Disc Cutter

- Combined Production with Accuracy
- Designed for thin cuts over soft sediments
- Achieved high production by large areas





Spreader

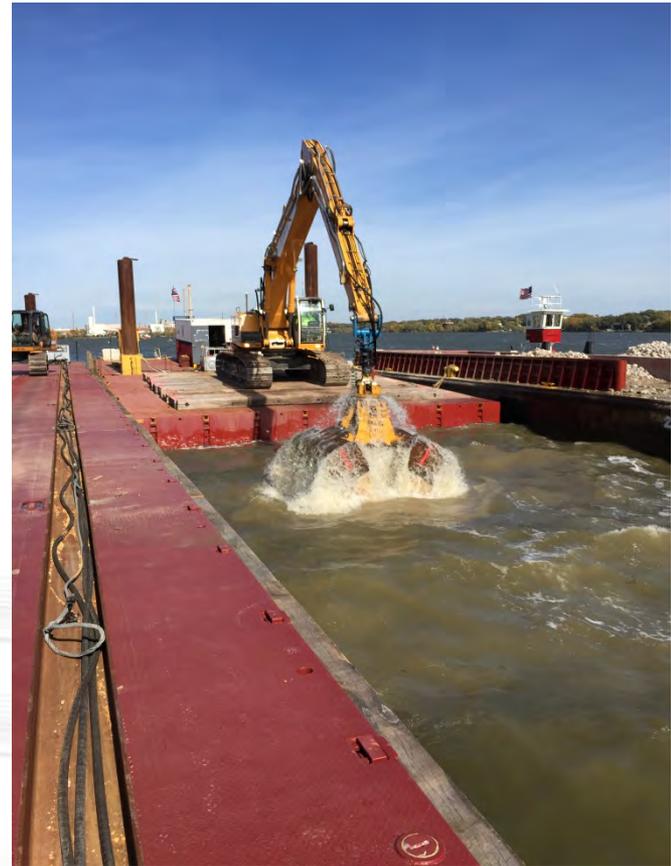
- Land plant staging areas
 - Reduced pumping distances.
 - Pipeline management
- Winter testing on land to improve accuracy





Mechanical Capping

- On land testing prior to placement
- Two barge system to improve production
 - Reduces impact on bottom two layers
- Ability to place over utilities and underneath bridges





Commercial/Recreational Traffic

- Commercial Traffic
 - Created contact list of boat captains and terminal operators
- Recreational Traffic
 - Boat Patrol
 - Channel Markers
 - Media Events





Working As One

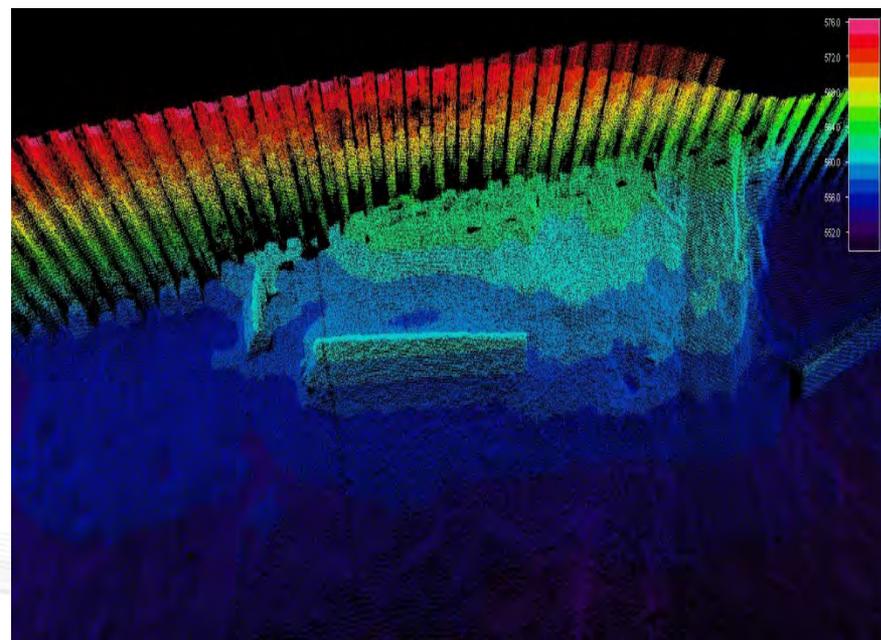
- Modifying dredge lines to accommodate WTP
- Communication





Surveys

- Ability to determine areas of debris before dredging.
- Daily monitoring of dredge accuracy
- Service all equipment 24 hours per day





Conclusion

- Be flexible in ideas and technology
- Don't become complacent
- Utilize winter shutdowns to improve and maintain equipment



Questions

