Beneficial Use of Dredge Material for the St. Louis River Area of Concern Program

2016 GLDT
Chicago, IL
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Minnesota Pollution Control Agency

Courtesy Jeff Williams
St. Louis River estuarine site conditions
Aquatic Habitat Restoration

Why is it being done?
How does it get done?
When is it done?

Littoral zone modifications
Aquatic Habitat Restoration
Design Basis for an AOC process

_BUI 5- Dredging Restriction-_ Complete remedial action and document AOC-wide Sediment Characterization

_BUI 4- Degradation of Benthos-_ Macroinvertebrate community is comparable to least-impaired condition

_BUI 9- Loss of Habitat-_ 1,700 acres restored, protected, implement invasive species management, etc.
Restoration Sites
St. Louis Bay
• 21st Ave
  350 acres
• 40th Ave West
  316 acres
• Grassy Point
  118 acres
Others
• Spirit Lake
  413/526 acres
• Mud Lake
  40/80 acres
• Crawford/Misc.
  100 acres
Project Design Checklist

- Risk assessment
- Habitat evaluation
- Benthic community condition
- Material testing
- Modeling
- Design Basis Approach
- BCOE review
- Permit/EA Review
- Construction
21st Ave. site evaluation

BUI-5, Dredging Restrictions

- Sediment characteristics and mapping
21st Ave. site evaluation

BUI-9, Loss of Habitat

- Vegetative community metrics
21\textsuperscript{st} Ave. site evaluation

BUI-4, Degradation of Benthos

- Benthic community metrics
Surface-weighted averaging
- Spatial interpolations
- Comparisons based on least-impacted sites
- Lower-Confidence Intervals
- Multiple lines of evidence
Surface-weighted averaging approach

- Restoration improvements based on modeled assumptions
Incorporating Design Criteria

- Stakeholder Interests
  - Wildlife management
  - Maritime interests
  - Plant operations
  - Municipal planning

Legend
- Sample Location and ID
- Area in WI (not interpreted)
- Drudge material cover

Comparison to SLRLCI reference site percentiles
- Less than 5%
- Less than 25%
- Greater than 25% (within the range typical of reference sites)

November 2015
1. All depths and contours are referred to low water datum U.S. NAVD 88. The final elevation is 0.0 ft above NAVD 88.
2. The grid coordinate system shown is based on the Lambert projection, Minnesota system of state plane coordinates, north zone, 1863 American Datum in feet.
3. The Minnesota/Wisconsin State Line depicted is based on information from the Minnesota Department of Transportation available at: http://www.dot.state.mn.us/maps.
4. The Minnesota/Wisconsin State Line depicted is for illustrative purposes only and cannot be considered definitive.
5. The information depicted represents the results of automated photogrammetric and terrestrial surveys and can only be considered as indicating the general conditions existing at the time.
6. The information depicted is based on the surveys performed in 2014 and 2015.
7. Aerial imagery is from July and September 2011.
## 21st Avenue West Restoration Materials

<table>
<thead>
<tr>
<th>Construction Season</th>
<th>Volume (Cubic Yards)</th>
<th>Dollars (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>113,000</td>
<td>$2.04M</td>
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<tr>
<td>2014</td>
<td>111,000</td>
<td>$1.99M</td>
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<tr>
<td>2015</td>
<td>133,000</td>
<td>$2.39M</td>
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<tr>
<td><strong>Pilot Total</strong></td>
<td><strong>357,000</strong></td>
<td><strong>$6.42M</strong></td>
</tr>
<tr>
<td>2016</td>
<td>~350,000</td>
<td>~$6M</td>
</tr>
<tr>
<td>(2017)</td>
<td>Remainder and bio-medium</td>
<td>$</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>~720,000</td>
<td><strong>$12-14M</strong></td>
</tr>
</tbody>
</table>
# St. Louis River AOC Program Material

<table>
<thead>
<tr>
<th>Construction Site</th>
<th>Volume (Cubic Yards)</th>
<th>Dollar Est (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>21\textsuperscript{st} Ave.</td>
<td>720,000</td>
<td>$12-14M</td>
</tr>
<tr>
<td>40\textsuperscript{th} Ave West</td>
<td>350,000</td>
<td>$6M</td>
</tr>
<tr>
<td>Grassy Point</td>
<td>50,000</td>
<td>$1M</td>
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<tr>
<td><strong>St. Louis Bay Total</strong></td>
<td><strong>1,120,000</strong></td>
<td><strong>~$22M</strong></td>
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<tr>
<td>Remediation</td>
<td>13 slips</td>
<td>$</td>
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<tr>
<td>Remediation to Restoration</td>
<td>3 sites</td>
<td>$</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2017-2020</strong></td>
<td>$</td>
</tr>
</tbody>
</table>