

## FY16 RSM IPR

# Chicago District (LRC), Improving Effectiveness of Nearshore Placement in Southern Lake Michigan

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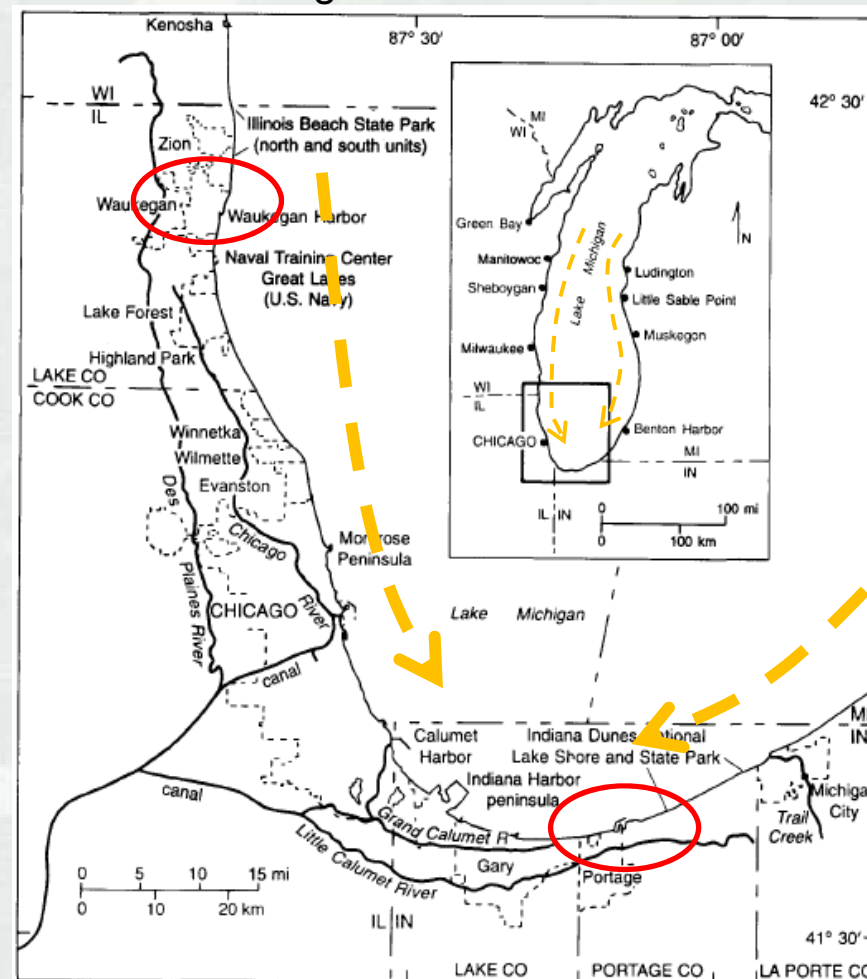
**BLUF:** Review of the shoreline processes of two southern Lake Michigan reaches that are threatened by erosion and coastal storm damages

## Description/Challenges

- Sediment dredged from two southern Lake Michigan harbors is routinely placed in the nearshore area along shoreline reaches impacted by erosion.
- Current placement practices are designed with the goal of minimizing costs, and the effectiveness has not been monitored or modeled.
- Reaches continue to erode

## Objectives

- An evaluation of current placement practices
- Development of strategies for improving the success of these beach nourishment efforts



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### Approach

**Task 1:** Study effects of existing placement practices

**Task 2:** Develop strategies for effectively placing materials in the nearshore

**Task 3:** Develop a monitoring plan

**Task 4:** Advocacy group article



### Deliverables

Product or Milestone	Date
Memorandum summarizing the effects of current nearshore placement techniques	Spring 2015
Technical Note on innovative nearshore placement techniques	Summer 2015
Technical Note outlining nearshore placement monitoring guidance	Summer 2015
Advocacy Group Article (Great Lakes Information Network)	Fall 2015



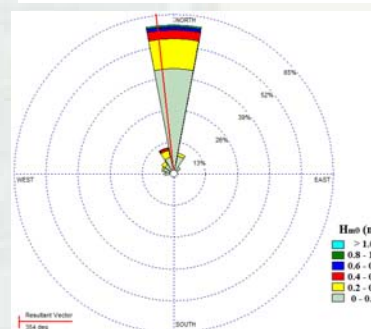
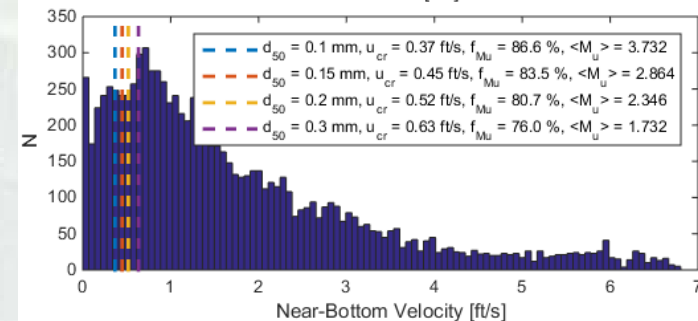
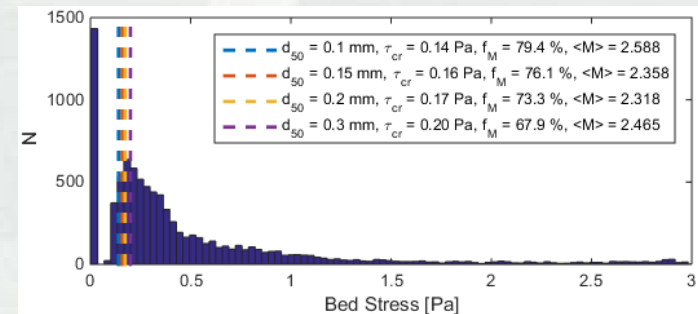
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#### Accomplishments/Benefits/Lessons Learned/Actions-construction

- Historical Data Collection at Burns and Waukegan Harbors
  - Historic photos
  - Previous dredge volumes and placement information
- Monitoring planned for 2016 dredge cycle and placement at Burns Harbor
  - Coordination with USGS
  - ADCP measuring of wave conditions
  - Pre- and post-dredge surveys planned
  - Coordination and outreach ongoing
- Sediment Mobility Tool (Burns Harbor)
  - Freq. of Mobilization:  $f_m = 37\text{-}48\%$
  - Sed. Migration Direction

d (mm)	Predicted Sediment Migration
0.1	68% Onshore
<b>0.15</b>	<b>91% Onshore</b>
0.2	97% Onshore
0.3	99% Onshore





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### **What is working? Ups? Success?**

- This phase of the project has been mostly data collection and coordination between various entities - currently ongoing
- Initial sediment mobility analysis indicates that nearshore placement will result in sediment migration onshore
- Funding in place for USGS to measure waves and conduct 4 surveys this dredge cycle
  - Test monitoring strategies

### **What is not working? Downs? Issues?**

- Nothing yet – trying to keep deliverables on schedule



Indiana Dunes National Lakeshore  
Google Maps, Sept 2015

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### District/Other USACE PDT Members

#### Chicago District

David Bucaro, Chief, Economic Formulation and Analysis Section (PI)  
Erin Maloney, Planner

#### ERDC

Brian McFall, Research Civil Engineer (Co-PI)  
Katie Brutsché, Research Physical Scientist

### Leveraging/Collaborative Opportunities

#### Illinois

Illinois DNR - Sand Management Working Group

#### Indiana

National Park Service Shoreline Management Plan/ EIS

### Stakeholders and Partners

Illinois DNR - Diane Tecic  
Indiana DNR - Steve Davis  
National Park Service (Indiana Dunes National Lakeshore) - Gia Wagner  
Town of Ogden Dunes, Indiana  
USGS – Indiana, Illinois, & Kentucky Water Science Centers



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#### Value to the Nation

- Support more sustainable shoreline management practices and efficient use of dredge material
  - Beneficial use of dredge material from navigation sediment projects
- Currently nearshore placement techniques are used to nourish shorelines across the Great Lakes with varied success.
  - This effort will aid Detroit and Buffalo Districts and local entities in developing more effective nearshore placement and monitoring plans
  - May lead to more efficiency across the entire Great Lakes Region (better results and/ or reduced costs)
- Protection and reestablishment of valuable and rare Great Lakes dune shoreline ecosystems
- Improved partnerships and happy stakeholders

“Shrinking Beaches”  
Front Page News in  
Chicago Tribune this  
week...

