



Regional Sediment Management Program Chicago District (LRC): Improving Effectiveness of Nearshore Placement in Southern Lake Michigan



Description

The US Army Corps of Engineers (USACE), Chicago District (LRC) will review the shoreline processes of two southern Lake Michigan reaches that are threatened by erosion and coastal storm damages. Sediment dredged from two southern harbors is routinely placed in the nearshore area along shoreline reaches impacted by erosion with the goal of shoreline protection and littoral nourishment. Current placement practices are designed with the goal of minimizing costs, and the effectiveness has not been monitored or modeled. Numerical models will be utilized to determine alternative placement strategies to be employed at the two study sites. An evaluation of current placement practices, strategies for improving the success of these beach nourishment efforts, and associated costs will allow LRC Operations and its partners to make more informed investments in the placement of dredged material for effectively addressing shoreline erosion.

Study reaches include the Illinois Beach State Park shoreline north of Waukegan Harbor in Illinois and the Indiana Dunes National Lakeshore and the community of Ogden Dunes shoreline West of Burns Waterway Harbor in Indiana.



Location of LRC RSM initiatives

Issue/Challenge To Address

The southern shoreline of Lake Michigan is highly developed and the presence of harbor structures and shoreline armoring interrupts the natural littoral movement of sand. Remaining undeveloped areas contain valuable natural resources and provide protection for residential structures. To support the shoreline management goals of the State of Illinois, the State of Indiana, the National Park Service, and local communities, USACE regularly places sand dredged from two Federal harbors (Waukegan Harbor, Illinois and Burns Waterway Harbor, Indiana) in the nearshore area along reaches that are threatened by erosion and coastal storm damages. Dredged sediments are primarily coarse sand suitable for beach nourishment, and the material is placed in a designated nearshore area



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that is directly accessible by the dredging scows. While this method of beneficial use of dredged material is lower cost than placement directly on the beach or closer to the shoreline, the effectiveness of these nearshore placements for shoreline protection and littoral nourishment has not been established. Despite ongoing nearshore placement activities, the shorelines along these reaches continue to erode.

Successes Lessons Learned

Lessons learned will be compiled during the duration of this study.

Expected Products

- Summary memorandum describing existing placement practice effects
- Technical Note describing innovative nearshore placement techniques
- Technical Note outlining nearshore placement monitoring guidance
- Advocacy group article
- Lessons learned article and presentation at RSM workshop

Stakeholders/Users

Stakeholders include Illinois Department of Natural Resources, Indiana Department of Natural Resources, Ports of Indiana, the National Park Service, Indiana USGS, Illinois USGS, and the Town of Ogden Dunes.

Projected Benefits

This project will include a review of the shoreline processes in both reaches, an assessment of tools available for optimized placement, estimate the costs and benefits associated with alternative placement methods, and development of a monitoring plan to evaluate effectiveness of proposed placement strategies.

Leveraging Opportunities

This project will support sustainable and cost-effective maintenance of Federal harbors, in alignment with the goals of the Engineering with Nature initiative.

In Illinois, the Department of Natural Resources recently convened a sand management working group made up of area stakeholders including elected officials from shoreline communities, area businesses and others tasked with developing comprehensive sand management strategies for the north shore of Lake Michigan. This working group will provide input, allowing for the identification of placement methods that are feasible and meet identified goals and priorities.

In Indiana, the National Park Service completed in August 2014 a Shoreline Management Plan/Environmental Impact Statement (SMP/EIS) for the Indiana Dunes National Lakeshore which selected annual nourishment of shoreline west of Burns Harbor as the management alternative for this reach. The decisions recorded in the SMP/EIS and the National Park Service staff expertise will be used to ensure that alternatives are targeted to meet the identified shoreline management goals.

Funds for USGS to collect a series of bathymetric surveys pre and post nearshore placement were leveraged from surveillance of northern boundary waters.

Points of Contact

David Bucaro, CELRC-PM-PL-F
Chief, Economic Formulation and Analysis Section
312-846-5583
david.f.bucaro@usace.army.mil

Participating Partners

Indiana Department of Natural Resources
Illinois Department of Natural Resources
USGS Indiana and Illinois
Town of Ogden Dunes