



EVANSTON SHORELINE REPAIRS

Presentation to City Council on
November 14, 2022

AGENDA

EVANSTON SHORELINE REPAIRS – COUNCIL UPDATE

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2020 EMERGENCY REPAIRS & “ROADMAP”

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Q&A

An aerial photograph of the Evanston shoreline. In the foreground, a rocky shore meets the water. A paved road curves along the shore, with a yellow diamond-shaped sign on the left. To the left of the road is a cemetery with several tombstones. The background is filled with trees in autumn colors (yellows and oranges) and some buildings in the distance under a clear blue sky.

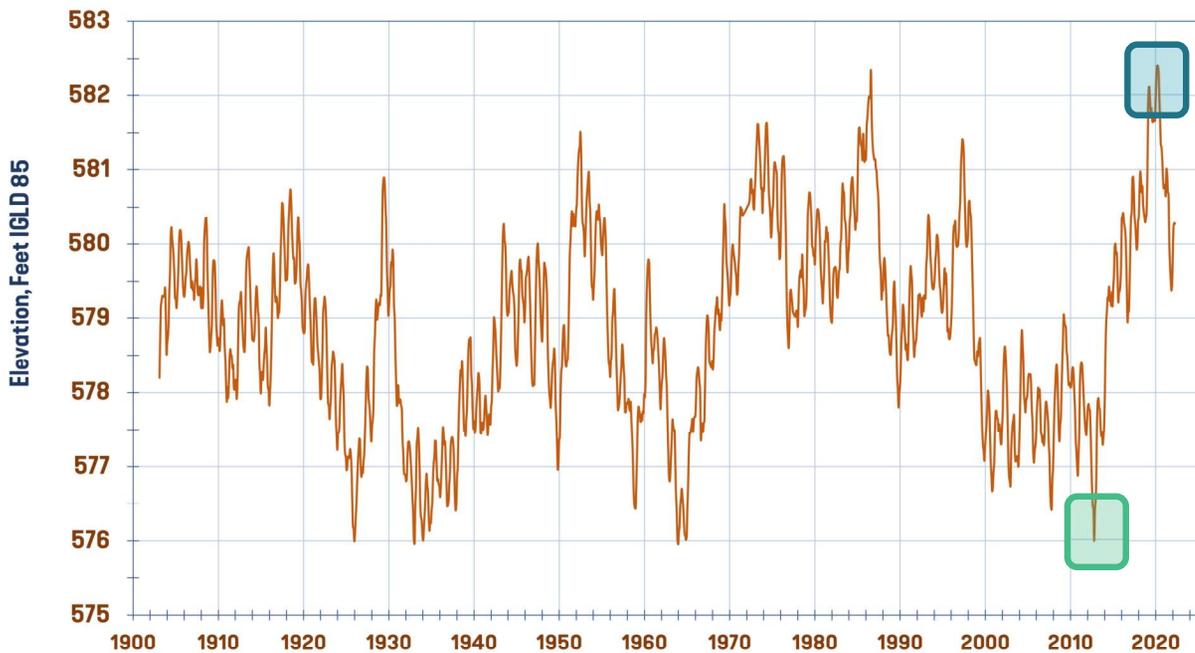
**EVANSTON
SHORELINE REPAIRS
*BACKGROUND***

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BACKGROUND

RECENT HIGH LAKE LEVELS REVEALED SHORELINE VULNERABILITY THROUGHOUT THE GREAT LAKES, INCLUDING EVANSTON

Monthly Average Water Levels for Lake Michigan at Calumet Harbor (1903 - 2022)



- Lake Michigan water levels vary over a range of approximately 6 feet
- We experienced record high water levels in 2020
- Which followed record low water levels in 2012
- Current climate science anticipates a future with increased variability

BACKGROUND

COMPARISON OF 2013 SHORELINE CONDITIONS VS. 2021 SHORELINE CONDITIONS



BACKGROUND

A SERIES OF STORMS IN 2019 AND 2020 WREAKED SIGNIFICANT DAMAGE AT SEVERAL EVANSTON LAKEFRONT LOCATIONS

OVERTOPPING AND FLOODING AT ELLIOT PARK ON JANUARY 11, 2020



PARK DAMAGE AT GARDEN PARK ON JANUARY 11, 2020



BACKGROUND

BEACHES WERE ERODED AND OVERTOPPING CAUSED DANGEROUS ROADWAY CONDITIONS

POST-STORM PHOTO SHOWING EROSION AT LEE STREET BEACH



ROADWAY FLOODING AT SHERIDAN ROAD ON JANUARY 11, 2020



BACKGROUND – JANUARY 2020 VIDEO





**EVANSTON
SHORELINE REPAIRS
*2020 “ROADMAP”
AND EMERGENCY
REPAIRS***

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2020 “ROADMAP” AND EMERGENCY REPAIRS

IN 2020 THE CITY CONDUCTED A RISK ASSESSMENT AND CREATED A LAKEFRONT “ROADMAP” TO HELP PLAN FUTURE CAPITAL INVESTMENTS



Table 3: Overall Weighted Ranking Summary

PARK NAME	SHORELINE TYPE	CONDITION (50%)	USAGE (25%)	LIKELIHOOD (25%)	OVERALL RANKING
Greenwood Beach - North	Beach	4	5	2	3.8
Elliot Park - South	Revetment	3	4	5	3.8
Dempster Launch Facility	Revetment	4	4	3	3.8
Garden Park - North	Revetment	4	2	4	3.5
Sheridan Road Revetment	Revetment	3	5	3	3.5
Clark Square	Revetment	3	2	4	3.0
Dempster Beach	Beach	2	5	3	3.0
Water Treatment Plant	Wall	2	5	3	3.0
South Boulevard Beach - North	Revetment	2	2	4	2.5
Garden Park - South	Revetment	2	2	4	2.5
Lee Street Beach - South	Revetment	2	3	3	2.5
Lee Street Beach - North	Wall	2	3	3	2.5
Elliot Park - North	Revetment	2	3	3	2.5
Dog Beach	Revetment	2	4	2	2.5
Clark Street Beach	Beach	2	3	3	2.5
Lighthouse Beach	Beach	2	4	2	2.5
Church Street Launch Ramp	Wall	1	5	3	2.5
South Boulevard Beach - South	Beach	2	2	3	2.3
Dawes Park	Revetment	2	3	2	2.3

MOST CRITICAL

LEAST CRITICAL

2020 “ROADMAP” AND EMERGENCY REPAIRS

THE ROADMAP IDENTIFIED POTENTIAL SHORELINE STABILIZATION PROJECTS AND ESTIMATED OVER \$20M* IN CONSTRUCTION [*2020 DOLLARS]

Table 8: Capital Investment Table

PARK NAME	SHORELINE TYPE	OVERALL RANKING	URGENT NEEDS*	GROUP 1	GROUP 2	GROUP 3	GROUP 4	GROUP 5
Greenwood Beach - North	Beach	3.8	\$206,500		\$3,360,000			
Elliot Park - South	Revetment	3.8	\$188,900	\$1,688,000				
Dempster Launch Facility	Revetment	3.8	\$214,800					
Garden Park - North	Revetment	3.5	\$136,200					
Sheridan Road Revetment	Revetment	3.5	N/A	\$3,375,000				
Clark Square	Revetment	3.0				\$1,575,000		
Dempster Beach	Beach	3.0			\$920,000			
Water Treatment Plant	Wall	3.0				\$220,000		
South Boulevard Beach - North	Revetment	2.5					\$1,238,000	
Garden Park - South	Revetment	2.5					\$563,000	
Lee Street Beach - South	Revetment	2.5				\$200,000		
Lee Street Beach - North	Wall	2.5				\$403,000		
Elliot Park - North	Revetment	2.5		\$1,688,000				
Dog Beach	Revetment	2.5						\$1,988,000
Clark Street Beach	Beach	2.5						\$540,000
Lighthouse Beach	Beach	2.5					\$225,000	
Church Street Launch Ramp	Wall	2.5						\$338,000
South Boulevard Beach - South	Beach	2.3					\$360,000	
Dawes Park	Revetment	2.3						\$900,000
			2020	2021-23	2023-24	2025-26	2027-28	2029-30

2020 “ROADMAP” AND EMERGENCY REPAIRS

3 PERMANENT REPAIR PROJECTS AND 2 TEMPORARY BARRIER PROJECTS WERE COMPLETED IN 2020



2020 “ROADMAP” AND EMERGENCY REPAIRS

PERMANENT REPAIRS WERE INSTALLED TO PROTECT KEY LAKEFRONT INFRASTRUCTURE

BEFORE: HEAVILY DETERIORATED REVETMENT AT GREENWOOD BEACH IN FEBRUARY 2020



AFTER: NEW REVETMENT AT GREENWOOD BEACH IN NOVEMBER 2020



2020 “ROADMAP” AND EMERGENCY REPAIRS

AS WELL AS GREENWOOD, PERMANENT REPAIRS WERE MADE AT GARDEN PARK AND AT DEMPSTER LAUNCH FACILITY

REVETMENT REPAIRS AT GARDEN PARK, DECEMBER 2020



REVETMENT REPAIRS AT DEMPSTER LAUNCH FACILITY



An aerial photograph showing a park area. In the foreground, there is a body of water with a rocky shoreline. A large, irregular pile of grey rocks runs along the edge of the water. Behind the rocks is a paved area, possibly a parking lot or a walkway, with several people walking. In the background, there is a grassy area with trees and a few streetlights.

**EVANSTON
SHORELINE REPAIRS
*CURRENT PROJECT***

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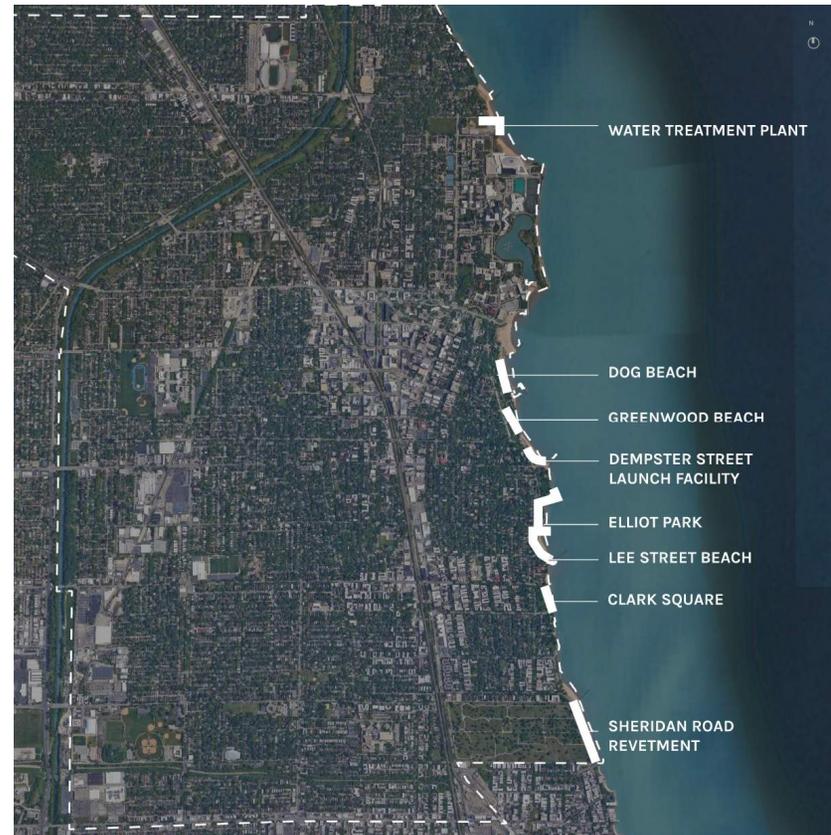
CURRENT PROJECT

HAVING ADDRESSED SOME OF THE HIGHEST-RISK AREAS IN 2020, THE CITY IS NOW WORKING TOWARDS IMPLEMENTING A LONG-TERM PLAN FOR THE NEXT GROUP OF PRIORITY LOCATIONS

The current project will examine 8 higher risk locations and develop preliminary design solutions.

Project goals are:

-  DEFINE LONG-TERM, SUSTAINABLE SHORELINE REPAIR SOLUTIONS
-  IDENTIFY EXTERNAL FUNDING SOURCES
-  PROTECT AND ENHANCE RECREATIONAL OPPORTUNITIES
-  PROVIDE DETAILED CAPITAL INVESTMENT PROGRAM AND SCHEDULE



CURRENT PROJECT

WORK COMPLETED TO DATE INCLUDES DATA COLLECTION & COASTAL ENGINEERING ASSESSMENT AT THE 8 PROJECT LOCATIONS AND INITIAL PUBLIC ENGAGEMENTS

■ Data Collection

- Topographic and Bathymetric Survey
- Geotechnical Investigation including:
 - Boreholes
 - Sediment Grain Size Samples
- Staff Interviews
- Historical data review
- Site Inventory

■ Coastal Engineering Assessment

- Wind, wave, water level statistical analysis
- Design parameter estimation
- Sediment transport analysis
- Overtopping analysis

■ Public Engagements

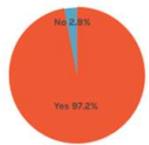
- Online Survey with over 1,300 responses from across the city. Provided opportunity for residents to share thoughts on needed improvements and critical concerns
- Public Open House which gathered further input relative to each project site.

CURRENT PROJECT

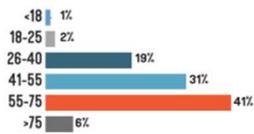
PUBLIC OPINION SURVEY RESULTS WERE SHARED AT AN OPEN HOUSE PUBLIC MEETING ON OCTOBER 25, 2022

WHO ANSWERED THE SURVEY? OVER 1,300 PEOPLE!

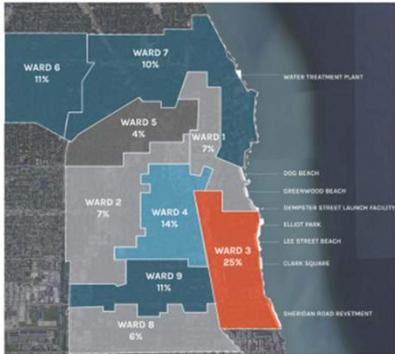
Do you live in Evanston?



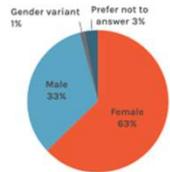
Age



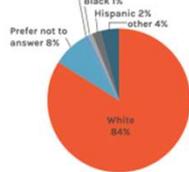
Which Ward in Evanston do you live in?



Gender identity



Race or ethnicity

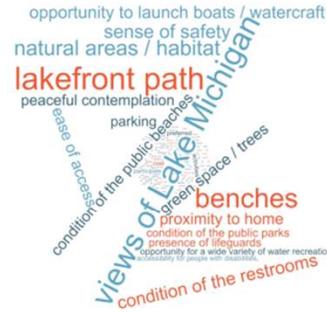


WHAT'S WORKING ?

What aspects of the Evanston lakefront do you think should NOT be changed?



What aspects of the Evanston lakefront do you MOST appreciate?

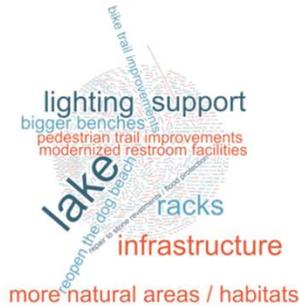


Please write your comments about what's working (Please use a green sticky note)

WHAT DO YOU THINK?

WHAT NEEDS WORK ?

What aspects of the Evanston lakefront's physical infrastructure do you think MOST need improvements?



What aspects of the Evanston lakefront are of MOST critical concern to you?



Please write your comments about what needs work? (Please use a yellow sticky note)

WHAT DO YOU THINK?

CURRENT PROJECT

OCTOBER 25, 2022 OPEN HOUSE ALSO OFFERED RESIDENTS OPPORTUNITY TO EXPRESS PREFERENCES FOR DIFFERENT SHORELINE IMPROVEMENT TYPOLOGIES

YOU ARE AT STATION 3
This is your opportunity to tell the project team what you think about potential opportunities for improvements.

None of these are design solutions... they are EBM (Ecological Bank Modification) solutions... some better than others.
A 'EVANSTON' SOLUTION solves the erosion problem at the beach by grading a narrow 100' x 200' area.
Low overhead in a kids type solution where less \$ and resources are spent trying to stop nature. I am interested in innovative nature as much as possible. I have very little interest in a stone solution.

At this station there are a series of images showing different examples of possible improvements that could be considered at some of the project locations. The project team is interested in learning what you think about these different images and whether or not you think they might be worth considering for Evanston. Place **green dots** in the boxes if you think **there may be merit**, and **yellow dots** if you think they **wouldn't add to the experience at the lake**. (No wrong answers!)

Station 3 does better. They are from the before. They are from the before. They are from the before. They are from the before.

We should avoid building walls between water and the park. People will not want to walk on a wall. It will be very awkward.

BEACH SEATING WITH STONE EDGING
Seating areas to rest can be built into the shoreline protection measures and become an asset to the park or beaches.
Please put stickers here: Worth consideration! I don't think so ...

BEACH SEATING WITH NATURAL MATERIALS
Seating with natural materials like tree trunks to rest can be built into the shoreline protection measures and become an asset to the park or beaches.
Please put stickers here: Worth consideration! I don't think so ...

BEACH SEATING WITH WOODEN SURFACE
Seating and shaded areas to rest can be built into the shoreline protection measures and become an asset to the park or beaches.
Please put stickers here: Worth consideration! I don't think so ...

TWO-SIDED BEACH SEATING ON STRUCTURE
Two-sided resting seating can be built into the shoreline protection measures and provide multiple recreational spaces with limited room.
Please put stickers here: Worth consideration! I don't think so ...

PLAY ON BARRIER
The edge made by riprap dunes and tall shrubs create an opportunity to incorporate play into the shoreline protection measures.
Please put stickers here: Worth consideration! I don't think so ...

NATURAL PLAY
The edge made by tall dunes and shrubs create an opportunity to incorporate natural play activities without creating an entire playground.
Please put stickers here: Worth consideration! I don't think so ...

REVETMENT WITH VEGETATION-FORMAL
Revetment edge can be designed with plants to add to the water.
Please put stickers here: Worth consideration! I don't think so ...

REVETMENT WITH VEGETATION-NATURAL
Revetment edge can be designed with plants to add to the water.
Please put stickers here: Worth consideration! I don't think so ...

EVANSTON SHORELINE REPAIRS SMITHGROUP

- Design team is working on developing concepts to share at future public meetings
- Future work will include preliminary engineering and exploration of potential grant funding opportunities



**EVANSTON
SHORELINE REPAIRS
*SCHEDULE & NEXT
STEPS***

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EVANSTON SHORELINE REPAIRS – CONSULTANT SCHEDULE

CURRENT PROJECT CONCLUDES WITH PRELIMINARY ENGINEERING AND BENEFIT/COST ANALYSIS (BCA) WHICH CAN HELP WITH FEDERAL FUNDING GRANT APPLICATIONS

	2022								2023				
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
EVANSTON SHORELINE REPAIRS													
Field Investigations (Surveying, Geotechnical Data)				☑									
Site Evaluations and Site Visits				☑									
Concept Design and Public Engagement													
<i>Public Opinion Survey</i>					☑								
<i>Public Meeting # 1 (October 25, 2022)</i>						☑							
Concept Design													
<i>Public Meetings #2 and #3 (Exact dates TBD)</i>													
Preliminary Engineering & Regulatory Engagement													
Benefit / Cost Analysis & Grant Support													
COMPLETED TASKS / SUBTASKS ☑													

EVANSTON SHORELINE REPAIRS

THE DESIGN TEAM WILL WORK WITH THE CITY OF EVANSTON TO DEVELOP CONCEPTS FOR EACH LOCATION

- **Conceptual Design Phase**
 - Will be conducted in combination with public engagement
 - Will include comparative cost estimates to assist in evaluating options
 - Will explore nature-based / green infrastructure interventions as well as traditional approaches

8 specific sites are included in this phase of the project, and conceptual designs will be developed for all of them to meet the expected future needs of the community



EVANSTON SHORELINE REPAIRS

NEXT STEPS WILL INCLUDE CONCEPT DESIGN, ADDITIONAL PUBLIC MEETINGS, AND PRELIMINARY ENGINEERING

- **Concept Designs** are being developed for each site
 - Concept designs will be refined based on input received from staff and the public
 - Two more **Public Meetings** are anticipated early in 2023
 - A preferred concept for each location will be advanced to preliminary engineering
- The **Preliminary Engineering** phase will advance the technical plans and details.
 - Will include proposed construction staging areas and phasing plans
 - Will allow for more refined construction cost estimates, and the design team will help the City look for possible external **Grant Funding** opportunities
 - Will be reviewed with permitting agencies



**EVANSTON
SHORELINE REPAIRS
*ANY QUESTIONS?***

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