Lakeshore Boulevard

City Commission Work Session, Feb. 28

Challenges

Lakeshore Blvd. Damage

October 2017

January 2019

2017 Shiras Park Damage

Lakeshore Blvd. between Fair Ave. and Pine St.

Coastal Events (2008-2018)

Year	Events	Total
2010	Lakeshore Blvd. Overlay	$74,938
2013	Lakeshore Coastal Restoration	$20,000
2015	May 2015 Storm Cleanup	$17,143
2017	October 2017 Storm Cleanup	$110,000
2018	Carp River Restoration	$10,825
--	--	$232,906

*These are one time events separate from annual maintenance.

Public Works Annual Coastal Maintenance (2008-2018)

Description	Annual Maintenance Cost
Close, Clean/Repair and Open Lakeshore Blvd.	$20,000
Marina Dock Repairs	$7,500
Dredging Stormwater Outlets	$11,000
Bulkhead/Sinkhole Repair	$15,000
Annual Average Maintenance	$53,500

Public Works Ten Year Coastal Maintenance (2008-2018)

Description	Costs
10 Year Total Maintenance	$535,000
Coastal Events Repair/Cleanup	$232,906
Total with Coastal Events	$767,906

Historical Planning and Design Process

Phase I

- Grant Funded Project – MDEQ Coastal Zone Management
- Coastal Engineering Firm (BAIRD)
  - Analyze erosion
  - Draft alternatives based on Community Master Plan and natural science
- Five alternatives presented to the community at a public meeting on March 27, 2013

NORTH

0 75 150 300ft.

GRAPHIC SCALE — FEET

SHORELINE RESTORATION - EXISTING CONDITIONS
MARQUETTE, MICHIGAN

MARQUETTE SHORELINE RESTORATION

Figure Number:	Project Number:
12035-CD-01	12035.100
Description:	Date:
EXISTING CONDITIONS - LAYOUT	02/04/2013

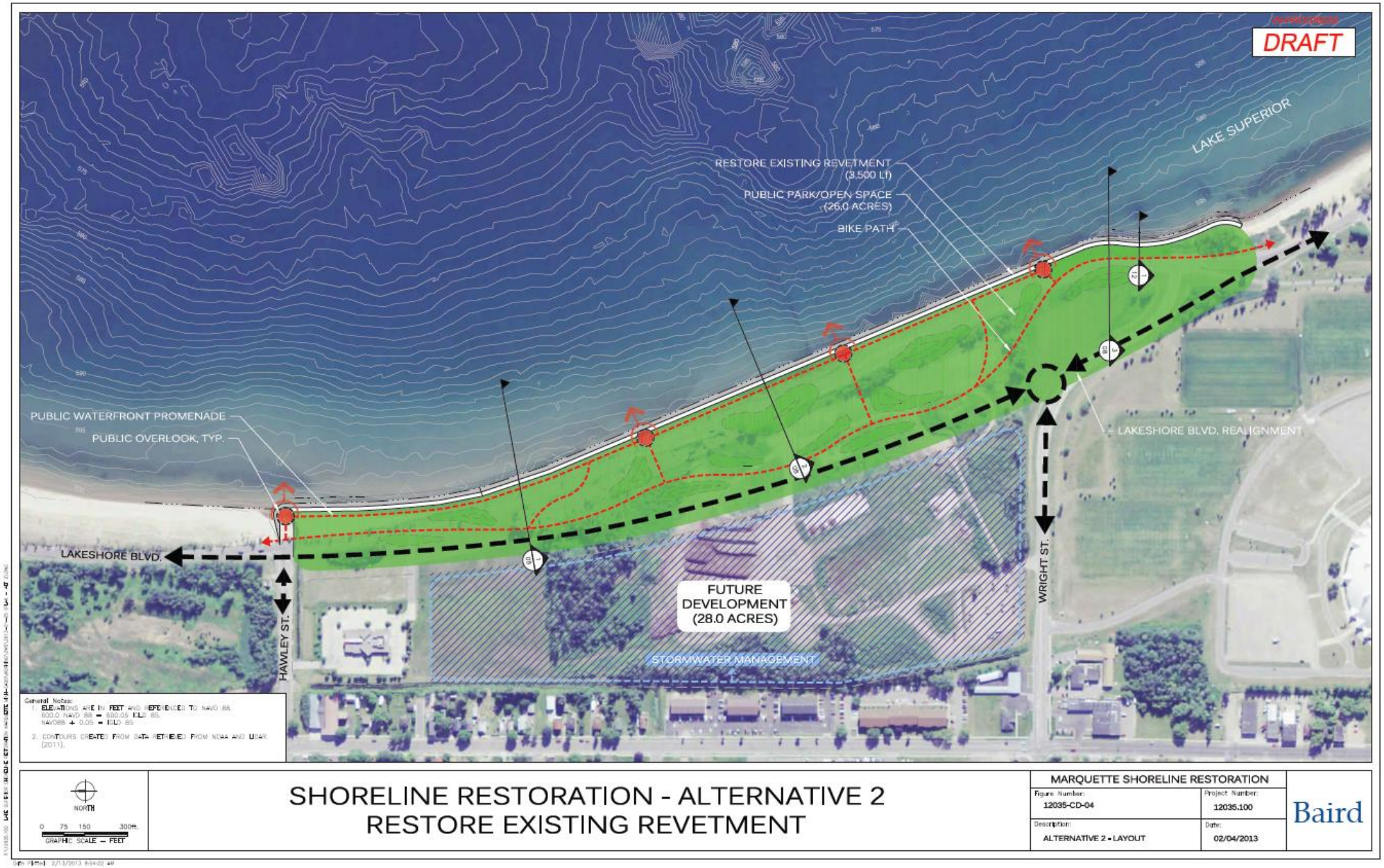
Baird

SHORELINE RESTORATION - ALTERNATIVE 1
REMOVE EXISTING REVETMENT

MARQUETTE SHORELINE RESTORATION

Figure Number:	Project Number:
12035-CD-03	12035.100
Description:	Date:
ALTERNATIVE 1 - LAYOUT	02/04/2013

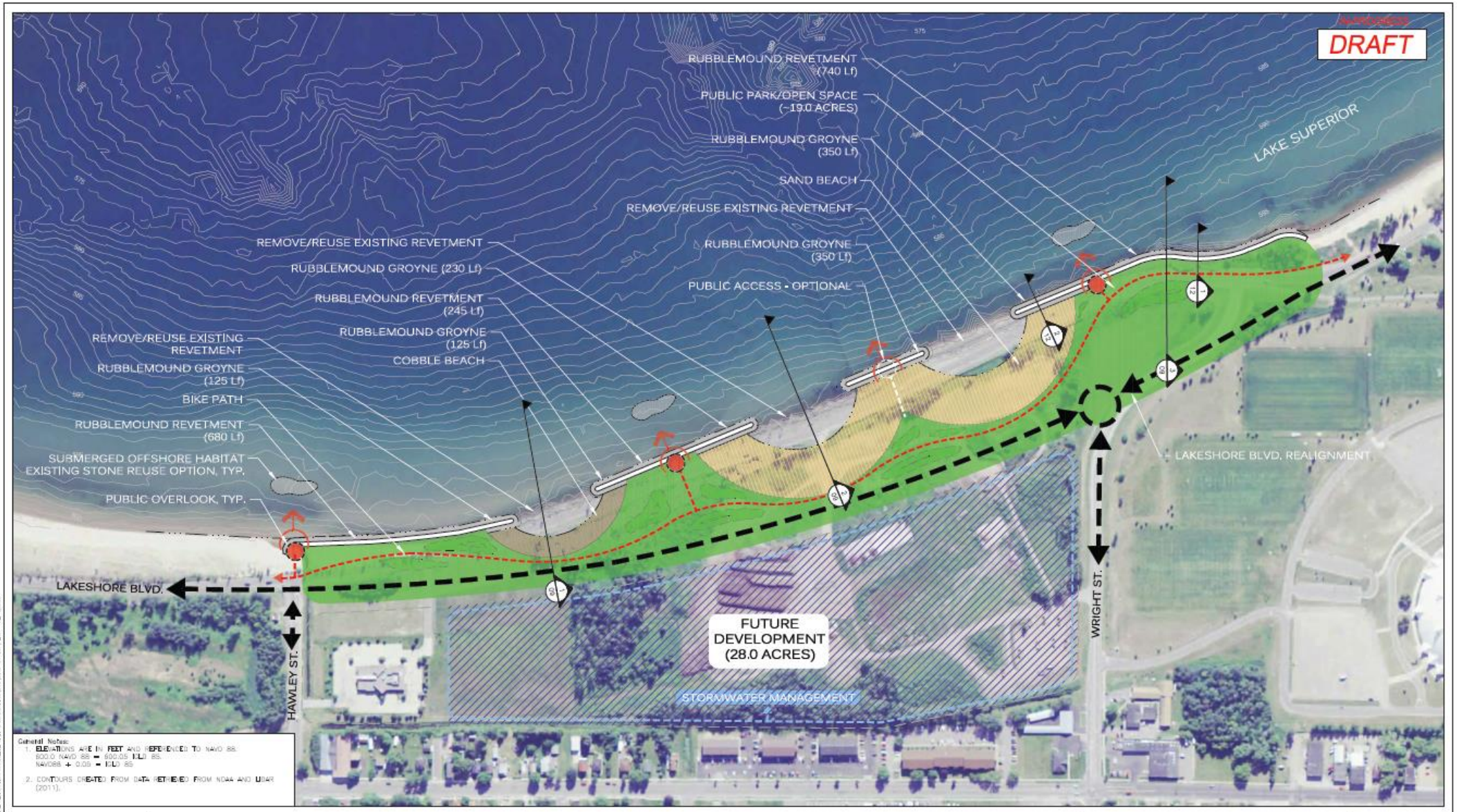
Baird



SHORELINE RESTORATION - ALTERNATIVE 2
RESTORE EXISTING REVETMENT

MARQUETTE SHORELINE RESTORATION	
Figure Number: 12035-CD-04	Project Number: 12035.100
Description: ALTERNATIVE 2 - LAYOUT	Date: 02/04/2013

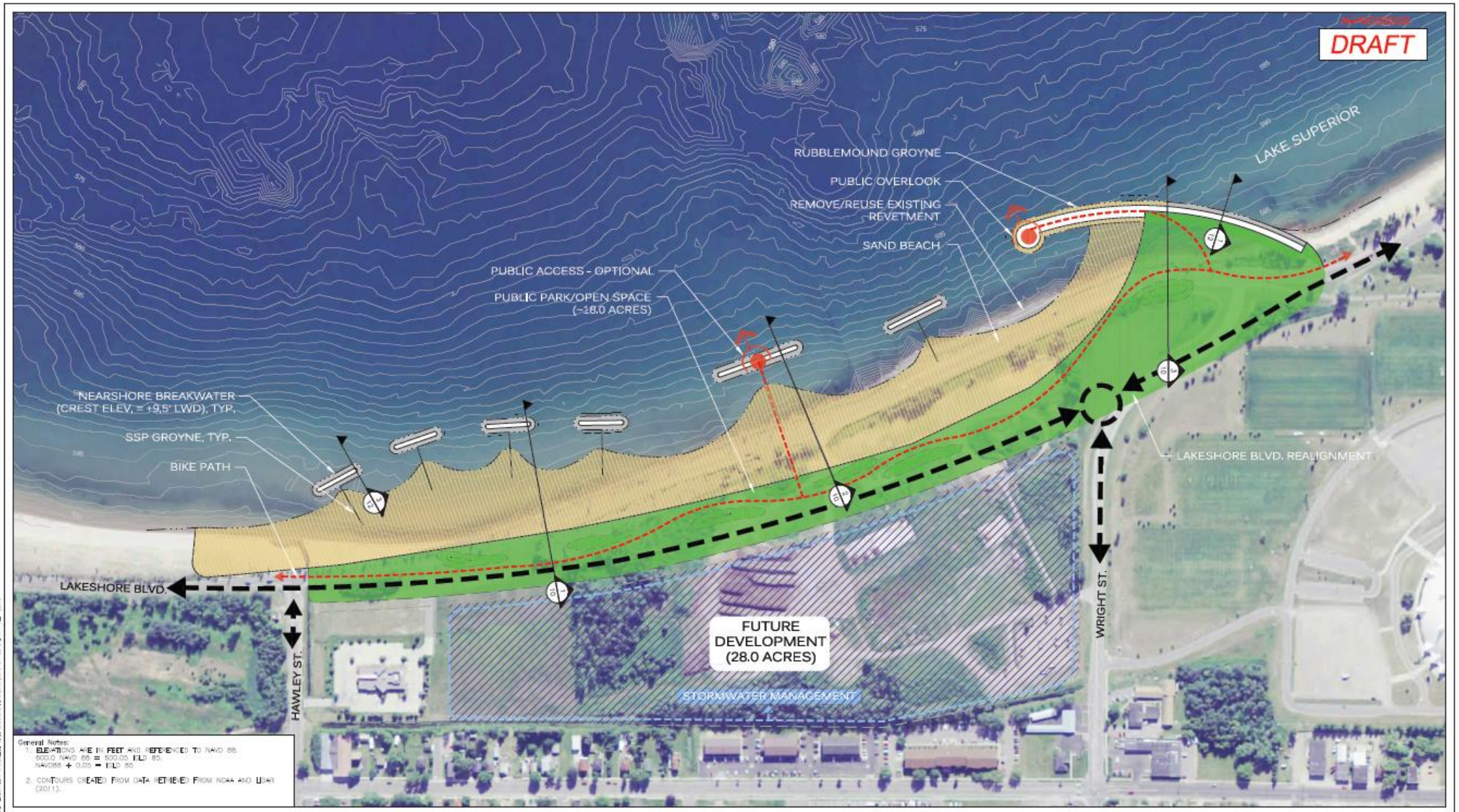
Baird



SHORELINE RESTORATION - ALTERNATIVE 3
LANDWARD BEACH DEVELOPMENT

MARQUETTE SHORELINE RESTORATION	
Figure Number: 12035-CD-05	Project Number: 12035.100
Description: ALTERNATIVE 3 - LAYOUT	Date: 02/04/2013

Baird



NORTH

0 75 150 300ft.

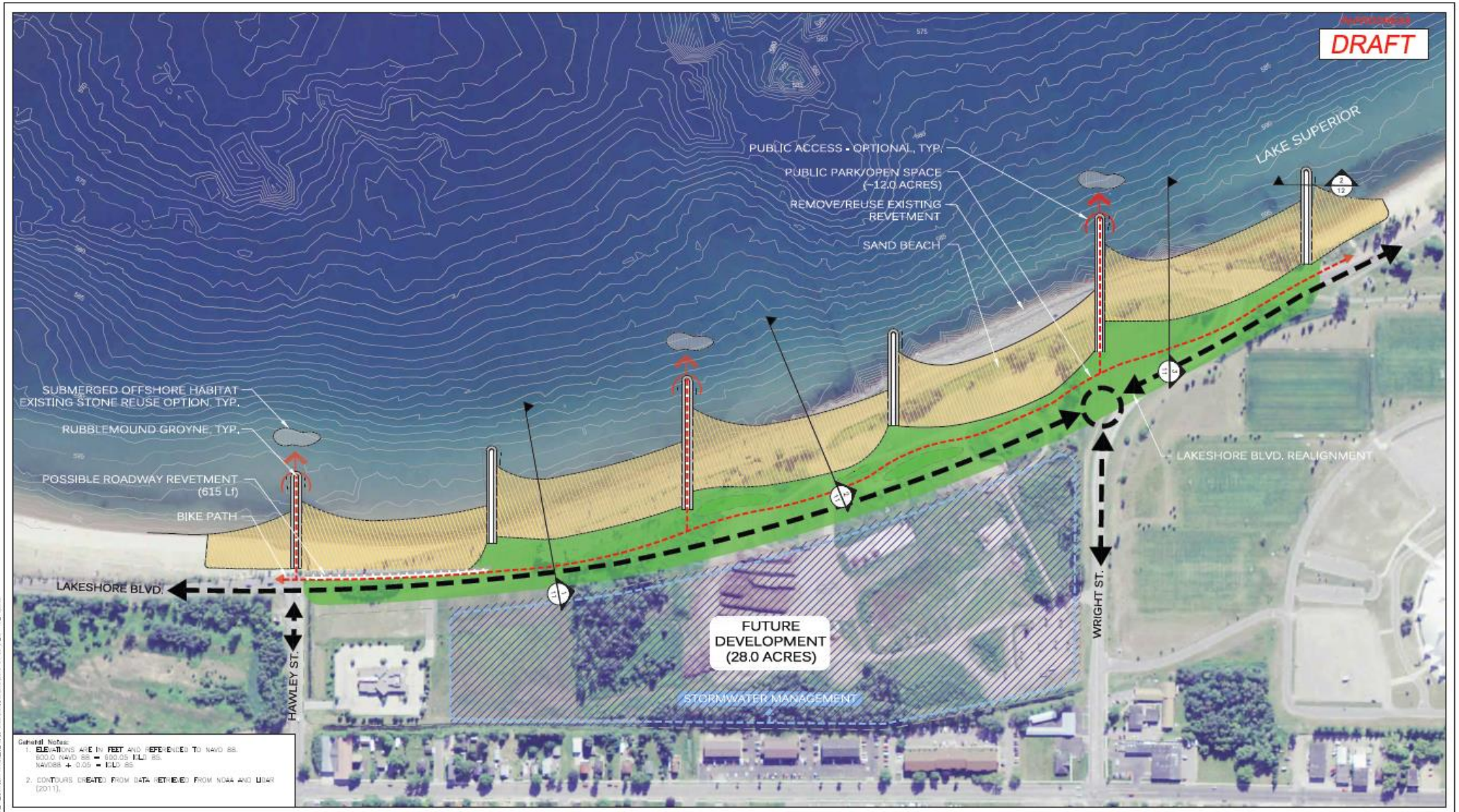
GRAPHIC SCALE — FEET

SHORELINE RESTORATION - ALTERNATIVE 4
OFFSHORE BREAKWATER BEACH DEVELOPMENT

MARQUETTE SHORELINE RESTORATION

Figure Number:	Project Number:
12035-CD-06	12035.100
Description:	Date:
ALTERNATIVE 4 - LAYOUT	02/04/2013

Baird



SHORELINE RESTORATION - ALTERNATIVE 5
RUBBLEMOUND GROYNES BEACH DEVELOPMENT

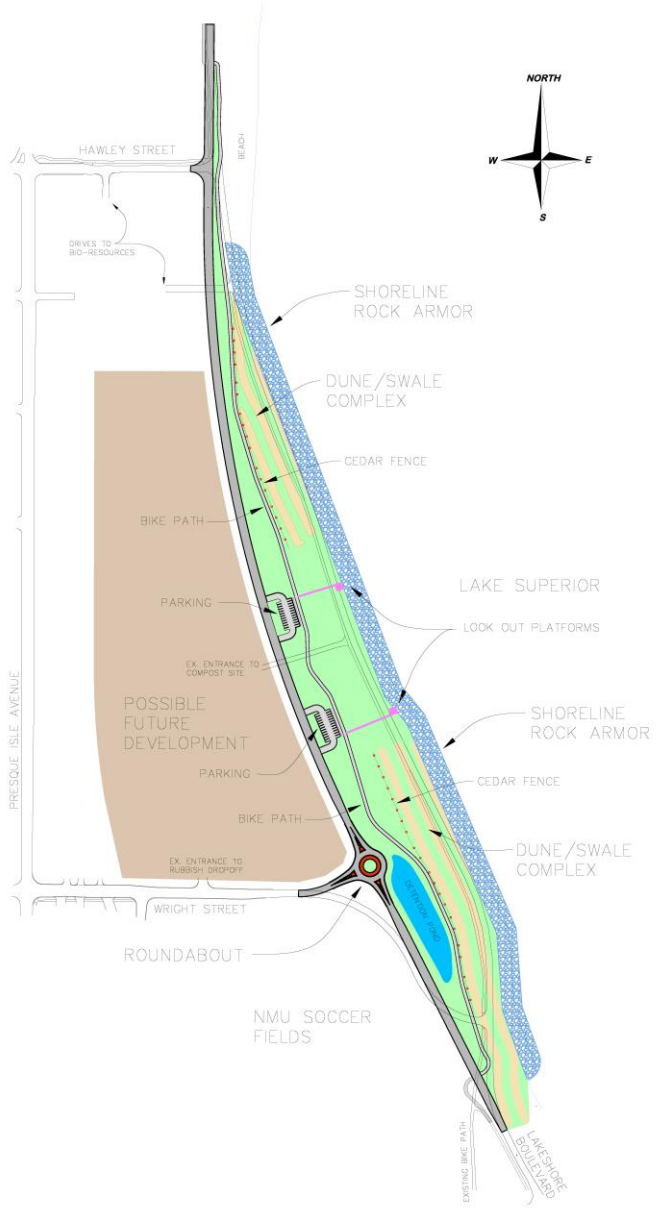
MARQUETTE SHORELINE RESTORATION	
Figure Number: 12035-CD-07	Project Number: 12035.100
Description: ALTERNATIVE 5 - LAYOUT	Date: 02/04/2013

Baird

Lakeshore Boulevard Relocation and Shoreline Restoration Project – Phase II

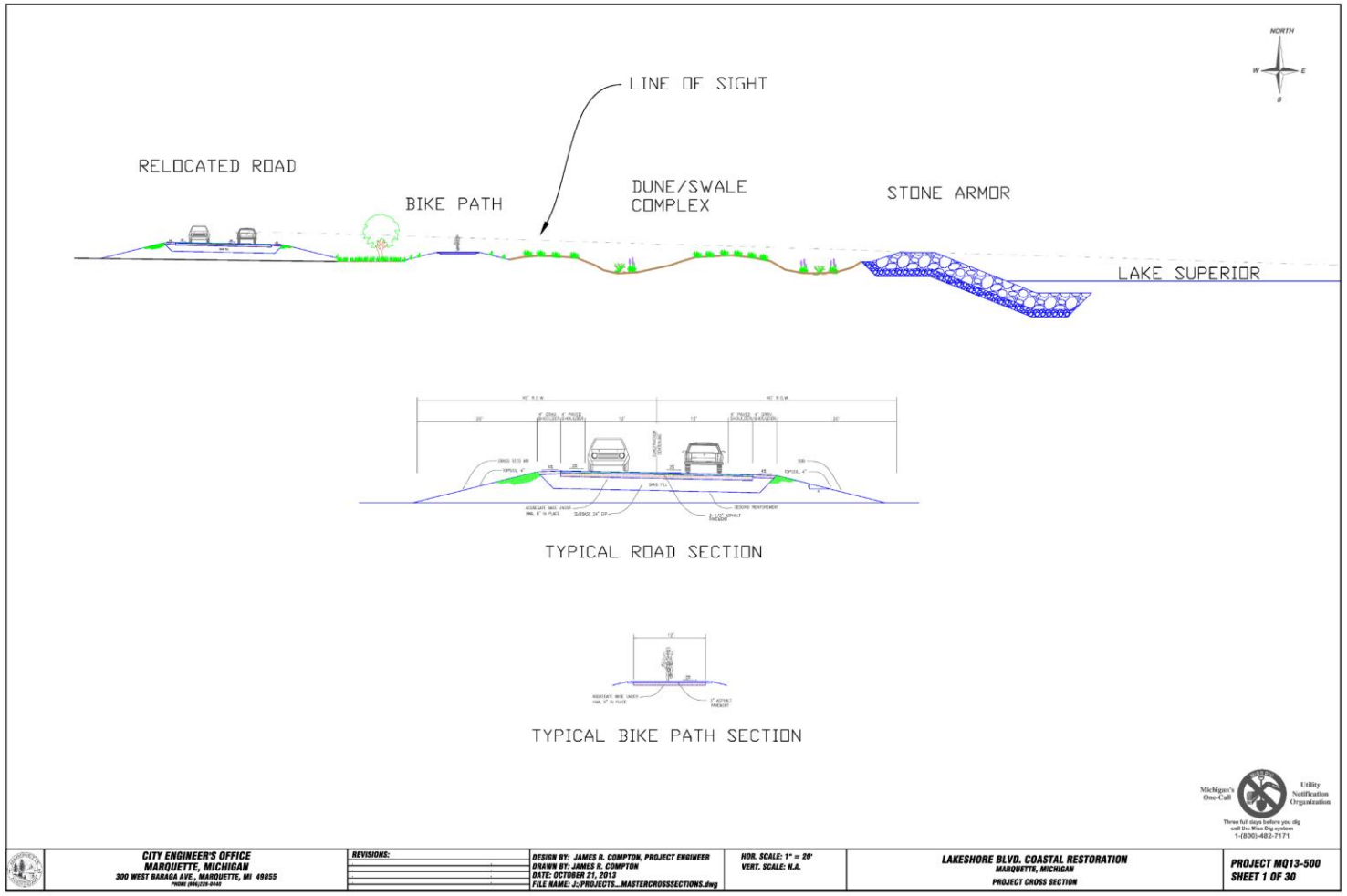
- MDEQ Coastal Zone Management Grant - $34,500 grant for a $69,250 project
- Conduct public engagement and develop a design for construction (shovel ready) based upon previous work by BAIRD
- Incorporate coastal restoration into man-made defense system (Dune and Swale complexes)
- Surveys and Public Meetings
- City Commission approved plans

City Commission Approved Design



- Shoreward Erosion Control – Stone Armor
- Shoreline Restoration – Dune/Swale Complex
- Multi-use pathway
- Two designated parking areas
- Two viewing platforms
- Asphalt street structure
- Roundabout at terminating vista

City Commission Approved Design



- Stone Armor per U.S. Corps of Engineers design
- Street and multi-use pathway provide direct line of sight to lake
- Dune/Swale Complex – dune grass and native plants
- Street structure to incorporate geogrid reinforcement

City Commission Approved Design - Cost Estimate

Description	Cost
Shoreline Rock Armor	$5,100,000
Road Relocation + Utilities	$2,800,000
Multi-use Pathway	$1,015,000
Parking Lots/ADA Public Access	$282,000
Dune Restoration/Coastal Wetland	$513,000
Contingency (15%)	$1,456,500
Total	$11,166,500

Where It Was Left…

- City Commission endorsement of final plans after lengthy public process described here
- Received approval from State of Michigan
- Seek funding multiple funding opportunities with “shovel ready” design
- Seek Funding from United States Army Corps of Engineers through multiple Section 14 requests – all were denied
- Ongoing Maintenance
- Funding Opportunities Realized

New Funding Opportunities

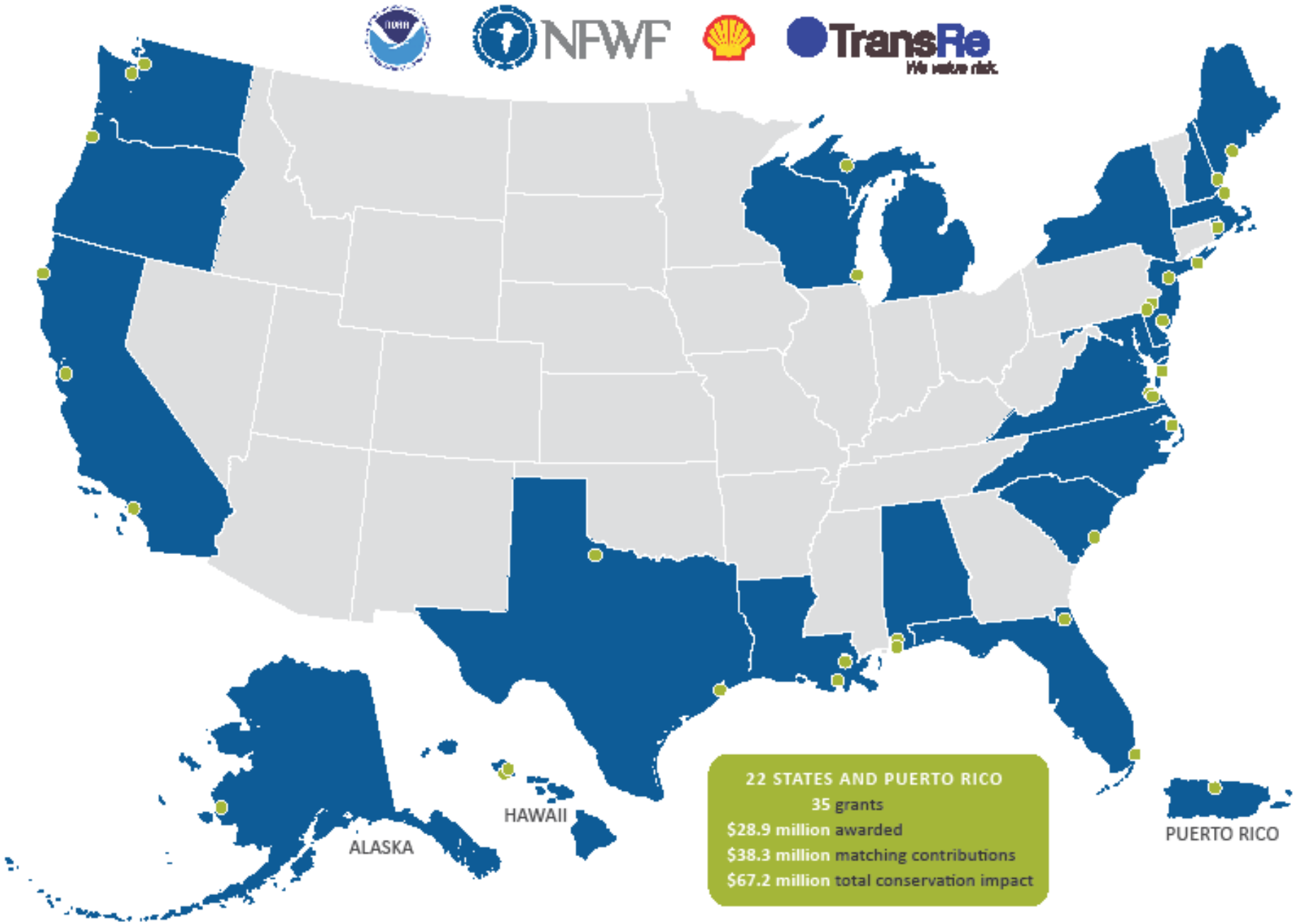
Awarded Funding

- National Fish and Wildlife Foundation – National Coastal Resilience Fund
  - Grant Amount: $2,500,000
  - Local Match: $3,050,000 (includes $50,000 in match from SWP)
  - Timeline: November 2018 – October 2021
  - Submitted By: Superior Watershed Partnership
  - Status: Awarded

Lakeshore Boulevard Project Supporters

- NOAA Climate Program Office
- Great Lakes & St. Lawrence Cities
- American Society of Adaptation Professionals
- Michigan Sea Grant
- Michigan Department of Natural Resources
- Michigan State University Extension
- United States Senator Debbie Stabenow
- United States Congressman Jack Bergman
- Climate Adaptation Task Force
- Marquette County
- Keweenaw Bay Indian Community
- Lakehead University, Thunder Bay, Ontario

NATIONAL COASTAL RESILIENCE FUND 2018 GRANTS



Pending Funding

- **FEMA – Pre-Disaster Mitigation Fund/Coastal Resilient Infrastructure (2 Proposals)**
  - Grant Amount: $2,700,000
  - Local Match: $675,000
  - Tentative Timeline: December, 2019 – April, 2023
  - Submitted By: City of Marquette
  - Status: Pending
- **USACE – Section 111 Shoreline Damage Attributable to a Federal Navigation Project**
  - Grant Amount: Maximum Federal Limit $10,000,000
  - Local Match: Cost share up to 35%
  - Tentative Timeline: If awarded, funding is anticipated in 2022-2023 or later
  - Submitted By: City of Marquette
  - Status: Pending

Former Cliffs-Dow Site Opportunities

- RFQ – Development Interest
- Brownfield Funding Opportunities
  - Public Infrastructure
  - Environmental Remediation (if necessary)

Recent Design Modifications to Match Funding Opportunities

- Changes to shoreline treatment
  - Addition of a beach into coastal restoration
- Road design remains the same
- Cost Impacts
- Impacts from Adjacent Property
  - Former Cliffs-Dow Site
- Timeline for Construction

Modified Design

- Maintains Commission Adopted Plans
  - Same road alignment
  - Same number of parking areas
  - Same Access to waterfront from parking areas
  - Same multiple use pathway
  - Same Dune and Swale concepts
- Enhances Commission Adopted Plans
  - Addition of a sand or cobble beach
  - Underwater erosion protection

Modified Design Cost Estimates

Description	Cost
Shoreline Rock Armor	$5,100,000
Road Relocation	$2,800,000
Beach Restoration	$600,000
Underwater Habitat	$350,000
Multi-use Pathway	$1,015,000
Parking Lots/ADA Public Access	$282,000
Dune Restoration	$513,000
Contingency (15%)	$1,559,000
Total	$12,259,000

*Does not include potential cost for site remediation (if necessary)

Modified Design Cost Estimates – Phased Approach - Phase I

Description	Cost
Shoreline Repair	$1,000,000
Road Relocation	$2,800,000
Contingency (15%)	$570,000
Total	$4,370,000

Modified Design Cost Estimates – Phased Approach - Phase – Phase II

Description	Cost
Shoreline Rock Armor	$4,500,000
Multi-use Pathway	$1,015,000
Parking Lots/ADA Public Access	$282,000
Dune Restoration	$513,000
Beach Restoration	$600,000
Underwater Habitat	$350,000
Contingency (15%)	$1,089,000
Total	$8,349,000

City Manager

- Phased in approach concept
- Future City Commission actions