MME 2024 Summer Workshop

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Planning for Infrastructure Resilience

Dennis M. Stachewicz, Jr., Community Development Director, City of Marquette

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Community Development Director

City of Marquette

Planning for Infrastructure Resilience

Marquette

- Near 10 miles of Shoreline
- Majority in public ownership
- Formerly had multiple high-risk designated erosion areas (EGLE)
- Significant storm events have increased over time

Damages in the MILLIONS

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We survived and prospered...

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1AB 2015 Great Lakes Restoration Initiative
Reducing Runoff/Tree Planting
2,500 trees planted (Approx. 737,500 gallons of stormwater captured)
$169,996 grant /$17,204 match = 187,200 (SWP/City)

2 Coastal Wetland Mitigation
Restored Approximately 2 acres
City/Funded, SWP Planning Assistance

3AB 2016 Great Lakes Restoration Initiative
Coastal Wetland Restoration
9.5 acres wetland habitat enhanced
2.5 acres coastal wetland restored
15 acres in conservation easement
2 acres beach restoration, 1000 trees planted
$199,451 grant /$36,100 match = $235,551 (SWP/City)

4 2017 Great Lakes Restoration Initiative
Hawley Storm Drain Relocation
Approx. 9.0 M gallons stormwater per year disconnected from Lake Superior
$288,500 grant /$112,500 match = $401,000 (SWP/City)

5 2012 Michigan Coastal Management Program
Public Engagement and Coastal Planning:
$58,000 grant/$59,990 match = $117,990 (SWP/City)

6 2014 Michigan Coastal Management Program
Coastal Engineering Design Review and Public Engagement:
$34,500 grant/$36,381 match= $70,881 (City/SWP)

7 2018 National Fish and Wildlife Foundation
Coastal Resiliency, Shoreline Stabilization and Habitat Restoration
$2,500,000 grant/$3,050,000 match= $5,550,000 (SWP/City)

8 2018 FEMA Pre-Disaster Mitigation Program
Lakeshore Boulevard Relocation
$2,700,000 grant /$675,000 match = $3,375,000

9 2020 Michigan Coastal Management Program
9 acres of coastal habitat restored
Improved resiliency 1,200 linear feet of shoreline
$200,000 grant/$202,851 match = $402,851

10 2014 Great Lakes Restoration Initiative
Lakeview Storm Drain Improvements
0.7 acres wetlands created (Lakeview storm drain)
70% reduction in bacteria and pollutants
$179,700 grant funds/$12,508 matching funds = $192,208 (City/SWP)

11 Great Lakes Conservation Corps and Community Volunteers
Beach grass planting, invasive plant removal, beach clean-ups, etc.
Annually: City funded and SWP match

12 2017 U.S. Army Corps of Engineers
Preliminary Coastal Study: Funded
Note: First step to additional coastal implementation funding
$100,000 grant/$0 match (City/SWP)

* Picnic Rocks to Dead River

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How?

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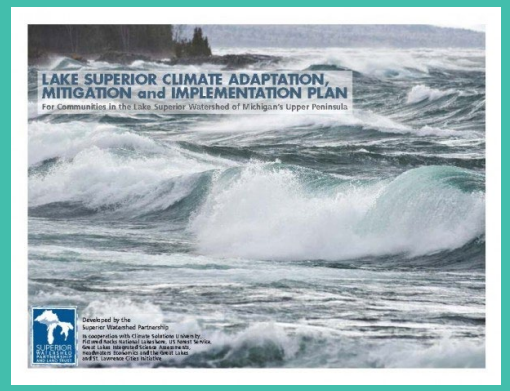
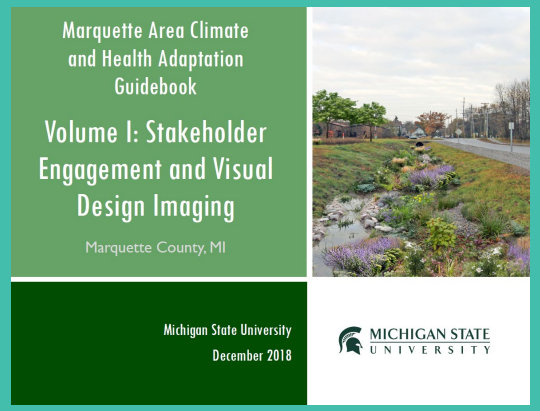
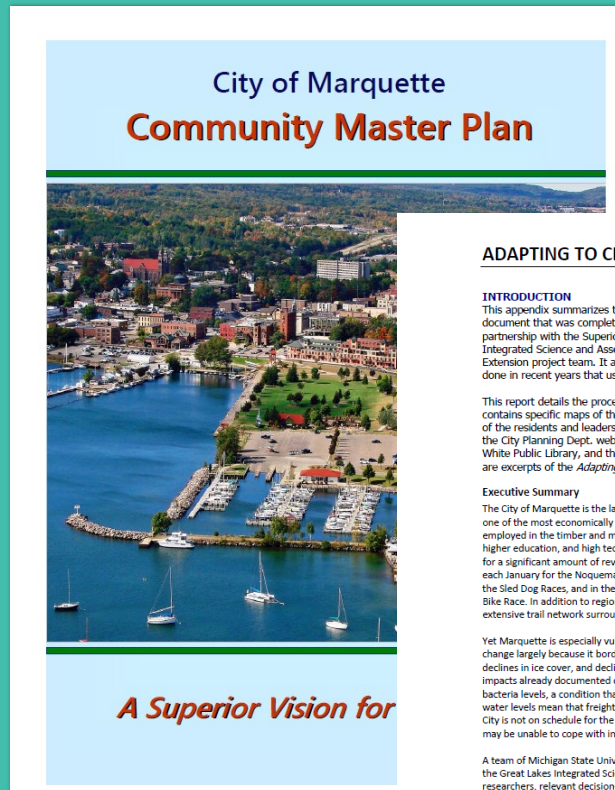
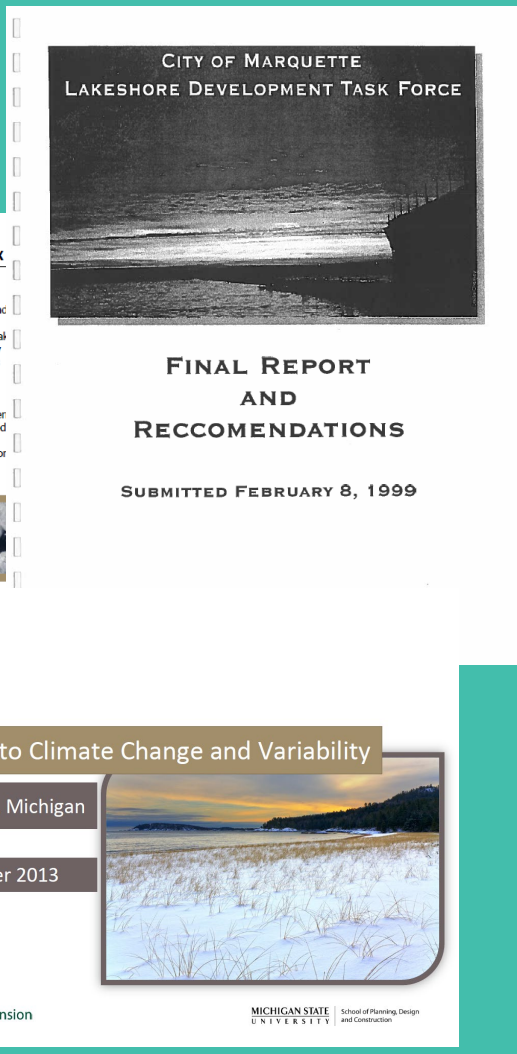

LAKE SUPERIOR CLIMATE ADAPTATION, MITIGATION and IMPLEMENTATION PLAN
For Communities in the Lake Superior Watershed of Michigan's Upper Peninsula


Marquette Area Climate and Health Adaptation Guidebook
Volume I: Stakeholder Engagement and Visual Design Imaging
Marquette County, MI
Michigan State University
December 2018
MICHIGAN STATE UNIVERSITY


City of Marquette
Community Master Plan
A Superior Vision for


ADAPTING TO CLIMATE CHANGE
Appendix
INTRODUCTION
Executive Summary
City of Marquette ✱ Community Master Plan


CITY OF MARQUETTE
LAKESHORE DEVELOPMENT TASK FORCE
FINAL REPORT
AND
RECCOMENDATIONS
SUBMITTED FEBRUARY 8, 1999


Adapting to Climate Change and Variability
Marquette, Michigan
September 2013
MICHIGAN STATE UNIVERSITY | Extension
MICHIGAN STATE UNIVERSITY | School of Planning, Design and Construction

Just a Sample of Adopted Plans

- Lakeshore Boulevard Task Force Report and Recommendation
  (City of Marquette)
- Coastal Zone Management Grant Phase I and II Workshops
  (SWP and City of Marquette)
- Lake Superior Climate Adaptation, Mitigation, and Adaptation Plan
  (SWP and partners)
- Marquette County Climate and Health Adaptation Guidebook
  (MSUE and County Partners, including City of Marquette)
- Adapting to Climate Change and Variability
  (MSUE and City of Marquette)
- Marquette County Community Resiliency Workshop
  (Climate Adaptation Task Force)
- Marquette Community Master Plan
  (City of Marquette)

Lakeshore Boulevard

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Funding Opportunities for Planning

EGLE

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

SUPERIOR WATERSHED PARTNERSHIP and LAND CONSERVANCY

NOAA

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

U.S. DEPARTMENT OF COMMERCE

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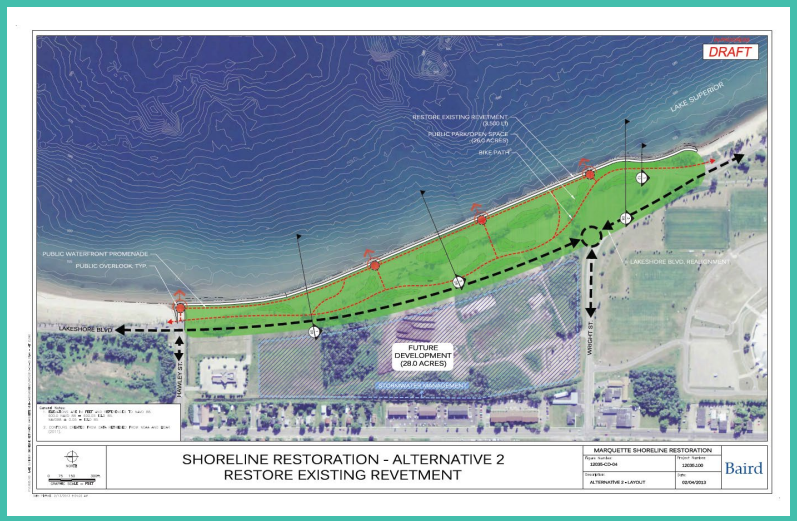
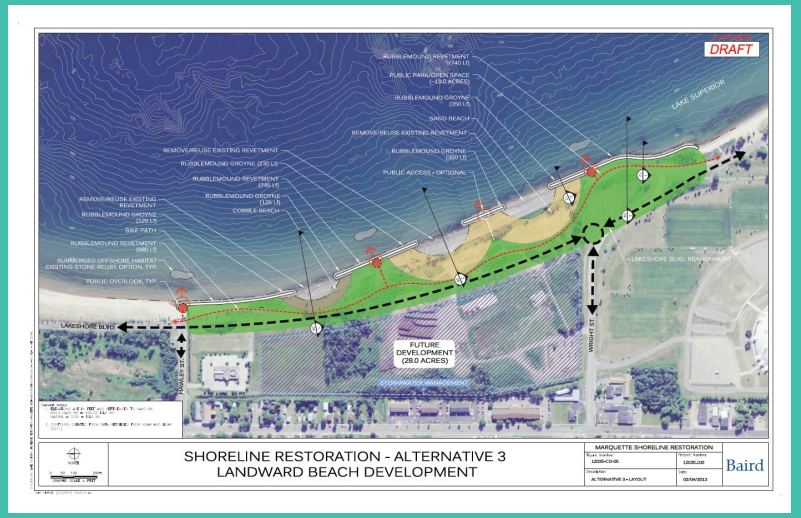
Coastal Zone Management Grant Phase I and II

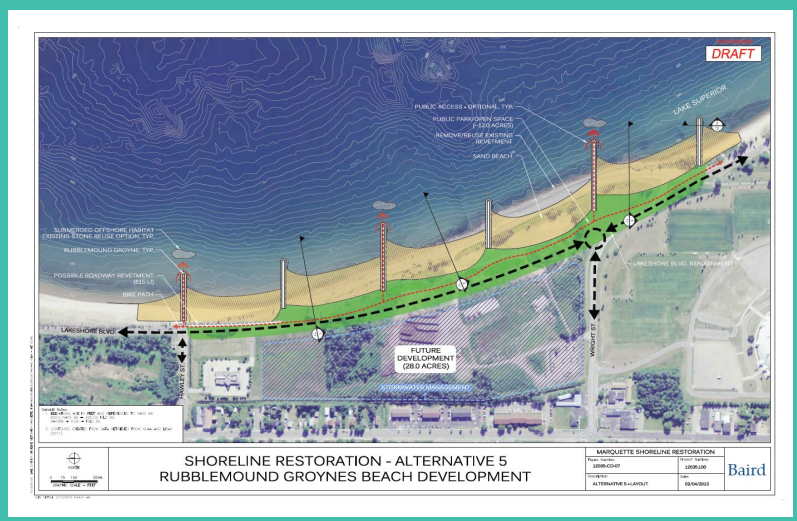
- SWP and City of Marquette were project partners
- Goal – Protect infrastructure while blending in natural shoreline attributes based upon previous community planning efforts
- Project spanned two years circa 2012
- Community Engagement
  - Multiple Community Forums
  - Written Comments
  - Community Survey
- Outcome was a preferred alternative in "shovel ready" form

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







Baird.
Innovation Engineered.

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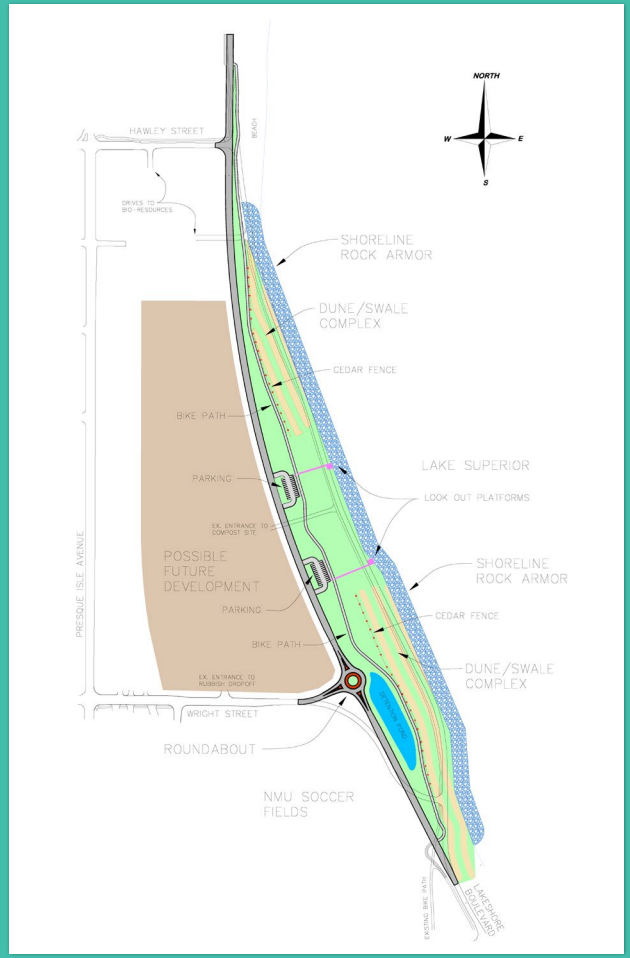
Lakeshore Boulevard Relocation and Shoreline Restoration Project – Phase II

- 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



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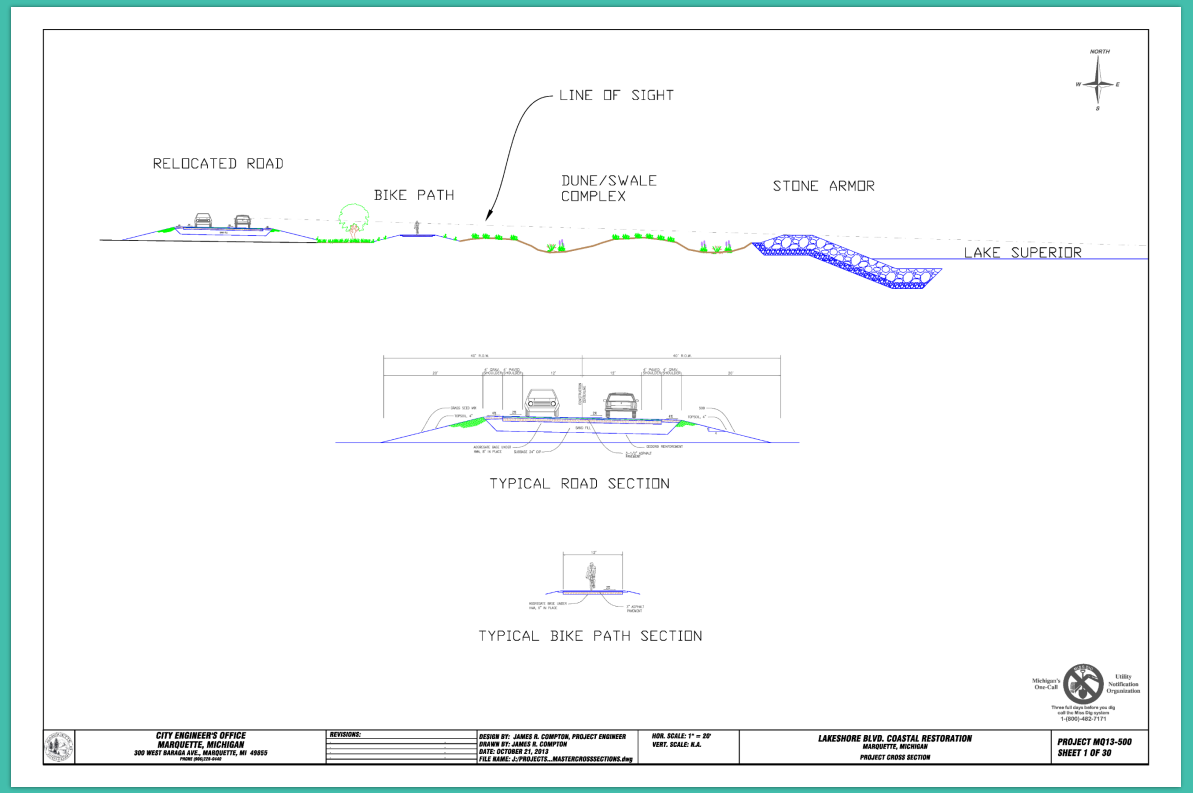
City Commission Approved Design

- 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



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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

Funding Partnerships for Implementation

FEMA

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Great Lakes
RESTORATION

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Phase I - Road Relocation

- Hazard Mitigation Grant
- $1.9 M with a $1.1M match
- Relocation of Lakeshore Boulevard landward

FEMA

SUPERIOR WATERSHED PARTNERSHIP and LAND CONSERVANCY

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Phase II - Shoreline Protection and Restoration

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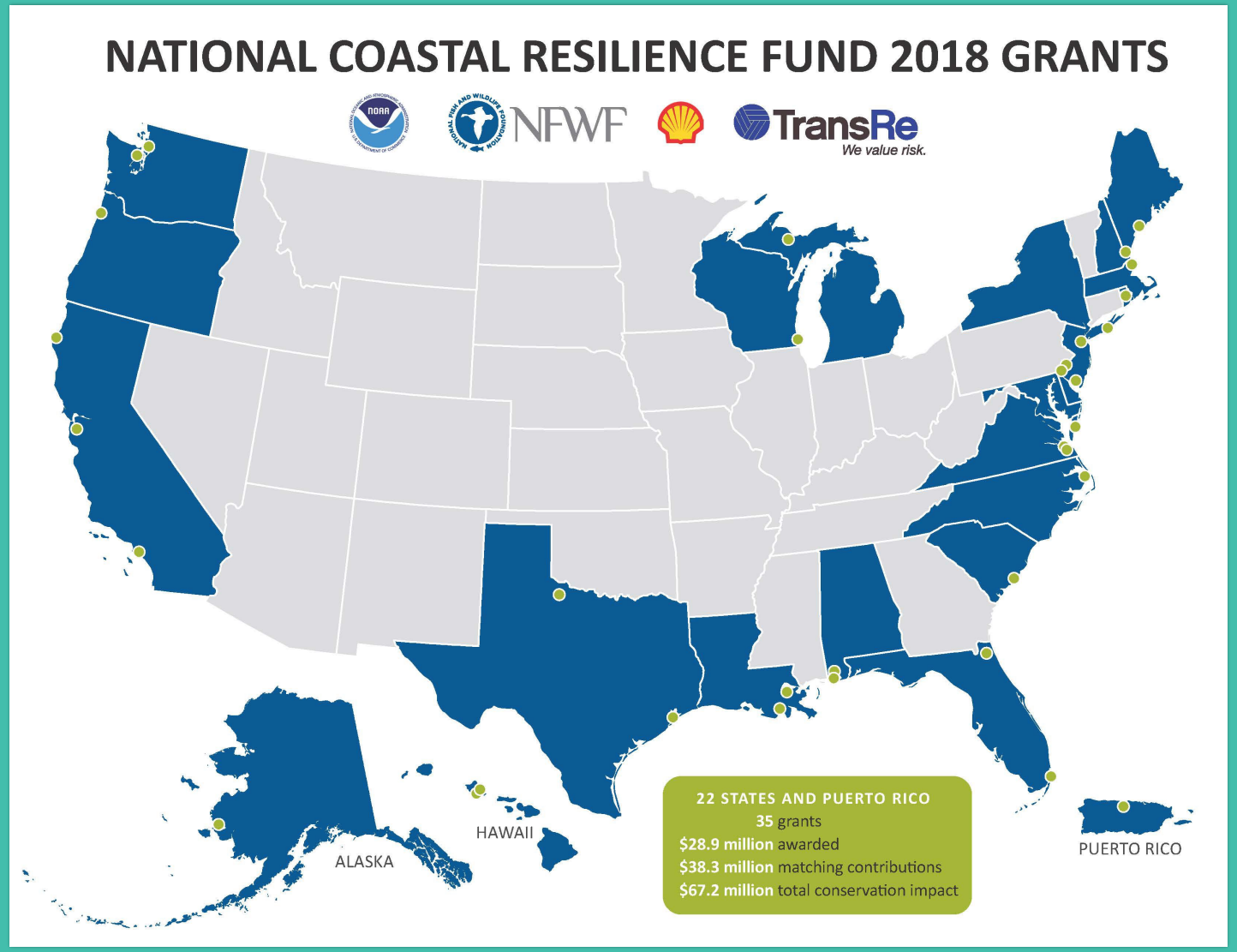
Awarded Funding

- 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 (Extended to 2024)
  - Submitted By: Superior Watershed Partnership and Land Conservancy
  - Supported by Keweenaw Bay Indian Community



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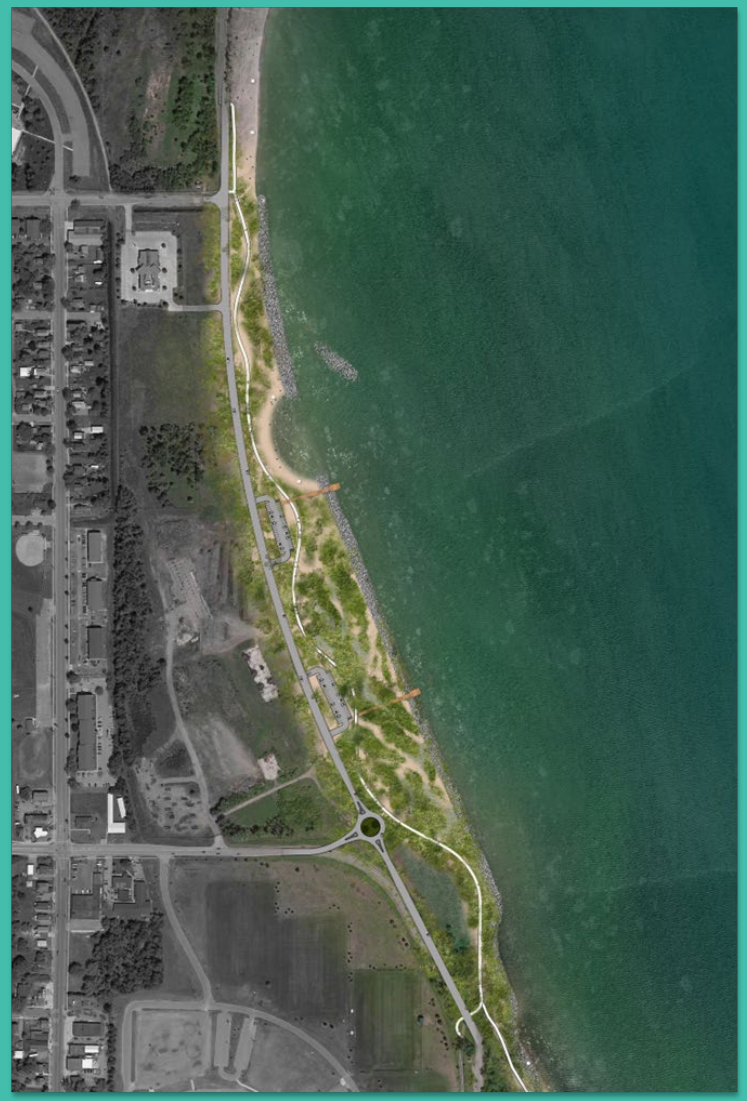
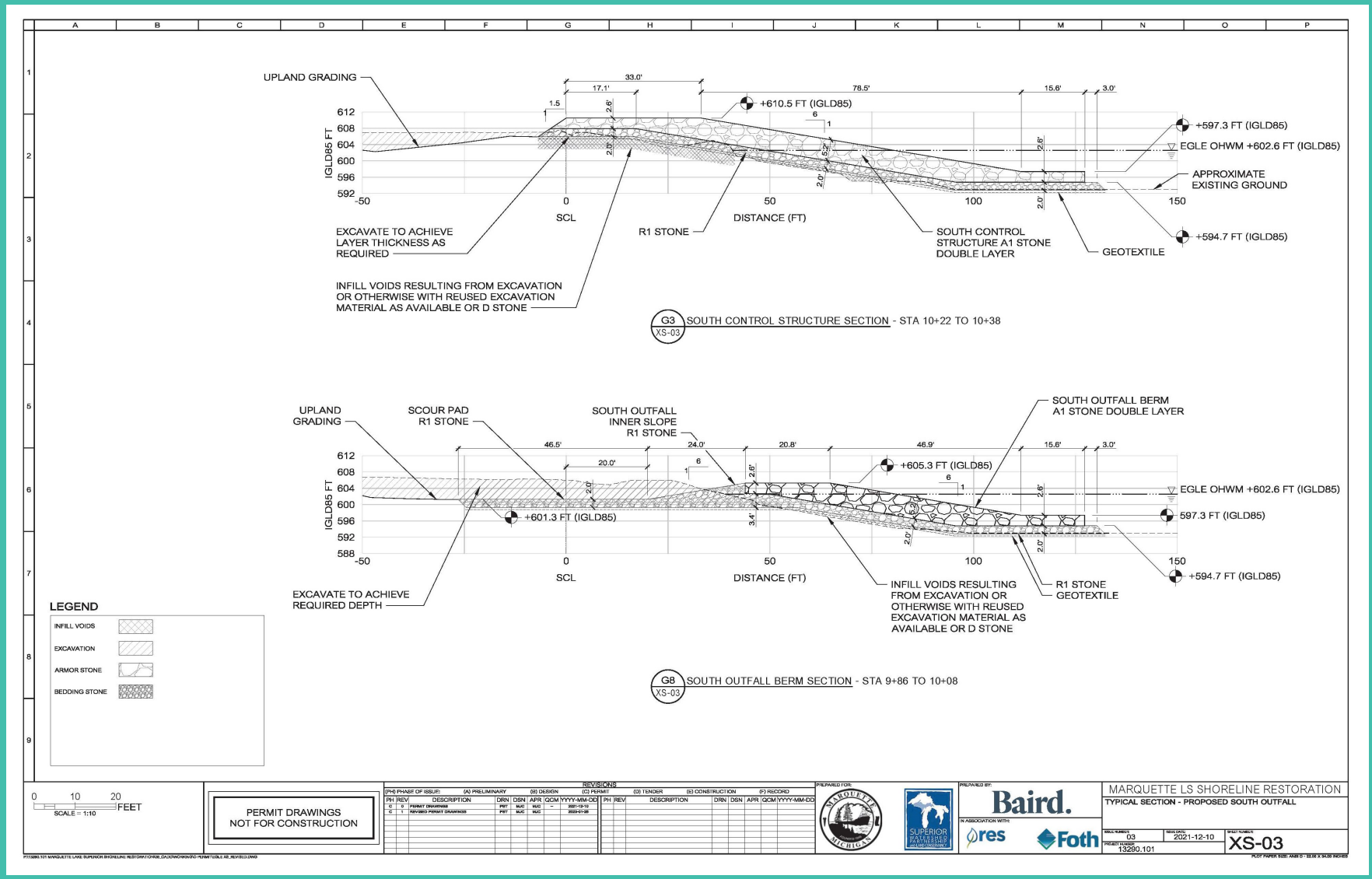
Awarded Funding

- USDA Forest Service – Green Infrastructure to Intercept Stormwater Runoff
  - Grant amount $116,475
  - Local match $30,849
  - Timeline: January 2021 – December 2024 (extended)
  - Submitted by Superior Watershed Partnership and Land Conservancy
  - Climate adaptive plantings – stabilize upland shoreline and intercept an estimated 258,695 gallons of stormwater runoff from entering Lake Superior each year

Overview

- Provide Shoreline Protection
- Sustainable Design
- Man-made, yet as natural as possible
- Minimal maintenance
- Public access





Challenges

- EGLE Permit
  - State Bottomlands – concern with creating upland area to accommodate the revetment slope
  - Concern from regulators about the living revetment concept – more comfortable with standard designs (armored revetment)
- Appeal of Permit Denial
- Outcome - mutual agreement prior to contested case hearing

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Take Home

- Plan long before the need
- Utilize NOAA/CZM/GLRI and local partners to seek funding for planning – it is available!
- Take a "natural systems" approach, it's more attractive for funding and for your community (Concrete versus Paradise)
- Have shovel-ready plans

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Questions?