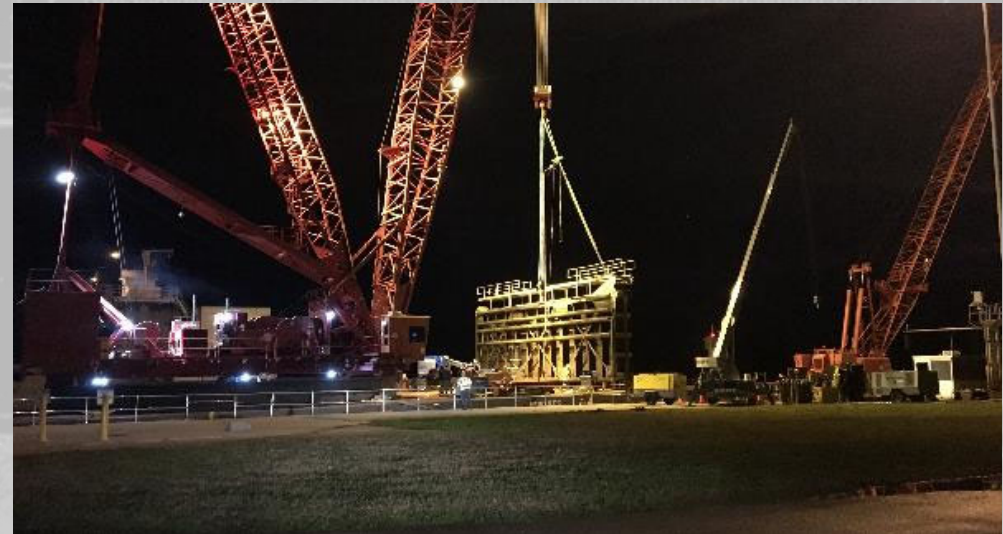


ILLINOIS WATERWAY 2020 CONSOLIDATED CLOSURE

Mike Walsh
Chief of Locks & Dams
Illinois Waterway Project
Rock Island District
Date: 20 February 2020



US Army Corps
of Engineers®





OVERVIEW OF THE ILLINOIS WATERWAY

2

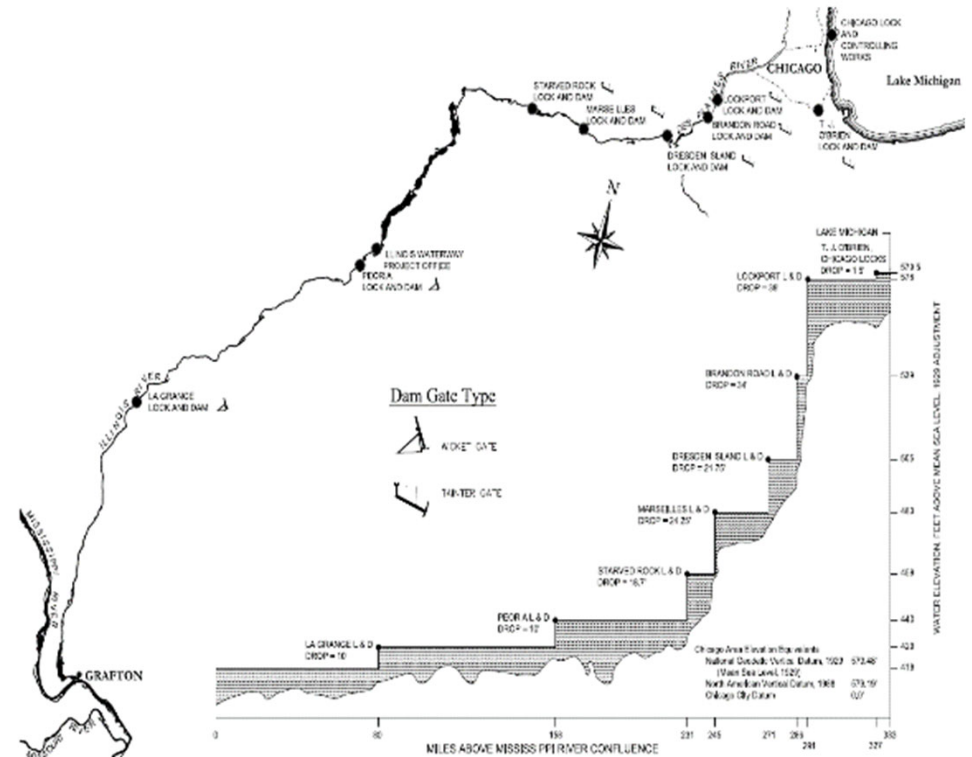


The Illinois Waterway Project includes a total of 268 river miles of 9 foot commercial navigation channel from Chicago to LaGrange Lock & Dam near Beardstown, Illinois.

The navigable portions of the river includes 8 locks and 7 dams which allows waterway traffic to move from one pool to another and is an integral part of a regional, national, and international transportation network.

Annually, the regional project generates an estimated \$3 billion of transportation cost savings compared to overland methods.

Authorized by O&M Rivers & Harbors Act of 1927 & 1930





OVERVIEW OF THE ILLINOIS WATERWAY



Lock & Dam Section

- 8 Locks & 7 Dams
 - **T.J. O'Brien** 4.25M tons 4,637 Lockages
 - **Lockport** 11.24M tons 3,782 Lockages
 - **Brandon Road** 11.18M tons 3,738 Lockages
 - **Dresden Island** 15.97M tons 3,859 Lockages
 - **Marseilles** 17.09M tons 3,851 Lockages
 - **Starved Rock** 18.48M tons 3,839 Lockages
 - **Peoria** 23.23M tons 3,363 Lockages
 - **LaGrange** 28.18M tons 3,588 Lockages

Natural Resource Section

- Illinois Waterway Visitor Center
 - 45,000 visitors annually
- Farm Creek FRM Site
 - Farmdale & Fondulac Reservoirs
- Support Locks & Dams with Environmental Restoration
- Water Safety
 - Classes
 - Weekend Public Contacts
- Partnerships (State Parks, Non government agencies, etc)

Maintenance Section

- 4 Motor Vessels (Towboats)
- 7 Deck Barges & 3 Material Barges
- 2 Structures Maintenance Units
 - 2 Manitowoc 777 Cranes (100T)
 - 1 Manitowoc 4600 Ringer (350T)
 - 2 Grove Mobile Cranes (50T & 60T)
- 1 Strike Removal Crew (Dredging)
 - Liebherr 974c Material Handler
 - Various loaders & dozers

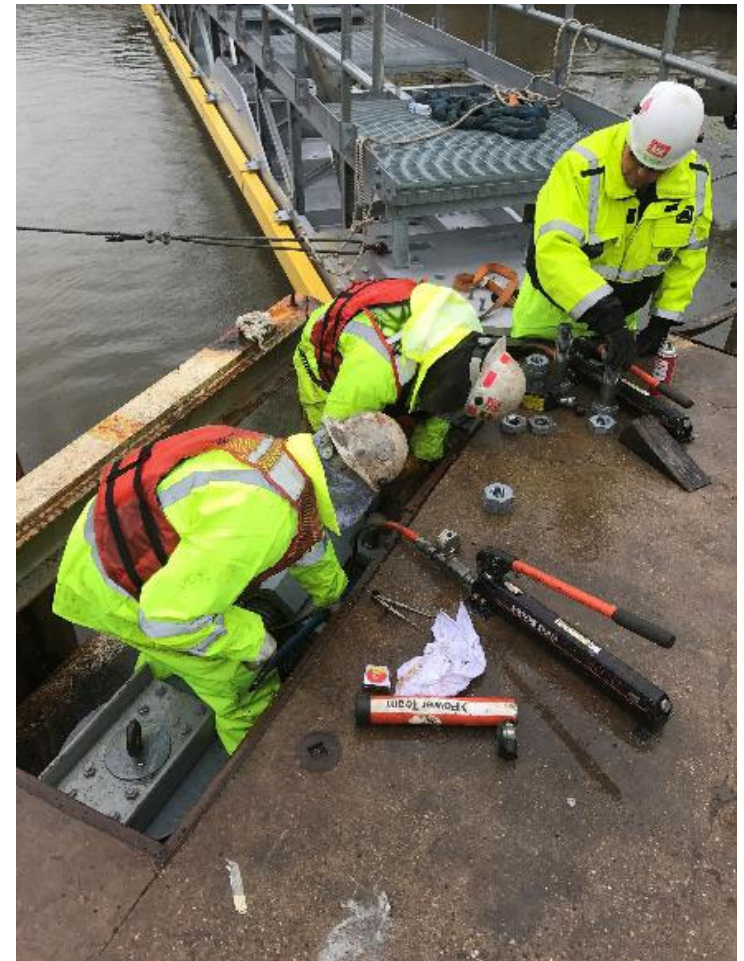
Service Base

- All Waterway Management & Administrative Offices
- Machine Shop
- Blasting & Painting Facilities



2020 CONSOLIDATED CLOSURE

- A large undertaking that will close 5 of 8 Locks on the IWW
- Includes one major rehabilitation, 3 closed for major maintenance, and 1 for 2023 preparations
- Closure times for each site will vary in duration depending on scope
- Navigation industry prefers a large consolidated closure over multiple single site closures
- Fabrication contracts already in progress. Miter Gate fabrication is 2.5 years from award to delivery
- Onsite work to take place during a summer closure/restriction period
 - Mostly July through October to avoid historical spring flooding seasons and fall harvest seasons
- Prep work started in 2017





PREP WORK COMPLETE

5



LaGrange Lock Dewatering Bulkhead Slots (2017)



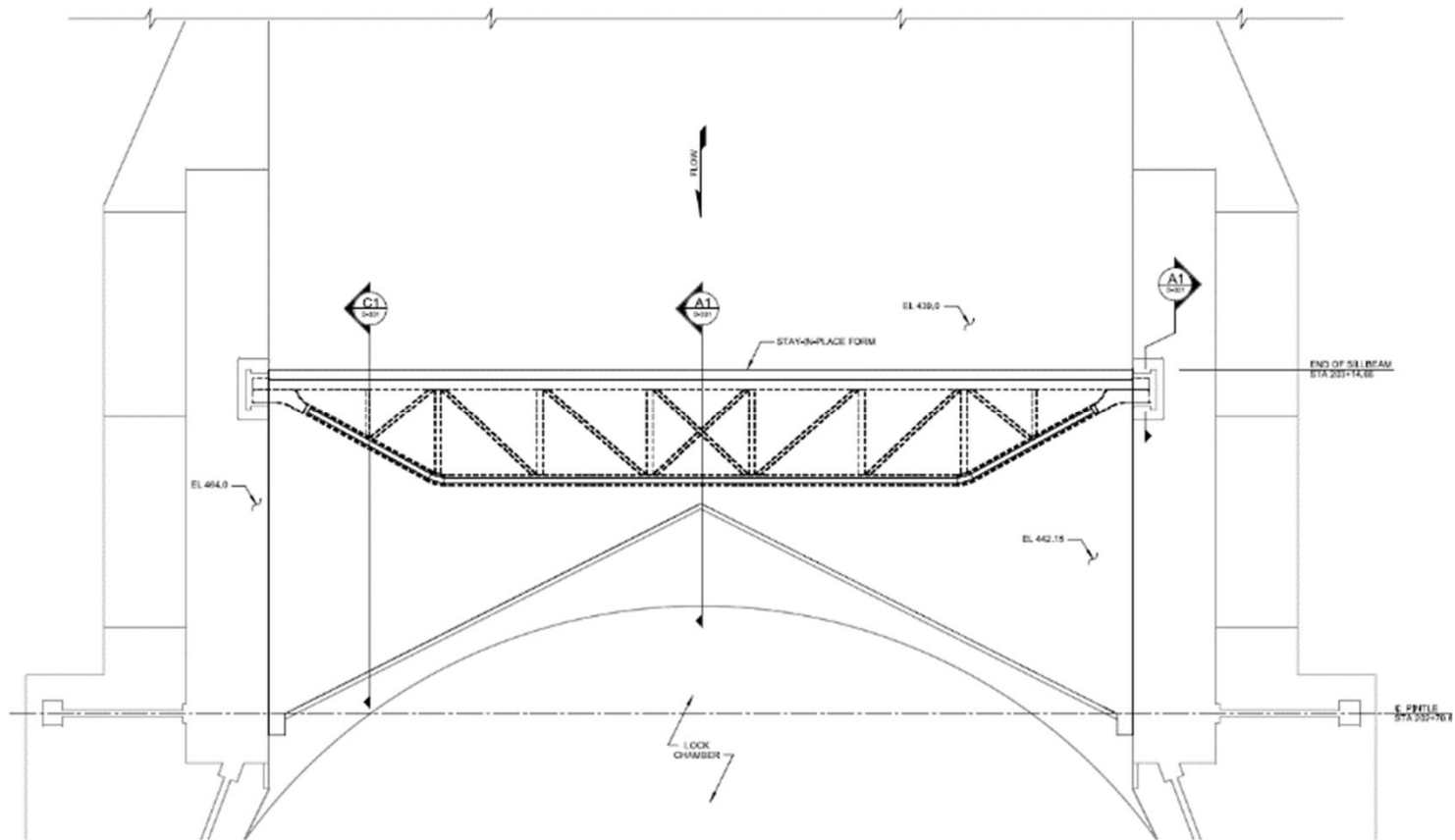


PREP WORK IN 2019

6



Bulkhead Slots Starved Rock & Marseilles





PREP WORK COMPLETE

7





PREP WORK COMPLETE

8





PREP WORK COMPLETE IN 2018

LaGrange Lock & Peoria Lock Miter Gates





PREP WORK COMPLETE IN 2018

10



LaGrange Lock & Peoria Lock Miter Gates





PREP WORK COMPLETE IN 2019

11



Bulkhead Slots Starved Rock & Marseilles

- Lock will remain open allowing traffic to pass but with width restrictions
- Removal of current Emergency Gates
- Install temporary cofferdam
- Install kicker beam & pre-cast panels
- Fill behind panels
- Repeat process on opposite wall
- Install new bulkhead sill in the wet utilizing a stay in place form (15 day full closure)



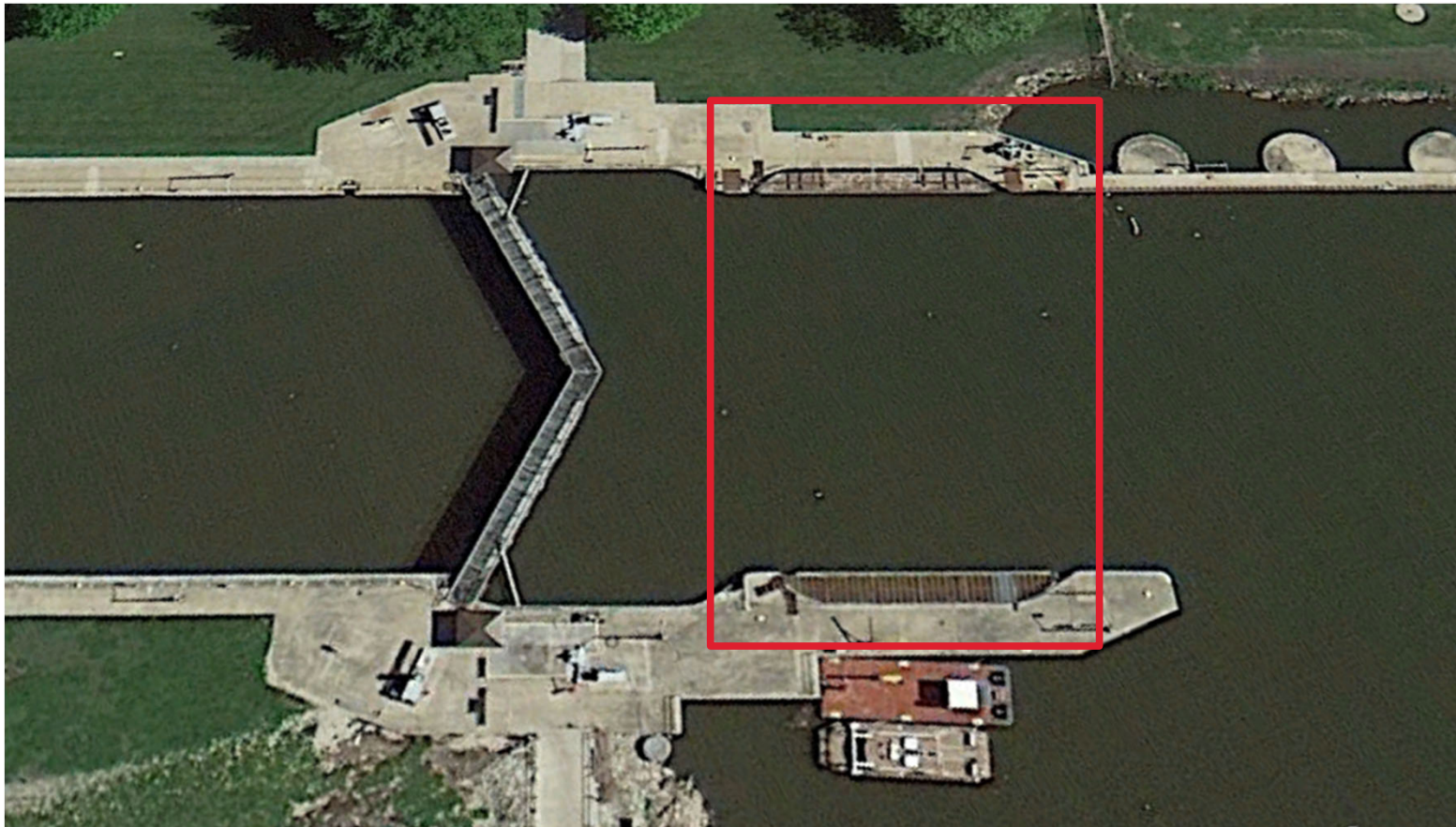


PREP WORK COMPLETE IN 2019

12



Bulkhead Slots Starved Rock & Marseilles





2020 MARSEILLES

- Dewatering/Inspection
- New Upper Miter Gates
- New Gate Anchorages
- Miter Sill Modifications
 - Horizontally Framed to Vertically Framed Gates
- Bubbler Pipe Replacement
- Vertical Concrete Repairs
- New Controls





2020 STARVED ROCK

14



- Dewatering/Inspection
- New Upper & Lower Miter Gates
- New Gate Anchorages
- Miter Sill Modifications
 - Horizontally Framed to Vertically Framed Gates
- Bubbler Pipe Replacement
- Major Electrical System Replacement
- New Controls
- Controls/Electric raised out of historic flood elevations.



2020 PEORIA

15



- Shortest Duration/SOW
- Dewatering/Inspection
- New Anchorages
- Bubbler Pipe Replacement/Installation
- Misc. Wall & Armor Repairs
- Misc. Mechanical Repairs (corrosion)





2020 LAGRANGE MAJOR REHAB

16



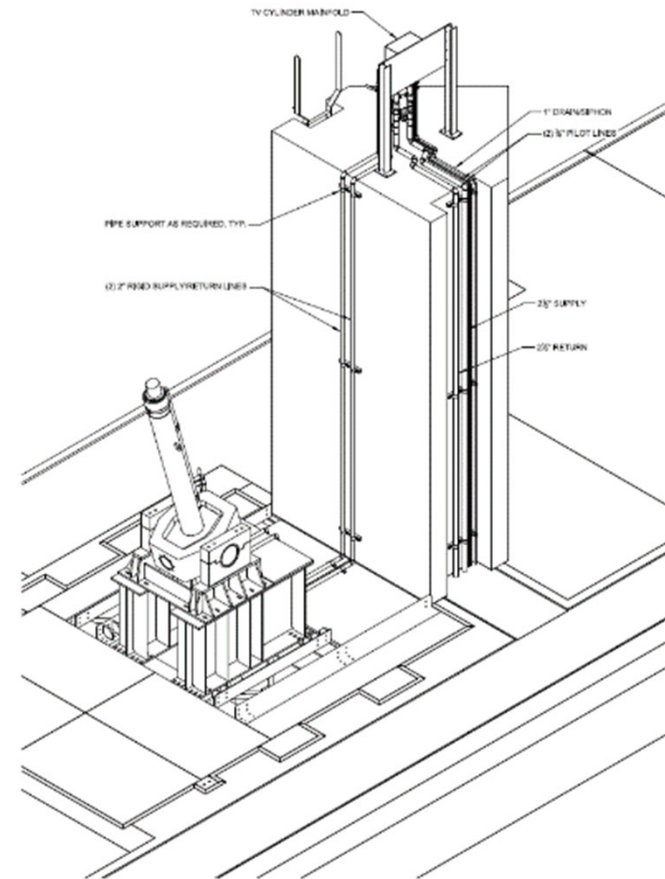
- Construction Started in 2019.
- Precast Concrete Panels
- Integrated Wall Armor
- Utility Trench Replacement
- Protective Concrete Piers
- New Hydraulic Power Units
- Miter Gate Rotary Actuators
- Tainter Valve Submersible Cylinders
- Bubbler System Replacement
- Programmable Logic Controller (PLC)
- Fiber Optic Data System
- New Generators





2020 LAGRANGE MAJOR REHAB

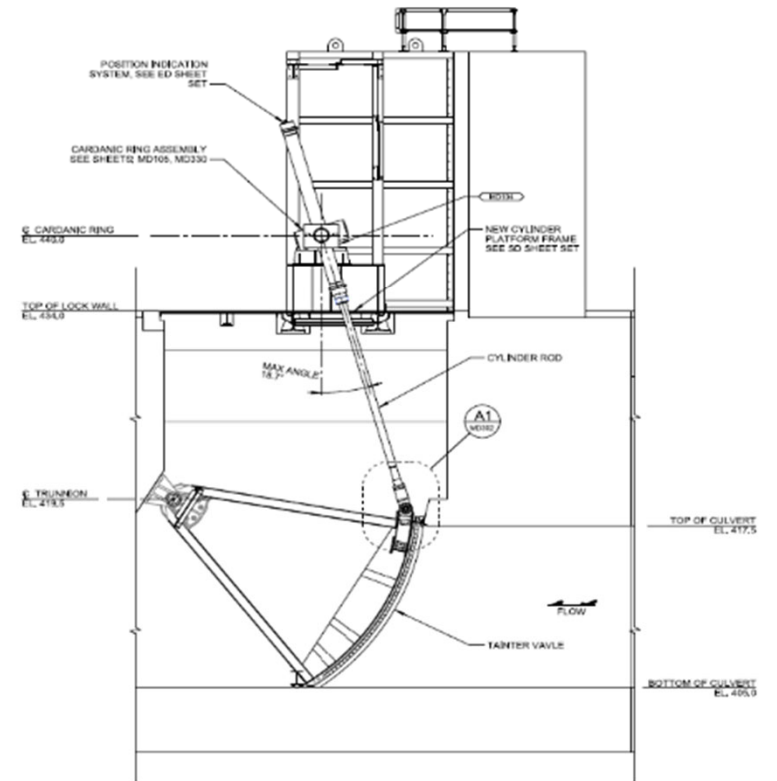
17





2020 LAGRANGE MAJOR REHAB

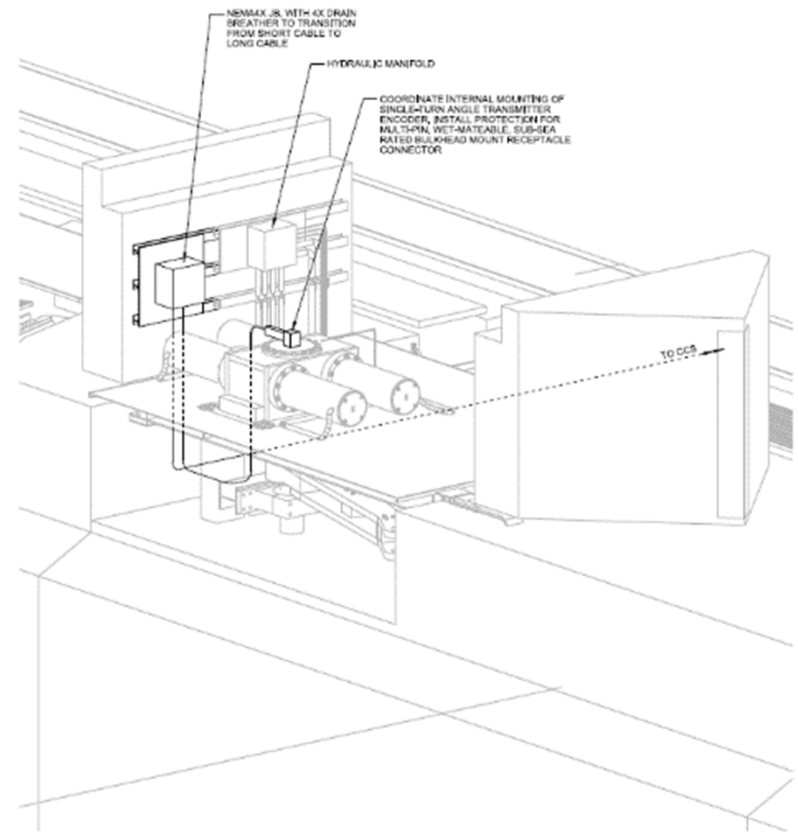
18





2020 LAGRANGE MAJOR REHAB

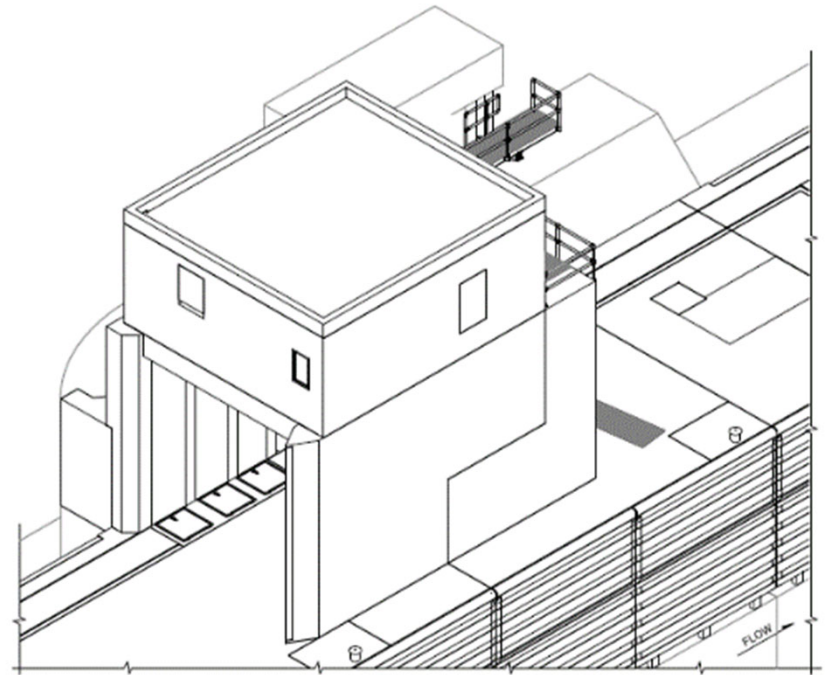
19





2020 LAGRANGE MAJOR REHAB

20





2020 LAGRANGE MAJOR REHAB

21





2020 LAGRANGE MAJOR REHAB

22





LAGRANGE FLOODING/DEBRIS

23





LAGRANGE FLOODING/DEBRIS

24





IWW CONSOLIDATED CLOSURES

25



- Current information and future updates can be found at the website
- <https://www.mvr.usace.army.mil/Missions/Navigation/Navigation-Status/>
- Questions?

GLMIRS – BRANDON ROAD UPDATE

Gerald “Jerry” Snyder
Assistant Lockmaster
Brandon Road Lock & Dam
Rock Island District
Date: 20 February 2020



US Army Corps
of Engineers®



GLMRIS-BR *Authority and Study Objective*

27



■ GLMRIS Authority

(d) *FEASIBILITY STUDY.*-The Secretary, in consultation with appropriate Federal, State, local, and nongovernmental entities, shall conduct, at Federal expense, a feasibility study of the range of options and technologies available to prevent the spread of aquatic nuisance species between the Great Lakes and Mississippi River Basins through the Chicago Sanitary and Ship Canal and other aquatic pathways.

GLMRIS-BR Study Objective: Prevent the upstream transfer of aquatic nuisance species from the Mississippi River Basin to the Great Lakes Basin through the Chicago Area Waterways in the vicinity of the Brandon Road Lock and Dam through the planning horizon

Prevent means the reduction of risk to the maximum extent possible, because it may not be technologically feasible to achieve an absolute solution

"Defining "prevent" to mean reducing the risk to the maximum extent possible is entirely reasonable." *Michigan v. U.S. Army Corps of Engineers*, 911 F. Supp. 2d 739, 766 (N.D. Ill. 2012), *aff'd*, 758 F.3d 892 (7th Cir. 2014).



BRANDON ROAD STUDY

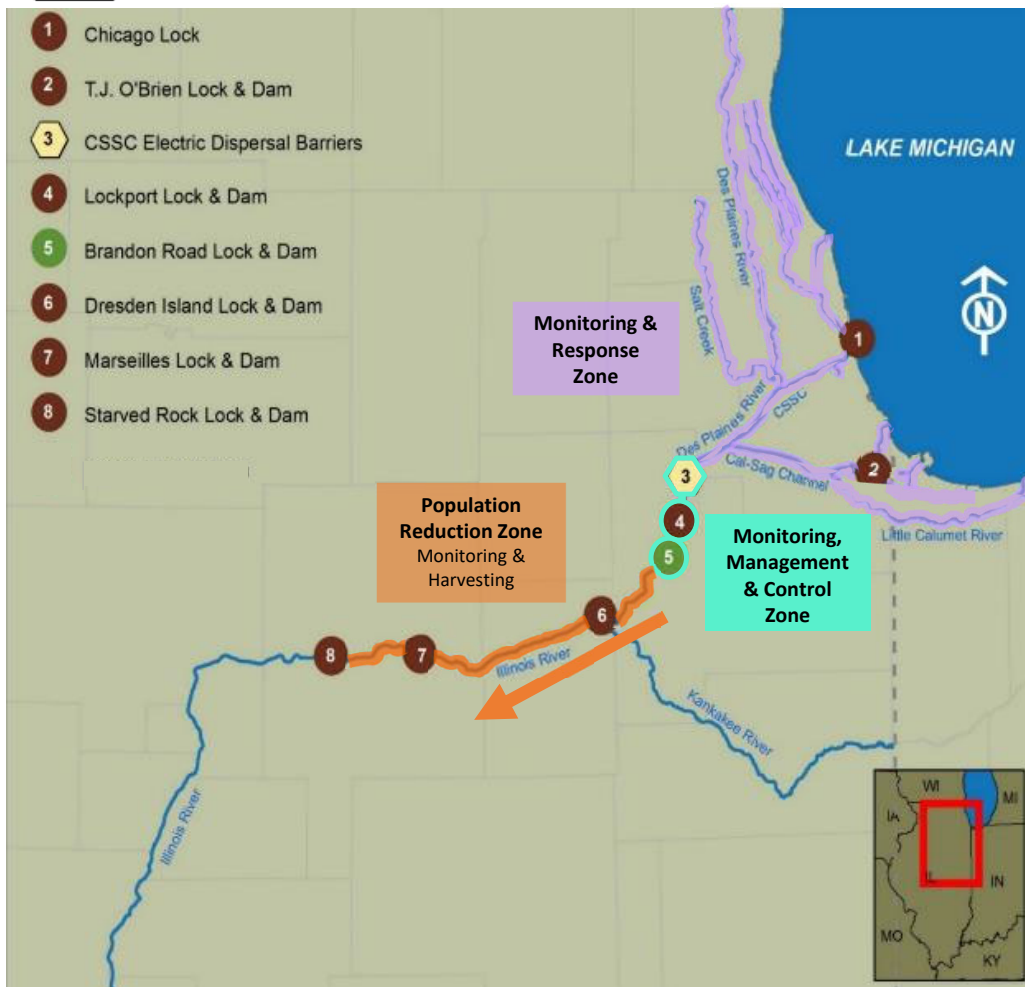


- The Chiefs Report recommending a National Ecosystem Restoration (NER) Plan, “federal plan” was signed on 23 May 2019 and sent to Congress.
- The NER Plan is a federal risk management plan that includes a layered system of structural controls and nonstructural measures.
- Nonstructural measures can begin upon appropriation.
- The Recommended Structural Plan is the Technology Alternative Acoustic Fish Deterrent with Electric Barrier, which includes the following measures: acoustic fish deterrent, bubble curtain, an engineered channel, an electric barrier, a flushing lock, and boat launches.
- Total Estimated cost is \$830,784,000 cost shared 65/35 with the sponsor, the State of Illinois and can be broken into phases.
- OMRR&R is cost shared 80/20 Federal/Non-federal.
- The Corps is working with state of Illinois to execute a design agreement to initiate the PED phase.
- Illinois is coordinating with Great Lake states and provinces to align regional interest in implementing a project. PED could take two to four years to complete, subject to the availability of funds.
- Construction is expected to take 6 to 8 years to complete. Timeline for structural implementation will be further developed in the PED phase.



FEDERAL RISK MANAGEMENT PLAN

29

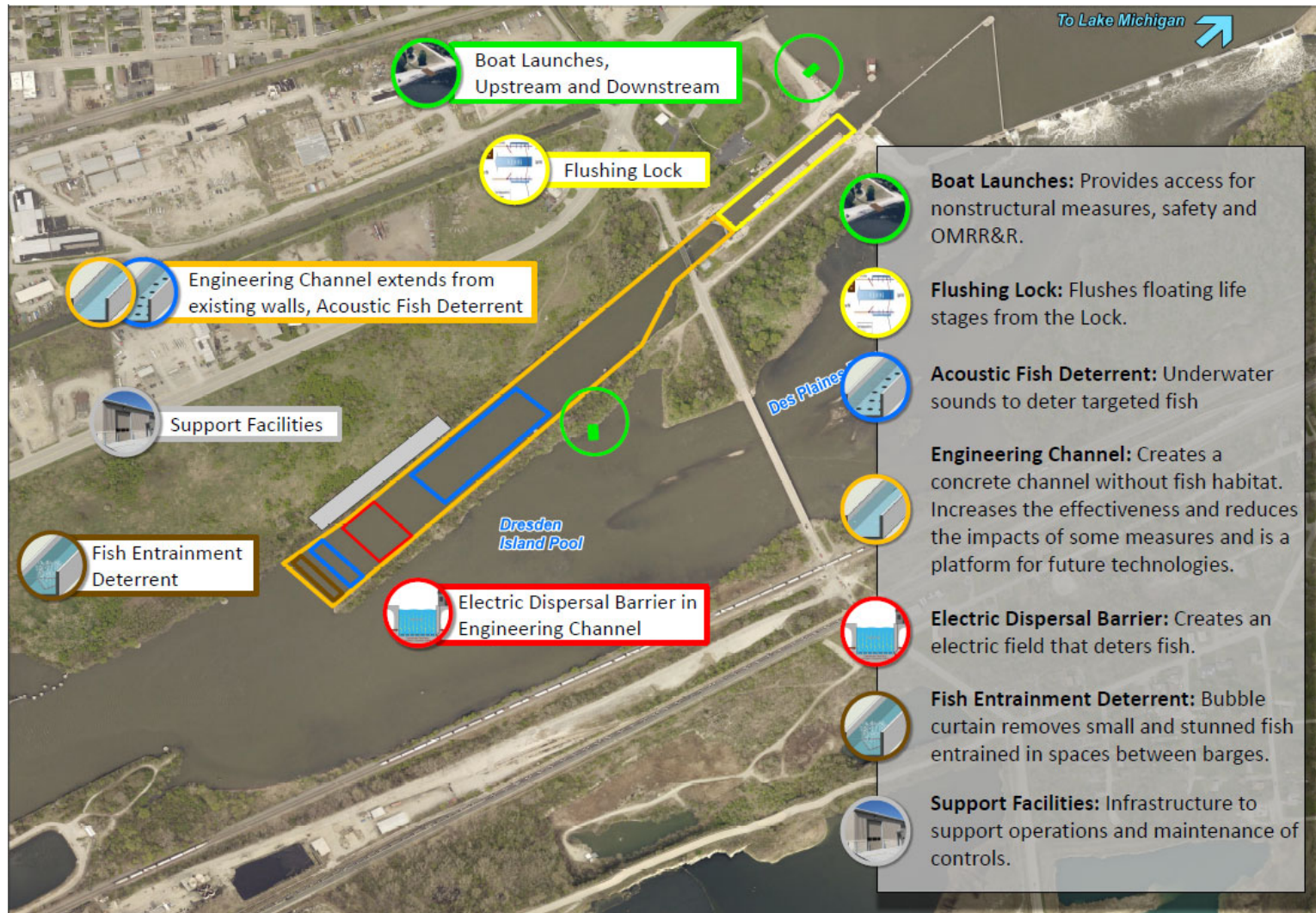


- The Recommended Plan is a federal risk management plan that includes a layered system of structural controls and nonstructural measures.
- Nonstructural measures are implemented primarily by other federal agencies including USFWS & USGS which can begin upon appropriation.
- Nonstructural measures include public education and outreach, monitoring, integrated pest management, pesticides, manual or mechanical removal, and research and development.
- The Corps structural plan includes a new control point at Brandon Road Lock and Dam in addition to the control point that is already provided by the electric dispersal barrier.



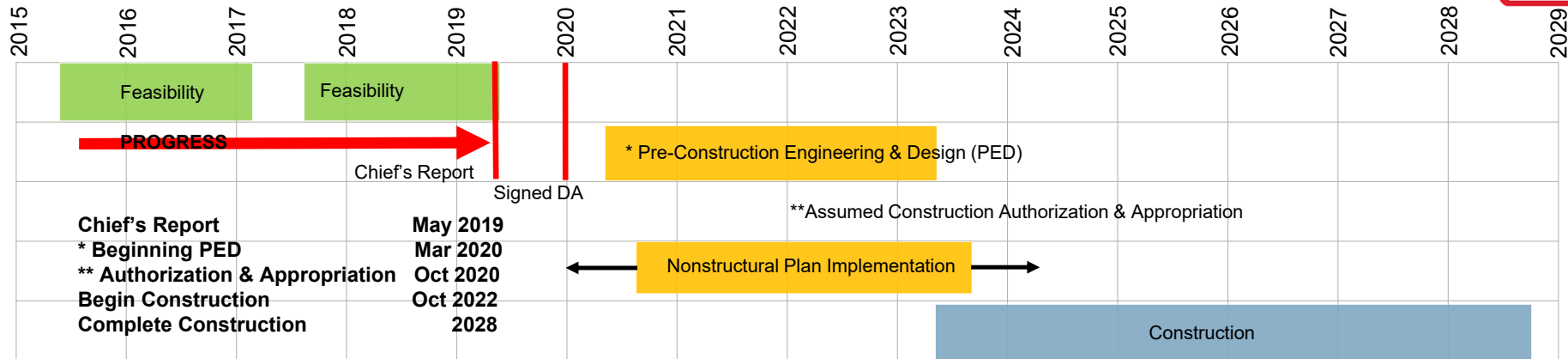
BRANDON ROAD STUDY RECOMMENDED STRUCTURAL PLAN

30





BRANDON ROAD PROJECT SCHEDULE



* PED is able to begin when Design Agreement is signed and funding is received

Key Schedule Drivers

- Signed design agreement with sponsor
- Non-federal sponsor/cost share agreements (DA/PPA)
- Availability of PED funds in FY 20
- Complex innovative designs increase PED duration
- Construction authorization & appropriation
- Real Estate Acquisition/HTRW
- Maintaining navigation during construction extends duration



BRANDON ROAD PRECONSTRUCTION ENGINEERING & DESIGN POTENTIAL RISK REDUCTION INCREMENT I ACTIVITIES

32



Data Gathering & Research	Engineering & Design
*Phase II HTRW Investigation	Engineered Channel Design
*Geotechnical Exploration	Air Bubble Curtain Design
*Topographical, Boundary, Utility Surveys	Acoustic Deterrent Design
Waterway Numeric Model for Flood Flows & Navigation Conditions	Control Building Design
Initiate Physical Modeling of the Flushing Lock	Upstream Boat Ramp Design
Physical Modeling of the Channel	Initiate Flushing Lock Design
Acoustic Deterrent Research	Initiate Electric Barrier Design
Bubble Curtain Research	Engineering Charrette
ANS Control Research/Testing & ANS Control Interaction Studies	Value Engineering
Concept Studies, Engineered Channel Wall, Channel Floor	Permit Coordination
Shallow Electric Barrier Research, (Stray Current Numeric Model for Insulation Termination & Channel Length Shortening)	Engineering Specifications & Drawings Risk Reduction Increment I
	30% PED & Drawings for Risk Reduction Increments II & III

*signed design agreement with non-federal sponsor is a prerequisite prior to PED initiation.



RISK REDUCTION INCREMENT I

33



Risk Reduction Increment I

- Prep NRG Site
- Channel Rock Excavation
- Air Bubble Curtain
- Narrow Acoustic Deterrent Array
- Control Building
- Upstream Boat Launch

Cost \$205,700,000

Design & Const. Duration 4-5 yr.

Timeline for structural implementation will be further developed in the PED phase.

Initial Risk Reduction – Nonstructural Measures begin upon appropriation of funding

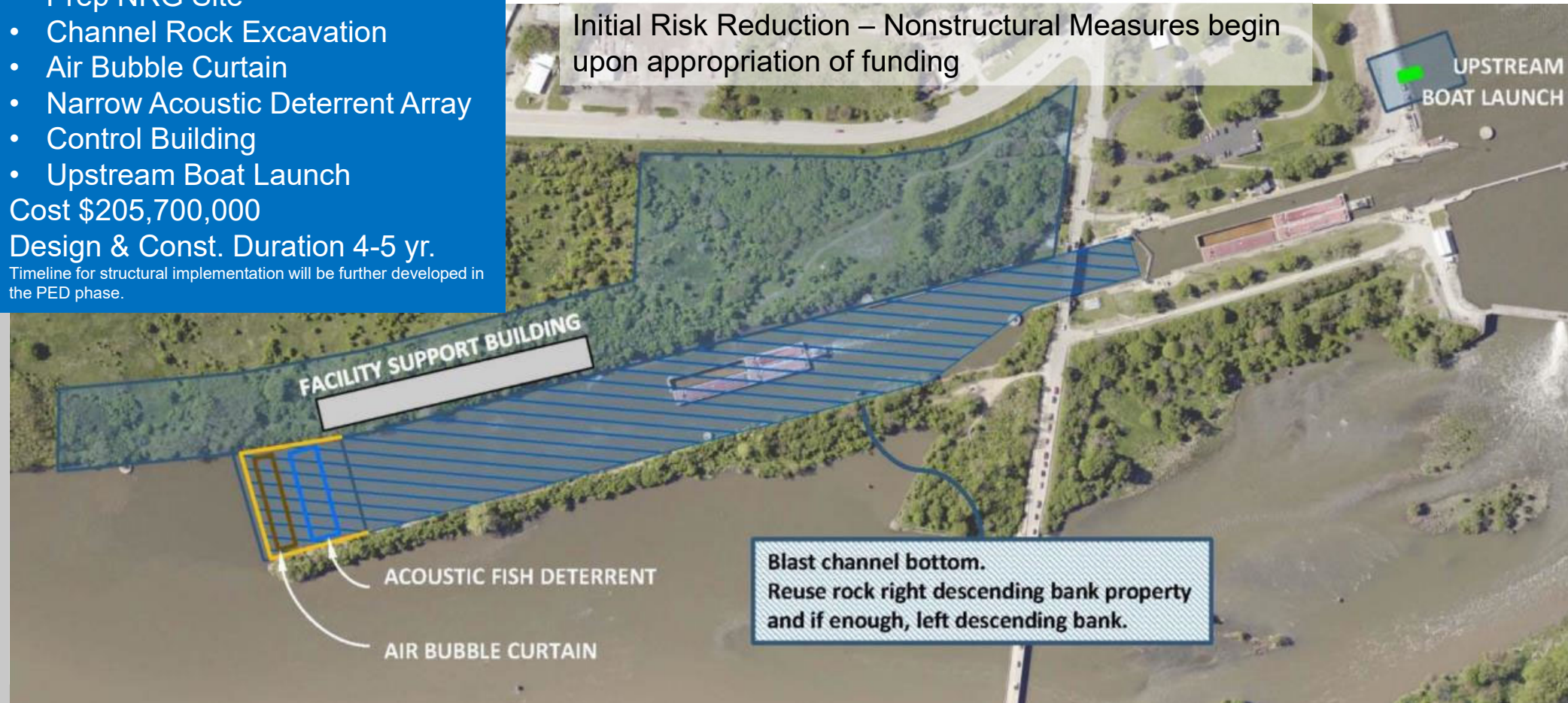
UPSTREAM
BOAT LAUNCH

FACILITY SUPPORT BUILDING

ACOUSTIC FISH DETERRENT

AIR BUBBLE CURTAIN

Blast channel bottom.
Reuse rock right descending bank property
and if enough, left descending bank.





RISK REDUCTION INCREMENT II

34



Risk Reduction Increment II

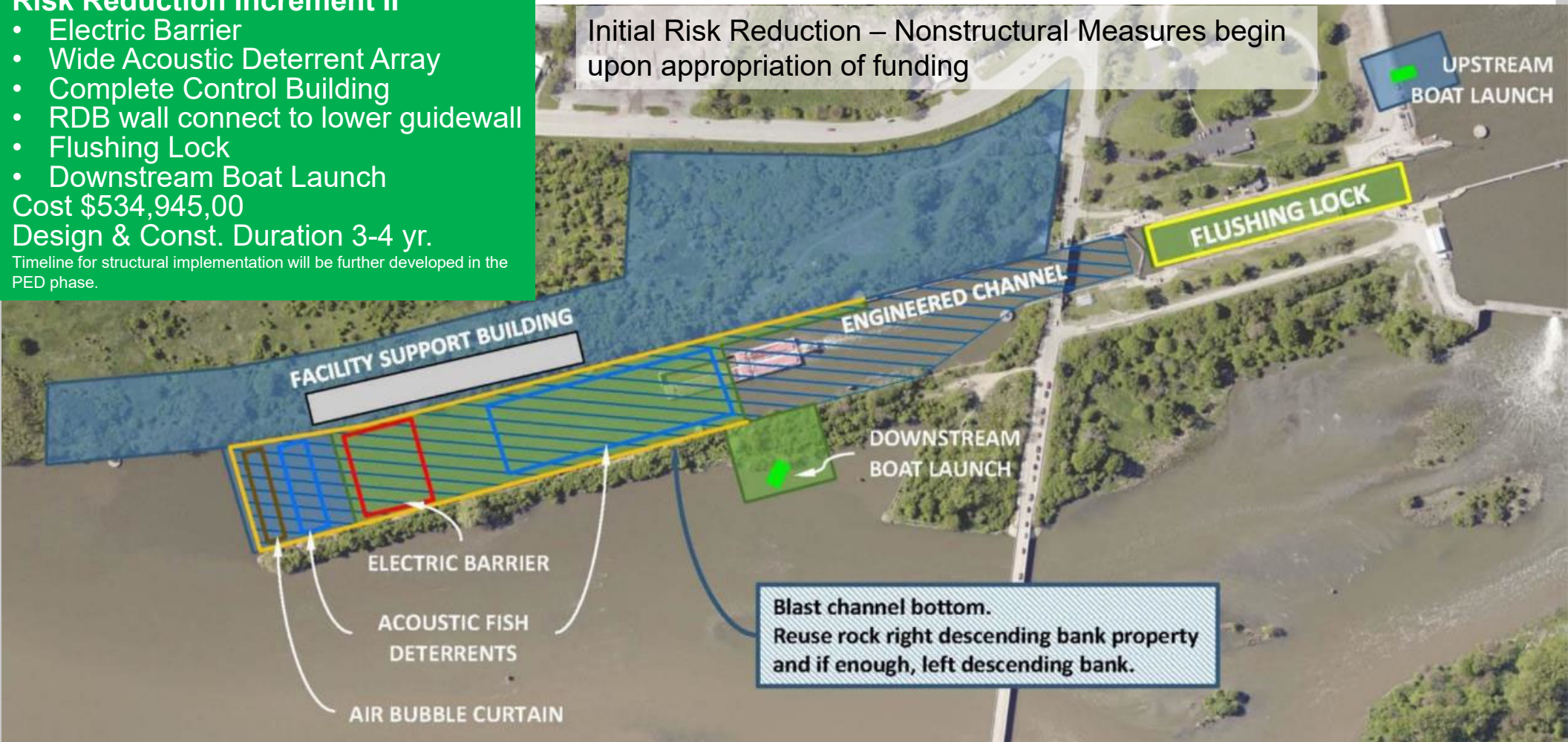
- Electric Barrier
- Wide Acoustic Deterrent Array
- Complete Control Building
- RDB wall connect to lower guidewall
- Flushing Lock
- Downstream Boat Launch

Cost \$534,945,00

Design & Const. Duration 3-4 yr.

Timeline for structural implementation will be further developed in the PED phase.

Initial Risk Reduction – Nonstructural Measures begin upon appropriation of funding





RISK REDUCTION INCREMENT III

35



Risk Reduction Increment III

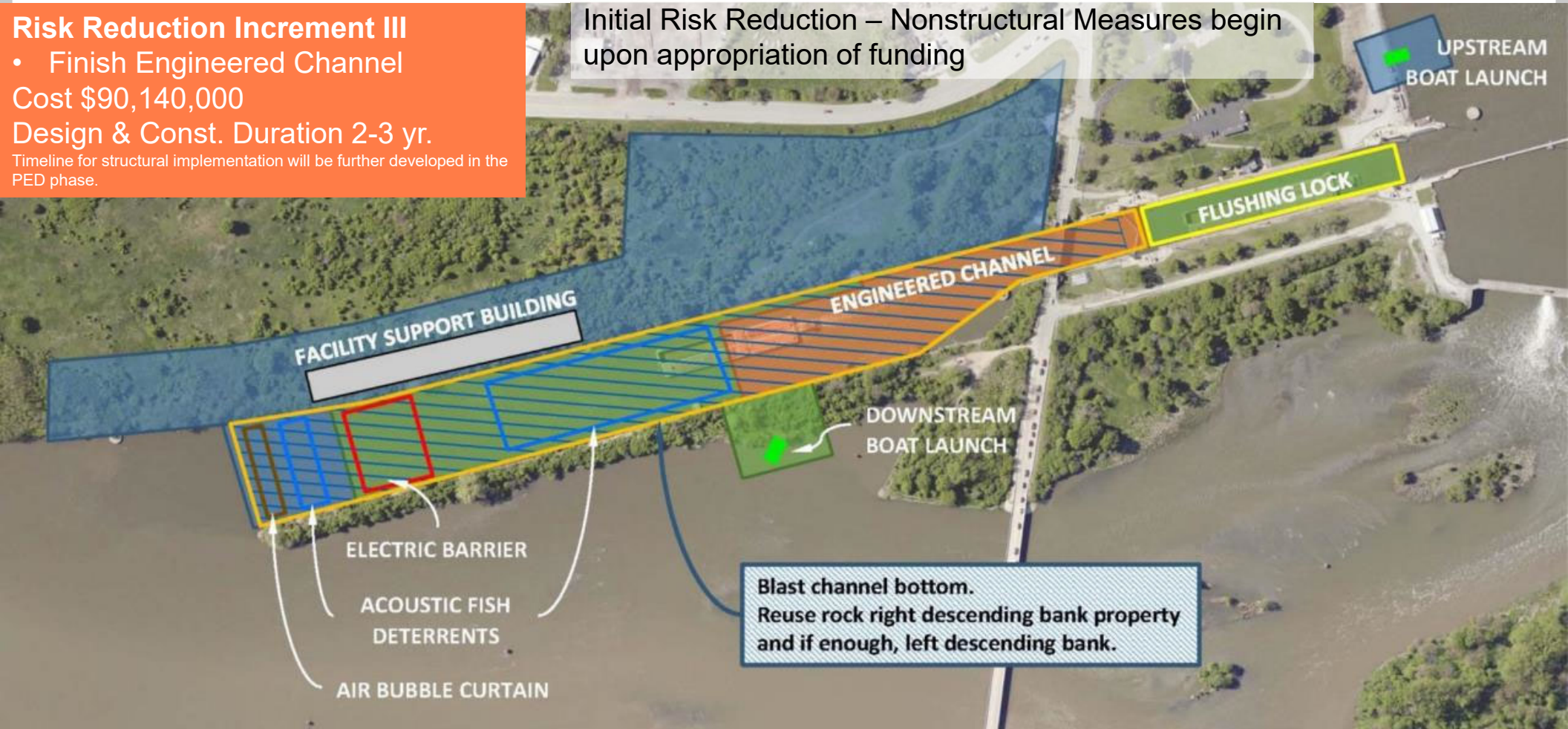
- Finish Engineered Channel

Cost \$90,140,000

Design & Const. Duration 2-3 yr.

Timeline for structural implementation will be further developed in the PED phase.

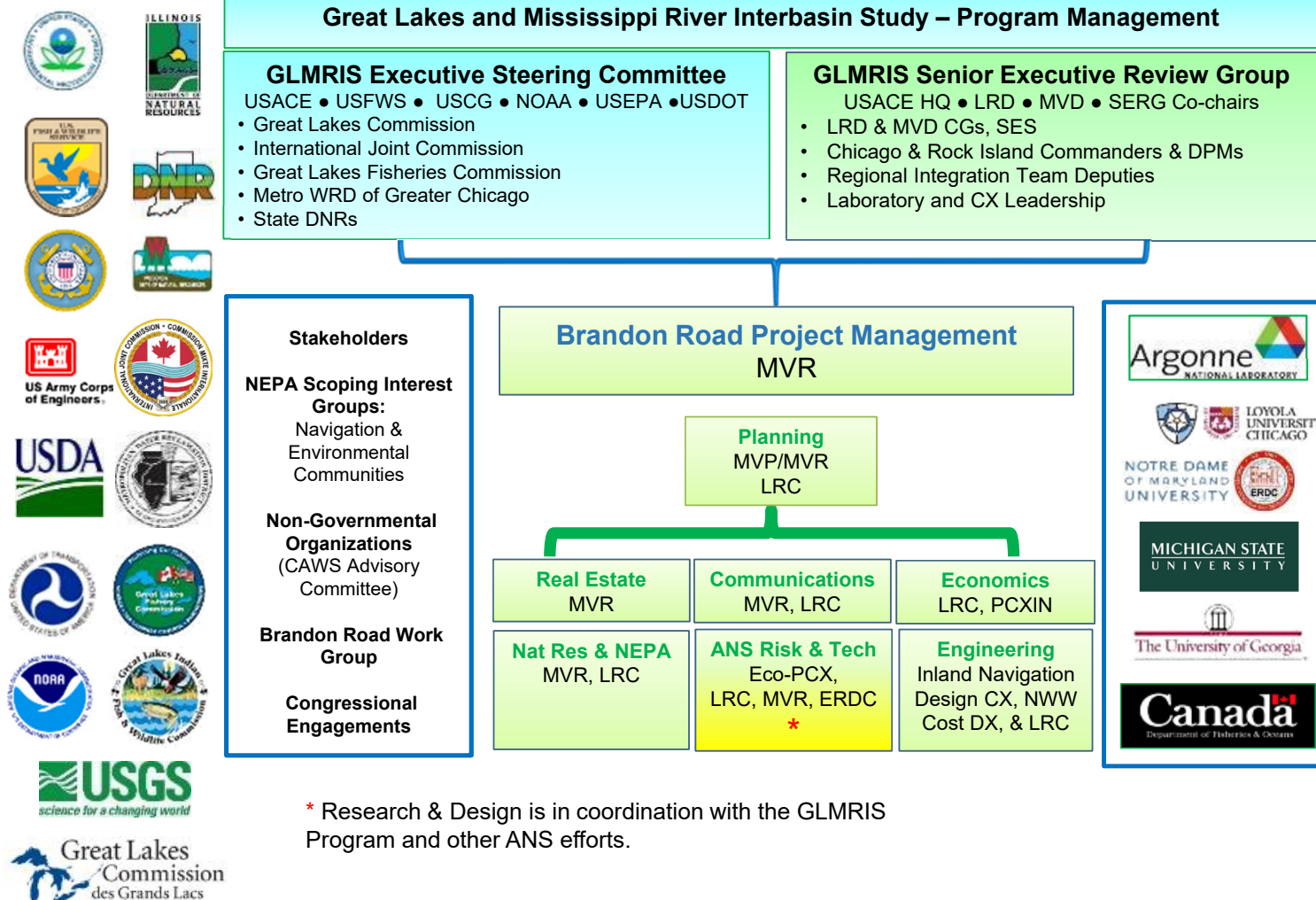
Initial Risk Reduction – Nonstructural Measures begin upon appropriation of funding





LEVERAGED EXPERTISE & SHARED RESPONSIBILITY

36



* Research & Design is in coordination with the GLMRIS Program and other ANS efforts.



NEXT STEPS



- Execute design agreement with non-federal sponsor
- Begin real estate and geotechnical site work upon receipt of PED funds (fed and non-fed)
- Implement non-structural measures upon receipt of appropriations
- Continue collaboration forums during PED phase



QUESTIONS?

