

A.

U.S. Army Corps of Engineers – Delaware Lake

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B.

Delaware Lake Fish Habitat Structure Installation and Monitoring

Delaware Lake – Temperate Plains Region

40° 22' 06.65" N

83° 03' 36.41" W

Ohio District 12

Project Objectives: To increase the amount of available habitat for various fish species in Delaware Lake by increasing the amount of structure at various points throughout the lake.

Estimated Start/End Dates: June 6, 2016 – March 6, 2017 (start and end date variable due to funding, weather, lake level)

Amount of Grant: \$10,000

Total Project Cost: \$ 30,960

Partners Include:

Ohio Department of Natural Resources – Delaware State Park

Ohio Department of Natural Resources – Ohio Division of Wildlife

Olentangy Watershed Alliance - NGO

C.

Project Overview – Delaware Lake is a flood control reservoir built on the Olentangy River, north of Delaware, Ohio. The lake is approximately 1,300 acres in size and 6 miles long from the mouth of the river to the dam structure. The lake was built by the U.S. Army Corps of Engineers in response to massive flooding and completed in 1951. Majority of the property surrounding the lake is owned by the Army Corps of Engineers but leased and managed by the Ohio Department of Natural Resources (Ohio State Parks and Ohio Division of Wildlife are 2 agencies under the direction of the ODNR that both have separate leases for different purposes on Delaware Lake) for recreation and wildlife management.

Delaware Lake reservoir is home to numerous fish species including large and small mouth bass, black and white crappie, channel catfish, as well as several sunfish species, white bass, and numerous game fish. The lake hosts several pairs of nesting osprey, provides important migratory bird habitat for ducks as well as shore birds, and is the seasonal hunting grounds for blue and green herons.

During the construction of the lake, the Army Corps of Engineers removed all structure from the lake bed area including all trees, buildings, roadways, allowing for the maximum amount of flood storage capacity. One result of this action is that fry (newly hatched fish) have very limited protection from predator species and therefore low survival rates. This issue is the leading impairment to reservoirs identified in the for the Temperate Plains region by the Reservoir Fisheries Habitat Partnership.

This project being proposed is for the construction and installation of fish structure, throughout Delaware Lake in accordance with recommendations from the Ohio Division of Wildlife fish biologists. This project will target black and white crappie as well as largemouth bass, although numerous other species will benefit as well. Although this is the basic proposal, this project will involve much more than placing fish structure in Delaware Lake. Long before any cribs are constructed, the partnering agencies will be advertising this project, the importance of fish habitat, the increase in fishing opportunities this project will create, and ways to get involved through the use of social media, flyers and banners, and public meetings. After that, supplies will be acquired through the partnering agencies and construction/placement days will be decided upon based on volunteer availability. After the cribs have been placed, this project will continue through survey and monitoring efforts aimed at determining if the cribs are being used, if fisherman success rates have increased, both at the crib locations and on the lake in general.

The design that will be used for building the cribs will be based off of the Pennsylvania Game Commission porcupine crib structure (see supporting materials section, attachment A). This design has been used in various other reservoirs across Ohio and Pennsylvania and has proven successful.

Placement of the cribs will be decided by fish biologists with the Ohio Division of Wildlife based off of lake topography, boater safety, and experience from habitat placement in other reservoirs in Ohio. In general, placement will take place in water deeper than 10 feet, which can be found mainly in the southern half of the lake (see supporting materials section, attachments B and C). Crib installation will happen through the use of pontoon boats and man power, mainly loading cribs on the boat, weighting them down, and pushing them into the lake once in place.

The outcome of this project is to provide more structural habitat in Delaware Lake, which will in turn increase the amount of fish that survive past their first year. Besides improved habitat for fry, the cribs will provide increased habitat for aquatic insects, which are a food source for many of the species in Delaware Lake. Benefits from this project include improved fish species reproduction rates, improved fishing opportunities for anglers, and improved ecological health for the Delaware Lake, and the Olentangy River ecosystem.

Monitoring Plan - The goal of this project and grant is to increase the amount and availability of fish habitat through the installation of porcupine crib fish structure. Currently, much of the fish habitat structure consists of fallen trees, marina mooring posts and docks, and riprap placed along the shoreline, with little to no structure in the middle of the lake. This project would broaden the available rearing areas for fry to grow and spread out the concentration of fry in the lake, making them less susceptible to predation.

Monitoring parameters will include the rate of catch, measure of recreational use, and amount of fish located in lake vicinity before and after habitat installation. The monitoring methods for these parameters will consist of creel surveys at boat ramps, monitoring of fishing activity at installation sites, and underwater video monitoring of structures to determine use by various fish species. This data collection and monitoring will occur during the open water season, generally March – November, but incidental surveys may happen during the winter months if weather conditions allow. Surveys will continue for 36 months after project completion to provide a wide range of data to prove the success (or failure) of the crib structures. The Ohio Division of Wildlife already conducts creel surveys as part of their management plan for Delaware Lake, so part of the data collection process will include sharing data collected by our partners.

Outreach Plan – Outreach for this project, before, during, and after, will be a multi-faceted endeavor by the staff of the U.S Army Corps of Engineers at Delaware Lake, Delaware State Park Ohio Division of Wildlife, and the Olentangy Watershed Alliance. The first facet includes the use of social media to inform the public about the project, how to get involved, specific dates, and other project information throughout the project and beyond. The second facet includes creating and distributing flyers advertising the project and specific date/time/location for volunteers to get involved to private businesses and throughout public areas including community bulletin boards, park brochure holders, and park/campground offices. The third facet will involve making targeted presentations to special interest groups such as the boy scouts, fish and game clubs, and volunteer groups to raise awareness and bring support to the project. The fourth, and final facet will include issuing press releases to the local newspapers concerning project details, progress, and specific volunteer dates.

Provisions to protect the restoration project site after project completion – Due to the nature of the project, little protection or continued maintenance will be need at the installation sites after the initial work is completed.

List of Required Permits – Delaware Lake is covered by Nationwide Permit 4, issued for the Ohio region, according to Teresa Spagna, Biologist, Regulatory Branch, Huntington District, Army Corps of Engineers. With this in mind, the activity of placing fish cribs in Delaware Lake is approved and covered, provided that no other conditions in the nationwide permit are violated through this process.

Also, Delaware Lake is included under the lease from the U.S. Army Corps of Engineers to the Ohio Department of Natural Resources. Coordination and written permission will be attained from ODNR before project commencement.

Projected Timeline – The project time line will be fluid and flexible based on weather and water conditions and the availability of all partners to participate in various phases.

Phase 1 – Planning, outreach, special interest group meetings

June-Sept, 2016

This Phase includes meeting with all partners to discuss placement location of cribs, outreach activities, work schedules, volunteer involvement, and safety concerns

Phase 2 – Gathering supplies and constructing cribs

Sept-Nov, 2016

This phase will take place over several months to allow for different times that volunteers can come participate in building cribs and learning more about the project itself

Phase 3 – Crib Placement

Dec-March, 2016-2017

This phase involves placing the cribs at the agreed upon locations in Delaware Lake. This phase will depend on weather, water levels, and availability of partners and volunteers. This time frame is ideal because it will allow for work on the lake while it is held at winter pool, 5 feet less than summer

pool. The lower pool level will provide a better baseline for water depth and what locations are safe (deep enough) for crib placement.

D.

Amount Requested - \$10,000.00

Amount of In-Kind Contributions - \$20,960.00

Budget Narrative –The grant money requested will be spent exclusively on supplies to build the fish cribs. Supplies would include lumber, nails, rope, and rock/concrete to help sink the cribs. Technical and advertising costs will be covered by the Corps of Engineers. All labor will be covered by each partnering agency or through the use of volunteers. Delaware State Park is supplying pontoon boats as part of their in-kind services to assist with placing the fish cribs.

Budget

Categories	Partner Contribution Amount	Cash or In-Kind	Timeline (anticipated date of expenditures)
Reservoir Fisheries Habitat Partnership			
Administrative/Technical Services			
Construction Costs/Materials	10,000		
Labor (paid)			
Labor (volunteer)			
Miscellaneous (outreach materials)			
Partner B (U.S.A.C.E Delaware)			
Administrative/Technical Services	2,000.00		Throughout
Construction Costs/Materials	3,000.00		Sept-Nov 2016
Labor (paid)		2,880 (24/hr x 120 hrs)	Throughout
Labor (volunteer)		1440 (18/hr x 80 hrs)	
Miscellaneous (outreach materials)	1,500.00		June, 2016
Partner C (Olentangy Watershed Alliance)			
Administrative/Technical		960 (24/hr x 40 hrs)	Throughout

Services			
Construction Costs/Materials			
Labor (paid)		2,880 (24/hr x 80 hrs)	Throughout
Labor (volunteer)		1,440 (18/hr x 80 hrs)	Throughout
Miscellaneous (outreach materials)			
Partner D (Delaware State Park)			
Administrative/Technical Services			
Construction Costs/Materials		1,500 (boat use)	Dec – March 2017
Labor (paid)		1,920 (24/hr x 80 hrs)	Throughout
Labor (volunteer)			
Miscellaneous (outreach materials)			
Partner E (ODNR Division of Wildlife)			
Administrative/Technical Services			
Construction Costs/Materials			
Labor (paid)		2,400 (24/hr x 100 hrs)	Throughout
Labor (volunteer)			
Miscellaneous (outreach materials)			
Total Direct Costs	16,500	14,460	

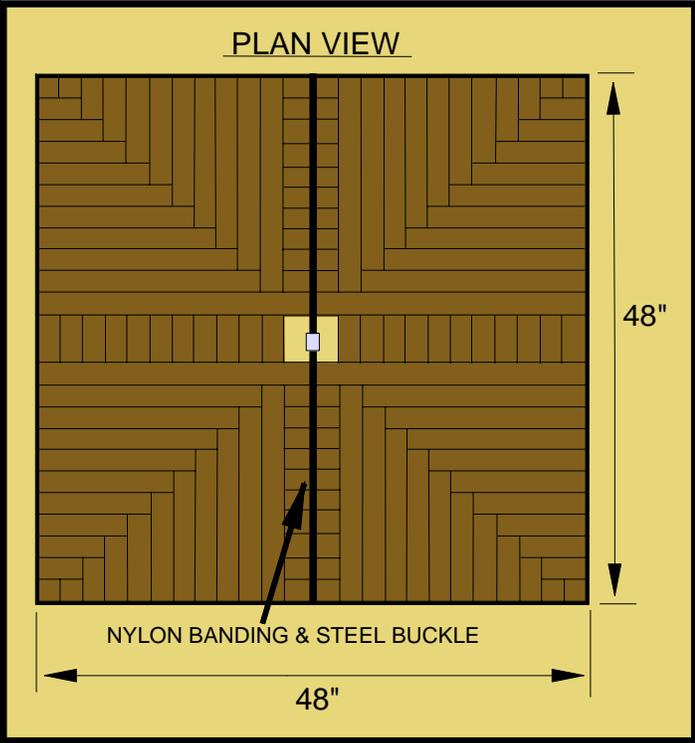
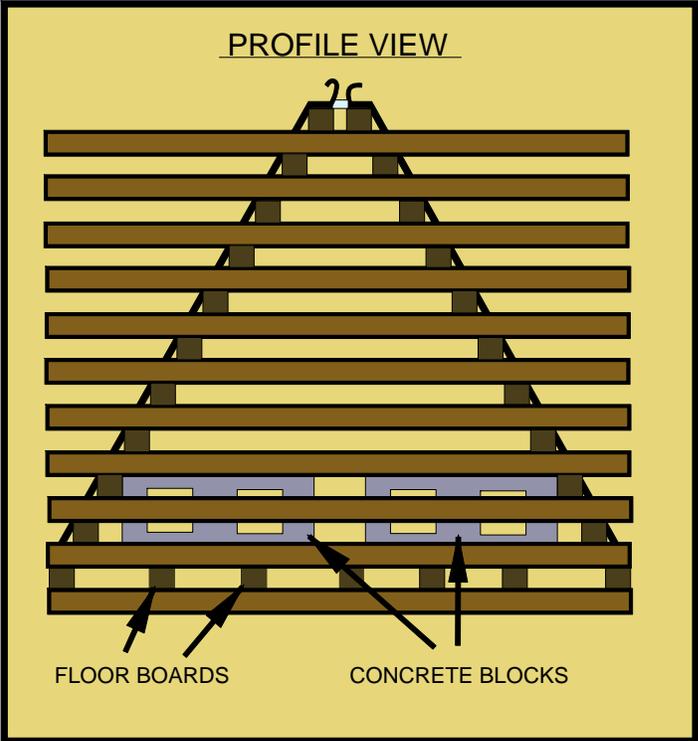
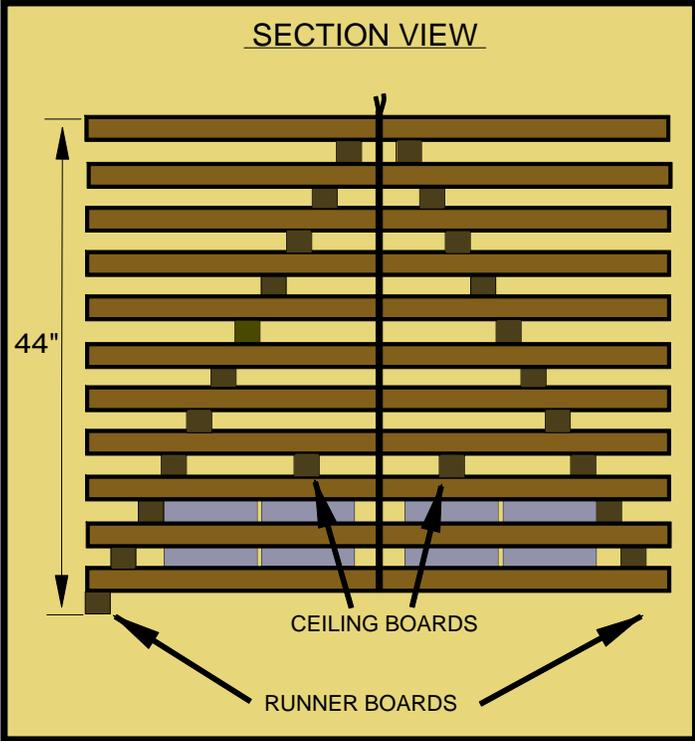
* Volunteer labor should be calculated at \$10/hr for age 16 and under; 18/hr other volunteers; agency staff labor rates @ \$24/hr

Optional Supporting Materials

- A. Pennsylvania Game Commission Porcupine Crib Structure Plans
- B. Ohio Division of Wildlife lake profile map
- C. Map of suggested crib placement sites (final locations will be dictated by Ohio Division of Wildlife fish biologists)

D. See attached letter of support from Ohio Division of Wildlife Fisheries Biologist Marty Lundquist

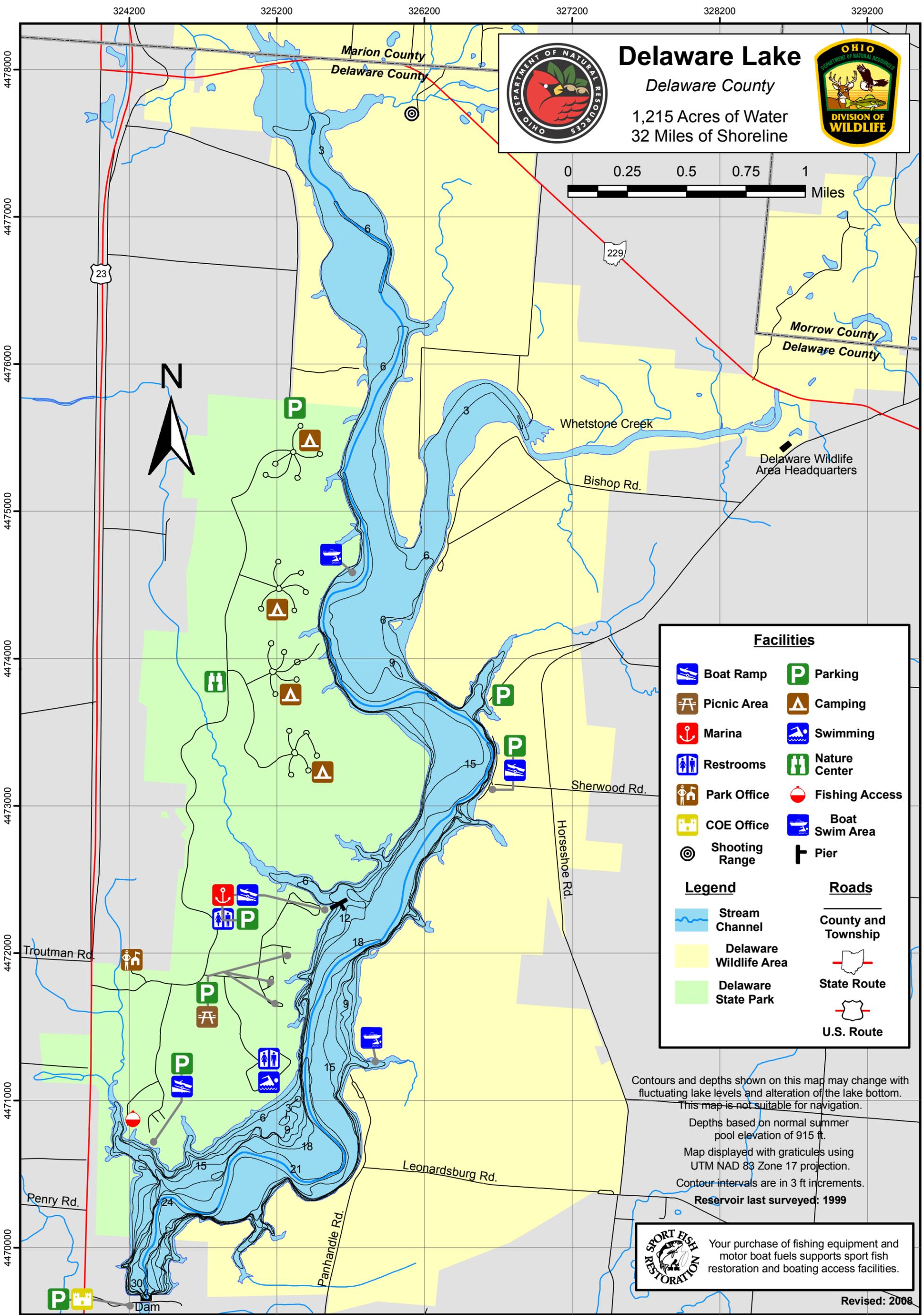
PENNSYLVANIA PORCUPINE CRIB STRUCTURE STANDARD DRAWING



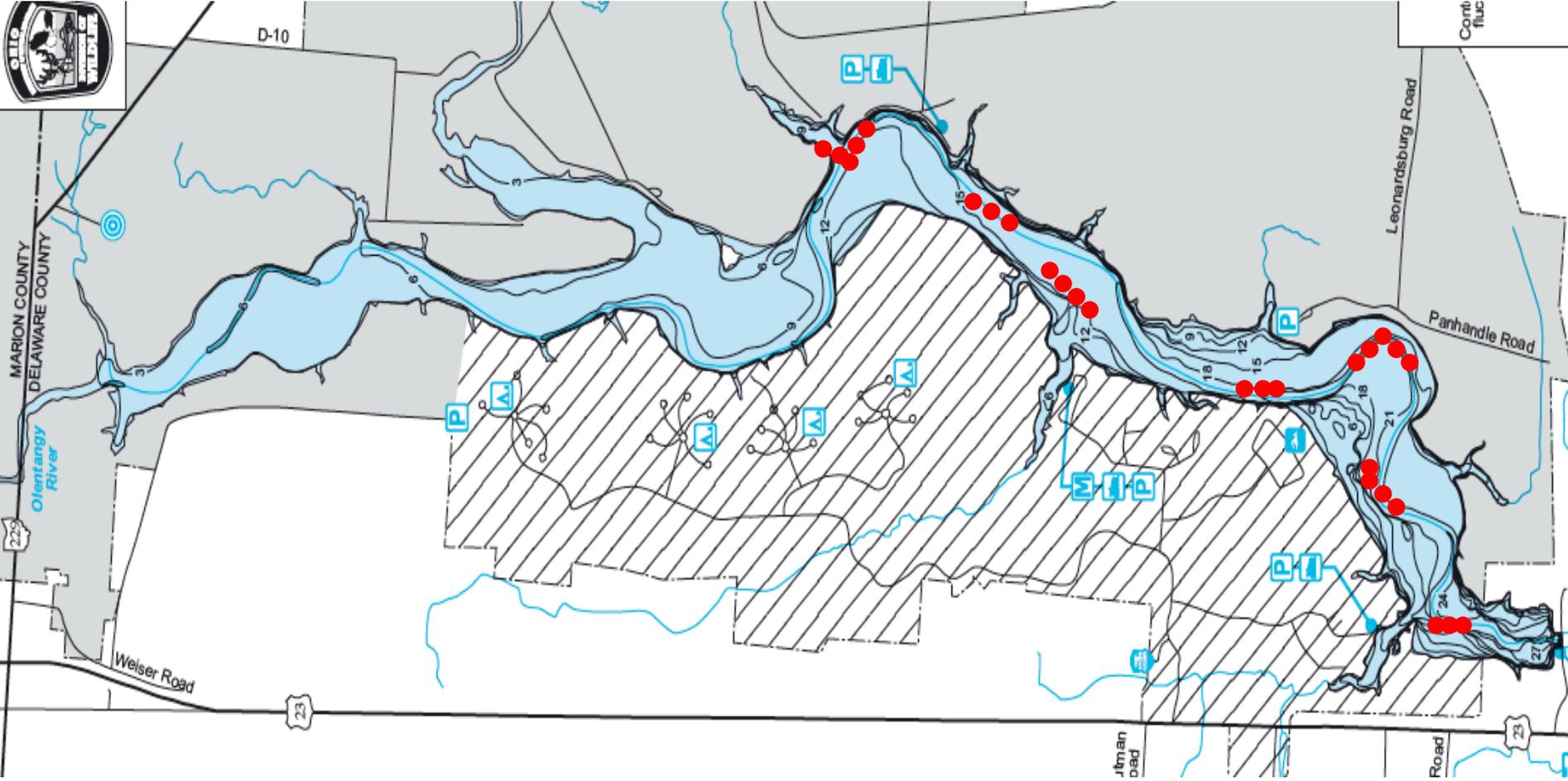
MATERIALS AND NOTES

MATERIALS:
 ROUGH CUT HEMLOCK LUMBER 2" x 2" x 4'- 50 PIECES
 8" x 8" x 16" 2 CORE CONCRETE BLOCKS- 8 TOTAL
 16D COMMON NAILS- 2 LBS. (OR 2 STRIPS OF 12D)
 1/2" NYLON BANDING- 18'
 1 STEEL BUCKLE

NOTES:
 LUMBER MUST BE TRUE DIMENSIONAL
 LUMBER MUST BE GREEN (FRESH CUT)
 YELLOW POPLAR MAY BE SUBSTITUTED FOR HEMLOCK
 CONCRETE BLOCKS MINIMUM WEIGHT: 35 LBS
 NYLON BANDING: 600 LBS TENSILE STRENGTH
 NOT TO SCALE
 ALL SIZES ARE APPROXIMATE
 FIT IN FIELD



Delaware Lake Fishing Map



MARION COUNTY
DELAWARE COUNTY

Olentangy
River

225

D-10

Weiser Road

23

Jimman
Road

Road

Leonardsburg Road

Panhandle Road

Cont
fluc

23



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

Division of Wildlife
District 1
1500 Dublin Road
Columbus, OH 43215
Phone: (614) 644-3925

September 2, 2015

SUBJECT: Adding Fish Habitat Structures to Delaware Lake

To Whom It May Concern,

Delaware Lake like many central Ohio lakes built for flood control has very little fish habitat or cover. When flood control reservoirs are built most of the habitat is removed to maximize the water storage capacity. In lakes and reservoirs with little habitat, manmade structures can provide cover for small fish to hide from predators, provides a surface for aquatic insects to use, providing an additional food source, and attracts large fish to congregate in known areas. Anglers fishing these known areas can improve their catch rates. Adding manmade structures have been used successfully in many lakes across the nation to improve the fisheries, angler catch rates, and aquatic ecology.

Delaware Lake is intensively sampled by the ODNR-Division of Wildlife every year for largemouth bass and crappie. This sampling protocol started in 2003. Along with sampling a creel survey is conducted every other year on weekends from the end of April through July. This data can be used as a baseline to detect any future changes in the fisheries. Changes in angler catch rates before and after the installation of the fish habitat structures can be tested.

Adding fish habitat structures into Delaware Lake is supported by the ODNR-Division of Wildlife, District One.

Sincerely,

A handwritten signature in cursive script that reads "Marty E. Lundquist".

Marty E. Lundquist
Fish Management Supervisor
ODNR Division of Wildlife - District 1