

# Shenango River Lake Master Plan

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**US Army Corps  
of Engineers**  
Pittsburgh District

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## Executive Summary

A Master Plan is required for each Civil Works Project and all fee-owned lands for which the U.S. Army Corps of Engineers (Corps) has administrative responsibility. It serves as a strategic land-use management document that guides the comprehensive management and development of all recreational, natural, and cultural resources throughout the life of the Project, anticipating what could and should happen at the Corps Project while remaining flexible enough to address changing conditions.

The primary goals of this 2023 revision of the Shenango River Lake (Project) Master Plan, are to prescribe an overall strategic land use management plan, resource objectives, and associated design and management concepts, which: 1) use sound environmental principles to protect and enhance public lands; 2) cultivate volunteers, public-private partnerships, and apply for grants; 3) provide safe and memorable connections as part of multiple destination points; and 4) leverage emerging technology to tell the Corps' story and enhance visitor experiences.

Upon completion of this Master Plan, Operational Management Plans (OMPs) will be executed yearly. OMPs are devised and implemented in accordance with the resource objectives and development needs identified in the Master Plan. The table below reflects the years in which key resource objectives should be realized.

**Resource Objectives for Shenango River Lake**

<b>Five Year</b>	<b>Ten Year</b>	<b>Conditions Based Actions**</b>
Establish regular dam tours	Install enhanced security features	Oil, gas, and coal mining are leveraged and mitigated
Survey and mark all fee and flowage easement boundaries	Update the Forest, Fish, and Wildlife Management Plan	Endangered species conservation methods are identified and implemented
Establish a Friends of Shenango River Lake group	Improve riparian habitat/vegetation for water quality purposes	Invasive species control methods are identified and implemented
Inventory/survey and document biological and cultural resources	Low use and degraded facilities/amenities are identified, and divestment or improvement options are considered*	Climate change impacts are considered

\*This will require external support (i.e., budgeting decisions through executive assistance).

\*\*Condition Based Actions will be evaluated as new requests or as information becomes available.

This Master Plan lays out future recommendations for the management of both recreation and natural resources at the Project with an emphasis on conserving our resources and responding to community needs.

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## 1. Project Authorization

The construction of the Project was authorized by the Flood Control Act of 1938. Authorizations subsequent to construction (Table 1-1, full list in Appendix A) provided benefits, including fish and wildlife, recreation, water quality, and low flow augmentation uses of the impoundments and Project lands.

**Table 1-1. Project Purposes and Authorities**

<b>Operating Purpose</b>	<b>Authority</b>	<b>Citation</b>
Flood Control	Flood Control Act of 1938	PL 75-761
Fish and Wildlife	Fish and Wildlife Coordination Act	PL 85-624
Recreation	Flood Control Act of 1938 Flood Control Act of 1944	PL 75-761 PL 78-534
Water Quality	Flood Control Act of 1938 Clean Water Act	PL 75-761 PL 92-500
Low Flow Augmentation	Flood Control Act of 1938	PL 75-761

### 1.1 Project Purpose

The Project is authorized for flood control, low flow augmentation, water quality control, fish, and wildlife management and recreation along the lower Shenango River and the Beaver and upper Ohio River Valleys. See Appendix B, Plate 1 for the Watershed map.

### 1.2 Watershed and Project Description

The Project is situated in northwestern Pennsylvania and northeastern Ohio approximately 20-miles from Youngstown, OH and 75-miles from Pittsburgh, PA. See Appendix B, Plate 2 for Project Overview and Transportation Corridors map. Refer to Table 1-2 below for Reservoir Information.

**Table 1-2. Reservoir Information**

<b>Pool</b>	<b>Elevation (ft. NAVD88)</b>	<b>Storage (ac.-ft.)</b>
Minimum	883.68	11,100
Winter Conservation	886.67	17,500
Summer Conservation	894.67	41,000
Full	917.67	191,400

The Project covers a total of 14,773.1 acres. This acreage encompasses lands held in fee title and lands subject to flowage and roadway easements. The Corps maintains the dam, Resource Manager's Office, two maintenance compounds, the ranger station, a disc golf course, multiple

trail systems, a 200-acre off-road vehicle (ORV) park, a swim beach, seven reservable picnic pavilions, six playgrounds, five concrete boat launches, and several unimproved water access points.

The Corps outgrants numerous acres of lands and waters to a variety of organizations, see Table 1-3 below. Appendix B, Plate 3 shows the Boundary map for the Project.

**Table 1-3. Outgrant Areas**

<b>Grantee</b>	<b>Type</b>	<b>Acres</b>
Ohio Department of Natural Resources, Division of Wildlife (ODNR)	Wildlife	4,888.6
Pennsylvania Game Commission (PAGC)	Wildlife	3,809.8
Northstar Marina	Recreation	18.9
Village of Orangeville	Recreation	12.5
Mercer County Trails Association, Inc.	Recreation	5

### **1.3 Listing of Pertinent Project Information**

While the Master Plan is focused on management of land and water surface area related to Project purposes, the following information is provided to aid in understanding Project information regarding water storage levels and Project construction (Table 1-4, below).

**Table 1-4. Project Information**

<b>Project Attribute</b>	<b>Description</b>
Average Annual Rainfall	46.65 in.
Drainage Area above Dam	589 sq. miles
Construction Began	1963
Construction Completed	1965
Dam Type	Concrete gravity
Dam Length	720 ft.
Dam Height	67.7 ft.
Base Width	66 ft.
Outlet Works	Seven 5 ft. by 7 ft. sluices, vertical lift gates with emergency bulkhead
Spillway	Crest elevation 914.2 ft. on uncontrolled concrete ogee weir spillway
<b>Highest Inflow Recorded</b>	16,980 cfs (July 21, 2003)
<b>Highest Outflow Recorded</b>	4,500 cfs (February 1968)

<b>Highest Elevation (NAVD88)</b>	908.22 ft. (June 29, 1989)
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#### **1.4 Purpose and Scope of the Master Plan**

This Master Plan presents updated land use categories, management objectives, resource plans, and recommendations for the management of Project lands and waters to meet current and future needs. It is a vital tool for the responsible stewardship of Project resources for the benefit of present and future generations, guiding the comprehensive management and development of the natural, cultural, and man-made resources at the Project.

This Master Plan takes into consideration regional and local needs, resource capabilities, suitability, and expressed public interests consistent with authorized Project purposes, pertinent legislation, applicable regulations, national objectives, and other state and regional goals and programs. The Master Plan is distinct from the Operational Management Plan (OMP). Specifically, policies in the Master Plan are implemented through provisions of the OMP and the Annual Work Plan. A Master Plan is the strategic land use management document that guides the comprehensive management and development of all Project recreational, natural, and cultural resources throughout the life of the Project. OMPs are devised and implemented in accordance with the resource objectives and development needs identified in the Master Plan. Annual Work Plans are a description of management tasks and initiatives, complete with labor, material, and cost requirements to be completed for use in the current fiscal year. The Annual Work Plan is synonymous with the current fiscal year plan in the OMP.

#### **1.5 Management Goals**

This section sets forth goals and objectives necessary to achieve the vision for the future of the Project. In the context of this Master Plan, goals express the overall desired end state of the cumulative land and recreation management programs, whereas resource objectives specify task-oriented actions necessary to achieve the Master Plan goals. The following goals are the priorities for consideration when determining resource objectives and development activities.

1. Meet the project authorization.
2. Use sound environmental principles to protect and enhance public lands.
3. Cultivate volunteers, public-private partnerships, and apply for grants.
4. Provide safe and memorable connections as part of multiple destination points.
5. Leverage emerging technology to tell the Corps' story and enhance visitor experiences.

Implementation of these goals is dependent upon time, manpower, and budget. These goals will be pursued using a variety of mechanisms such as: volunteer efforts, hired labor, contract labor, permit conditions, remediation, and special lease conditions.

The Corps management activities are guided by Corps-wide Environmental Operating Principles (EOPs) in accordance with ER 200-1-5. The current “re-energized” EOPs as found on the Corps’ HQ website (<https://www.usace.army.mil/Missions/Environmental/Environmental-Operating-Principles/>) are as follows:

1. Foster sustainability as a way of life throughout the organization.
2. Proactively consider environmental consequences of all Corps activities and act accordingly.
3. Create mutually supporting economic and environmentally sustainable solutions.
4. Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the Corps, which may impact human and natural environments.
5. Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
6. Leverage scientific, economic and social knowledge to understand the environmental context and effects of Corps actions in a collaborative manner.
7. Employ an open, transparent process that respects views of individuals and groups interested in Corps activities.

### **1.6 Resource Objectives**

Resource Objectives are defined as clearly written statements that both respond to identified issues and specify measurable and attainable activities for resource development and/or management of the lands and waters under Corps jurisdiction. Resource Objectives provided in this section are established to provide high levels of stewardship to managed lands and resources, while simultaneously providing a high level of public service.

Each of the following Resource Objectives has a current and future component (see below, Table 1-5 through Table 1-8). The current component is the near-term focus of the current Master Plan and is the impetus of efforts of this review cycle (i.e., five years). The future component is the long-term focus to be addressed in subsequent reviews (i.e., ten years).



**Table 1-5: Goal 1: Use sound environmental principles to protect and enhance public lands<sup>1</sup>**

Management and Development Activity	Five-year	Ten-year	Desired State
Inventory natural and cultural resources	Inventory/survey and document biological and cultural resources (E)	Develop operational geospatial database for natural and cultural resources (E)	Completed and maintained biological/cultural resource inventory and associated management plans
		Identify eligible cultural resource artifacts and sites that can be registered with the State Historic Preservation Office (SHPO) (E)	
	Update the Cultural Resource Management Plan (E)	Update the Forest, Fish, and Wildlife Management Plan to include items such as: best management practices for timber; controlled burns; protection of shoreline buffers for wildlife and water quality; protection of Corps owned and managed riparian habitat; protection of contiguous habitat corridors; protection of viewsheds (E)	
	Update the Water Control Manual (E)		
	Develop an Invasive Species Management Plan (E)		
Identify threats (i.e., erosion, terrestrial & aquatic invasive species)	Implement erosion and pollution (soil, air, water) control methods (E)	Improve riparian habitat/vegetation for water quality purposes (E)	Conservation management and enhancement of Project lands
	Identify and implement procedures to reduce Harmful Algae Blooms (HABs) (E)	Work with partners to establish floating islands (E)	
Achieve and maintain desired natural and cultural resource conditions	Engage specific conservation organizations (federal and state agencies, academia, non-profits) (S&E)	Formalize relationships (through Memorandum of Understanding (MOU) Memorandum of Agreement (MOA), partnership agreements) with federal, state, academia and non-government agencies to achieve	Increased stakeholder buy-in and protection of the resources in and surrounding the Project
	Send Project staff to applicable trainings to leverage and enhance knowledge and skill sets of natural and cultural resource management (S&E)		

<sup>1</sup> S – Sustain  
E – Establish

	Establish on site and roving educational programs for Corps staff on topics such as water quality, wildlife identification, native versus invasive species, how to cultivate invasive species, etc. (S&E)	desired environmental conditions (S&E)	
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**Table 1-6: Goal 2: Cultivate volunteers, public-private partnerships, and apply for grants<sup>1</sup>**

Management and Development Activity	Five-year	Ten-year	Desired State
Partnering for a shared public land management ethic	Initiate opportunities with community action groups, local recreational clubs, and other Corps resources (such as Corps Foundation, Scouts of America, Girl Scouts of America, 4-H, Mercer County Beekeepers Association, etc.) (S&E)	Find the right partner to manage Chestnut Run Swim Beach (E)	Appropriate resource managing partners are engaged; partners are helping to share the Corps goals and vision for the Project
	Initiate relationships with Whitetail Unlimited, Audubon Society, Ducks Unlimited, Ruffed Grouse Society, Union Sportsman's Alliance, LNT.org and Safe Kids Coalition to establish educational, safety, and wildlife improvement projects and practices (E)	Establish a volunteer host site at Chestnut Run Swim Beach and Mahaney Recreation Area (E)	Partners, volunteers, and interns are augmenting Project staff responsibilities to further protect and enhance natural and cultural resources
	Allow partners (academia, first responders, etc.) to use the Project to host workshops and events (S&E)		
	Hold annual working meetings with partners (Ohio Department of Natural Resources (ODNR), PAGC, Pennsylvania Fish and Boat Commission (PAFBC), Department of Conservation and Natural Resources (DCNR), first responders, etc.) (S&E)	Volunteers/partners are working at the Project year-round performing administrative duties,	
	Partner with universities to utilize Project facilities for biological stations (E)		

	Identify off-road vehicle (ORV) trail groups to assist with maintaining Bayview ORV Area (E)	developing programming, and assisting with natural and recreational projects (E)	
	Continued coordination with ODNr, PAGC, DCNR, PAFBC to expand amenities, increase access areas, hunting opportunities, fish stocking, etc. (S&E)		
	Partner with seasonal natural resource crews such as the Student Conservation Association (SCA), Civilian Conservation Corps (CCC) and the American Conservation Experience (ACE) for conservation, environmental and recreation management (S&E)		
	Establish a Friends of Shenango River Lake group (E)		
	Assist and notify non-profit organizations/partners of available grant opportunities (E)		

**Table 1-7: Goal 3: Provide safe, memorable connections as part of multiple destination points<sup>1</sup>**

Management and Development Activity	Five-year	Ten-year	Desired State
Ranger safety	Hold additional training opportunities (monthly or quarterly) such as self-defense, dog behavior, narcotics, and non-escalation, de-escalation, and crisis management skill trainings at the Project and throughout the District (E)	Install enhanced security features, such as, but not limited to, video surveillance systems, panic buttons and emergency exits throughout the Project (E)	Project staff are working in a safe environment
Visitor safety	Ensure consistent visitor assistance experience (playground inspections, life jacket loaner station inspections, water sampling, and regular sanitation and cleaning protocols) (S&E)	Develop Project/Public Safety Plan for accidents/incidents/severe weather; create a database for reporting and notifying of accidents/incidents (E)	Low chances of accidents and incidents and quick response times for emergency personnel
		Identify Project Site Areas (PSAs) with low use and degraded facilities/amenities and consider divestment or improvement options if appropriate. Establish regular maintenance program and plan for facilities, roads, parking, and recreation areas (S&E)	
	Partner with PAFBC to conduct boating safety courses and vessel inspections (S)		
	Work with DCNR to conduct invasive species inspections on vessels (E)		
	Provide educational water safety and hypothermia programs at the Project (E)		
	Emergency responders practice emergency safety and rescue relief at the Project on a regular basis (S)		
	Identify possible areas around Project for placement of dry hydrants (S)		
	Evaluate road widths for emergency vehicles and identify investment options to widen roads (E)		
	Place low water markers throughout the Project (E)		
	Utilize Federal Highways transportation programs to assist with road repairs, and establish a road maintenance plan (S&E)		

	Conduct regular Recreation Operational Condition Assessments (OCAs) at the Project to assess road, parking, utility, and facility conditions (S)		
Connect with other District reservoirs and locks and dams	Explore and promote joint ventures and recreational activities with other reservoirs and locks and dams (S&E)	Project staff is knowledgeable on operational/general information at other reservoirs and locks and dams; cooperation is improved (S&E)	Public is aware of the Corps recreational facilities at multiple Projects
	Cross-train Project staff at other reservoirs, locks and dams, and District departments; promote team building and knowledge sharing (S&E)		
Serve as part of multiple destination points	Serve as leaders in local governments including conventions and visitor bureaus (S&E)	Provide and promote access points to regional trails (S&E)	User groups from regional areas are coming to the Project
	Engage local and regional outdoor recreation organizations (e.g., paddlecraft, birding, Mercer County Disc Golf Club, etc.) (S&E)	Integrate the Project into the Heritage Tourism Program (Shenango Trail, etc.) and establish interpretative signs/historical pictures and programs (E)	
	Expand existing and establish new multipurpose trail systems; create trails maps (E)		
Promote all that the Project has to offer, bringing in an increased number of visitors with varying interests and of varying ages	Reach out to schools to initiate Every Kid Outdoors and similar opportunities (environmental and recreational) to get kids outside (E)	Bring in multiple and diverse vendors throughout the Project to increase visitation (E)	Visitors are aware and utilizing all of the available resources at the Project and are recreating year-round
	Placement of an observation platform for wildlife viewing at East Lake Road Access Area (E)	Elevate Clark Recreation Area boat ramp to ensure longer service opportunities (E)	
	Display signage and create promotional videos regarding different activity areas around the Project (e.g., cultural/historic sites, wildlife viewing areas, access points) (S&E)	Winter recreational opportunities are expanded and increased (e.g., hunting opportunities, viewing platform for migratory bird watching, snow shoeing, winter interpretive walks) (E)	
	Improve Chestnut Run Swim Beach pavilion area (E)	Designate a drone area in accordance with current guidance and policy (E)	
	Improve kayak launches (S&E)		
	Establish a dog park at Mahaney Recreation Area and Shenango Recreation Area (E)		
	Improve Mercer Recreation Area to allow for primitive camping and an unimproved boat launch (E)		
	Project staff participate in multiple outreach events (S&E)		
Establish regular dam tours (in-person or virtual) (E)			

	Modernize/upgrade facilities and amenities and ensure they are American Disabilities Act (ADA) compliant (E)		
	Make improvements to Shenango Recreation Area to include replacing fire rings, picnic tables, and site posts, erosion control, upgrading playgrounds, the addition of more electric and full hook-up sites, longer operating dates, etc. (E)		
	Continue to host Eagle Fest and other signature events (S&E)		

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**Table 1-8: Goal 4: Leverage emerging technology to tell the Corps’ story and enhance visitor experiences<sup>1</sup>**

Management and Development Activity	Five-year	Ten-year	Desired State
Assess and embrace emerging technology in interpretive services capabilities	Obtain tablets and other wireless devices to assist in patrols, inspections, and data collection (E)	Establish a sedimentation monitoring system that provides sedimentation data/changes in addition implement a sedimentation management plan (E)	Public interaction with the Project is occurring through technology; Project staff are utilizing technology to better monitor and communicate about the Project and provide data to the public and Project staff
	Utilize Boundary Line/Environmental Stewardship OCA Tool/Boundary Status Collector Application for collection and inventory of boundaries, encroachments, and trespasses (S&E)		
	Survey and mark all fee and flowage boundaries (E)		
Enhance public outreach	Include interpretive curriculum in every OMP update (E)	Increase signage leading to the Project and within Project boundaries, on highways and state roads, indicating the presence of the Project (S&E)	Visitation is increasing due to greater public awareness of events and opportunities at the Project
	Develop Project app to act as a real time comment card for Corps' facilities and activities such as fishing tournaments; include trail and park maps (E)		
	Identify or establish a Project Information/Nature Center (E)	Establish an Interpretive Plan at the Project to grow and adapt to changing conditions (S&E)	
	Promote Corps water safety messages and public service announcements throughout the region (S)		
	Promote regional outdoor recreation activities on social media (S)		
	Share success stories and upcoming events with local news outlets in coordination with the Public Affairs Office and internally throughout the District (S)		
	Utilize emerging social media technologies for promotion and public outreach (Facebook, Instagram) (S&E)		



## 2. Project Setting and Factors Influencing Management and Development

### 2.1 Resource Analysis

#### 2.1.1 Fish and Wildlife Resources

The Project's forested habitat, scrub-shrub uplands, wetlands, streams, and river/reservoir support a variety of wildlife species common to Pennsylvania and Ohio. A few of the more common avian species likely to occur in the Project include osprey (*Pandion haliaetus*), turkey (*Meleagris gallopavo*), red-winged blackbirds (*Agelaius phoeniceus*), robins (*Turdus migratorius*), song sparrows (*Melospiza melodia*), common mergansers (*Mergus merganser*), bald eagle (*Haliaeetus leucocephalus*), and mallards (*Anas platyrhynchos*) (ODNR, 2015).

Mammal species of the region commonly include white-tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), opossum, (*Didelphis virginiana*), raccoon (*Procyon lotor*), and gray squirrel (*Sciurus carolinensis*). In addition, the Project supports a variety of amphibians and reptiles, including multiple frog, turtle, salamander, and snake species (ODNR, 2015).

The Project also provides habitat for a diverse assemblage of fish species including largemouth bass (*Micropterus sp.*), walleye (*Sander vitreus*), yellow perch (*Perca flavescens*), black crappie (*Pomoxis nigromaculatus*), catfish (*Ictalurus punctatus*, *Ameiurus catus*, etc.), common carp (*Cyprinus carpio*), white sucker (*Catostomus commersonii*), golden redhorse (*Moxostoma erythrurum*), green sunfish (*Lepomis cyanellus*), pumpkinseed (*Lepomis gibbosus*), bluegill (*Lepomis macrochirus*), bluntnose minnow (*Pimephales notatus*), and white crappie (*Pomoxis annularis*) (ODNR, 2015).

#### 2.1.2 Vegetative and Timber Resources

A large proportion of the Project was historically timber harvested for pasturage and cultivation. Virtually all the lands at the Project were cleared of forest cover following European settlement. Consequently, forest cover on the Project has been extensively altered. It is currently comprised of second and third growth stands, which dominate the Project land cover. The remaining land is a combination of field and pasture, shrubland, wetlands/riparian forest, with areas of maintained lawn. The Project supports the overarching goal of forest sustainability. Forest sustainability requires the continued existence and use of forested lands to 1) meet human physical, economic, and social needs; 2) preserve the health of forest ecosystems in perpetuity; and 3) preserve options for future generations, while meeting current needs. See Appendix B, Plate 4 for Vegetative Classification map.

The Project supports the overarching goal of forest sustainability with a focus on the following priorities:

- Conserve and manage working forest landscapes for multiple values and uses;
- Protect forests from threats; and
- Enhance public benefits from trees and forests.

### **2.1.3 Threatened and Endangered Species**

Lists of threatened and endangered species are maintained by the U.S. Fish and Wildlife Service. Threatened and endangered species that may exist in the region are listed in Table 2-1 below. While no federally threatened and endangered species are known to use the Project, potentially occupied habitat may be present (See Table 2-1, below). The Shenango River upstream of the point of inundation from Shenango River Lake serves as critical habitat for the longsolid, rabbitsfoot, and round hickorynut. This includes approximately 7.0 river miles within the Project. Additionally, seven federally listed freshwater mussel species are known to reside in the Shenango River below the Pymatuning Dam, upstream of the Project. These include the endangered northern riffleshell (*Epioblasma rangiana*) and endangered rayed bean (*Paetulonio fabalis*), in addition to the five mussel species listed in Table 2-1 (PFBC, 2023). It is possible that these populations migrate or proliferate downstream into the Project. Therefore, periodic surveys should be conducted through coordination with local conservation groups and academia. Proposed development would include protective measures and consultations as needed to ensure no listed species would be adversely impacted.

**Table 2-1. Threatened and Endangered Species (USFWS, 2022)**

<b>Species</b>		<b>Scientific Name</b>	<b>Class</b>	<b>Status</b>	<b>Habitat</b>
Northern long-eared bat		<i>Myotis septentrionalis</i>	Mammal	Endangered	Cavities or crevices in both live trees and snags (dead trees) during the summer. In the winter these bats hibernate in caves and mines.
Indiana bat		<i>Myotis sodalis</i>	Mammal	Endangered	Roost under the peeling bark of dead and dying trees during the summer. In the winter these bats hibernate in caves or, occasionally, in abandoned mines.
Tricolored bat	<i>Perimyotis subflavus</i>	Mammal		Endangered	Roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees and pine needles, eastern red cedar ( <i>Juniperus virginiana</i> ), within artificial roosts like barns, beneath

				porch roofs, bridges, concrete bunkers, and rarely within caves.
Eastern massasauga	<i>Sistrurus catenatus</i>	Reptile	Threatened	Wet areas including wet prairies, marshes, and low areas along rivers and lakes and adjacent uplands during part of the year. May hibernate in crayfish burrows but may also be found under logs and tree roots, or in small mammal burrows.
Monarch butterfly	<i>Danaus plexippus</i>	Insect	Candidate	Located throughout North America feeding on milk weed plants. They can be found in prairies, meadows, grasslands and along roadsides.
Snuffbox mussel	<i>Epioblasma triquetra</i>	Clam	Endangered	Found in small to medium-sized creeks to larger rivers

				and lakes. Occur in swift currents of riffles and shoals and wave-washed lakeshores over gravel and sand with occasional cobble and boulders, and generally burrows deep into the substrate except when spawning or attracting a host.
Clubshell	<i>Pleurobema clava</i>	Clam	Endangered	Prefers clean, loose sand and gravel in medium to small rivers and streams. This mussel will bury itself in the bottom substrate to depths of up to four inches.
Rabbitsfoot	<i>Quadrula cylindrica</i>	Clam	Threatened	Occurs in large creeks to large rivers. It is often found along margins of shoals in gravel substrate in slow to moderate current.

Longsolid	<i>Fusconaia subrotunda</i>	Clam	Threatened	Prefers sand and gravel in streams and small rivers for habitat but may be found in coarse gravel and cobble in larger rivers.
Round hickorynut	<i>Obovaria subrotunda</i>	Clam	Threatened	Prefers sand and gravel in riffle, run, and pool habitats in streams and rivers. They also may be found in sandy mud and shallow habitats with gentle flows.

#### 2.1.4 Invasive Species

Under Executive Order (EO) 13112, Invasive Species (FR: 03 Feb 1999), as amended by EO 13751, Safeguarding the Nation from the Impacts of Invasive Species (FR: 08 Dec 2016), an invasive species is defined as a non-native species whose introduction does, or is likely to cause, economic or environmental harm or harm to human health. Invasive species can be microbes, plants, or animals that are non-native to an ecosystem. Invasive species can outcompete native species by consuming their food, occupying their territory, and altering the ecosystem in ways that harm native species. Invasive species can be accidentally transported, or they can be deliberately introduced because they are thought to be helpful in some way. Invasive species cost local, state, and federal agencies billions of dollars annually. The most common invasive terrestrial plant species occurring at the Project are: Japanese honeysuckle (*Lonicera japonica*),

Japanese knotweed (*Polygonum cuspidatum*), autumn-olive (*Elaeagnus umbellata*), buckthorn (*Rhamnus frangula*, *R. cathartica*), purple loosestrife (*Lythrum salicaria*), common reed or phragmites (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), garlic mustard (*Alliaria petiolata*), multiflora rose (*Rosa multiflora*), giant hogweed (*Heracleum mantegazzianum*), and bush honeysuckles (*Lonicera maackii*, *L. tatarica*, *L. morrowii*). The most common aquatic invasive species are the hydrilla (*Hydrilla verticillata*) and the zebra mussel (*Dreissena polymorpha*) (Ohio Invasive Plants Council, 2018). Common carp (*Cyprinus carpio*) have been documented in Shenango River Lake as well as the Shenango River, both upstream and downstream of the lake (USGS, 2023). The Asiatic or Asian clam (*Corbicula fluminea*) has been observed in the Shenango River, downstream of the Shenango Dam (USGS, 2023).

The most common invasive insects are: Asian long-horned beetle (ALB) (*Anoplophora glabripennis*), emerald ash borer (EAB) (*Agrilus planipennis*), spongy moth (*Lymantria dispar*), and the hemlock woolly adelgid (HWA) (*Adelges tsugae*) (USFS, 2014). Mercer County, PA are known to be infested with the spotted lanternfly (*Lycorma delicatula*) and is within an internal state quarantine area (NYSIPM, 2023). Climate change will likely benefit many of the aforementioned non-native species, potentially enhancing their ability to outcompete native organisms. Left unchecked, invasive species have the potential to undermine ecosystem structure and function, resulting in a degraded resource that fails to meet many of the key objectives of the Project.

#### **2.1.5 Ecological Setting**

The purpose of ecological land classification is to provide information for research, assessment, monitoring, and management of ecosystem components. The Natural Resource Management mission statement (ER 1130-2-550; Change 5, 30 Jan 2013) directly supports this paradigm. According to the U.S. Environmental Protection Agency's designation of ecoregions, the Project is located within the Erie Drift Plain Ecoregion. This region consists of closed, mixed wood forests composed of red spruce, balsam fir, red maple, hemlock, and eastern white pine. Lowlands are underlain by flat to gently dipping sandstones, shales, and conglomerates. The climate here is marked by warm summers and mild, snowy winters (USEPA, 2022).

#### **2.1.6 Wetlands and Aquatic Habitats**

According to the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), accessed on June 2, 2022, the Project includes approximately 6,775.9 acres of aquatic habitat. There are 151.8 acres of riverine habitat, 3,338 acres of lake habitat, 2,712 acres of freshwater forested/shrub wetlands, 511.6 acres of freshwater emergent wetlands, and 62.5 acres of freshwater pond habitat. Wetlands serve important water quality and wildlife habitat functions. Particular conservation interest should be given to these features. See Appendix B, Plate 5 for Wetlands map.

### 2.1.7 Water Quality

The Pittsburgh District water quality program has collected water quality measurements at Shenango River Lake since 1969. Data collected include chemical, physical, and biological constituents at numerous sampling locations on tributaries, bays, the reservoir and outflow. Routine water quality monitoring includes:

- Monthly sample collection by Project staff from the outflow
- Yearly limnology surveys of the reservoir by water quality staff
- Monthly intensive limnology surveys once every ten years from the months of March through October to understand seasonal/spatial changes and reservoir dynamics; and
- Groundwater sampling once every five years at The Shenango Disposal Area.

Water quality typically improves as water moves through the Project. Settling, dilution, and biological processes remove or store sediments, metals, contaminants, and nutrients. Many of the primary water quality concerns within the reservoir are associated with adjacent land use, e.g., agriculture, former industrial areas, and development. When property was purchased for flood easement lands in 1968, it included a hazardous waste disposal site which had a variety of names including “The Shenango Disposal Area”, “The Vernon Township Ohio Waste Disposal Site” and the “Horodyski Dump”. The site accepted a variety of wastes including industrial, commercial, and municipal wastes like paint, oil, solvents, automotive parts, copper wire, and food processing wastes. In 1980 the U.S. Environmental Protection Agency (Region 5) identified the site as contaminated and coordinated the removal of surface hazardous wastes. In 1981, the Corps, remediated the site by capping it with clay and drilling four groundwater sampling wells. Since then, Pittsburgh District’s water quality team has sampled groundwater every five years to ensure there is no migration of contaminants from the fill into either groundwater or surface water. To date, no migration of contaminants to groundwater or surface water have been observed. The outflow of the reservoir is listed as impaired on the Pennsylvania 303(d) list for metals and polychlorinated biphenyls (PCBs) and the Pymatuning Creek arm in Ohio has four locations that are non-attaining, two locations that are partially attaining, and two that are fully attaining. Federal and state agencies are working with water-quality partners and landowners to focus watershed conservation efforts on priority or target areas in the watershed to meet water quality standards in the Project watershed.

The Project can be classified as a shallow, eutrophic, mid-latitude, dimictic reservoir. The Project has seven gates all at invert elevations of 869.7’ NAVD 88, approximately five feet from the original stream bed, which does not provide substantial water quality control. Stratification, which is the development of different depth zones based on water temperature/density, can lead to hypoxic areas in the deeper areas of the reservoir, especially by the dam in the summer, periodically resulting in reduced fish habitat and increased dissolved metal concentrations such as manganese and iron that are transported from reservoir tributaries. Despite the periodic



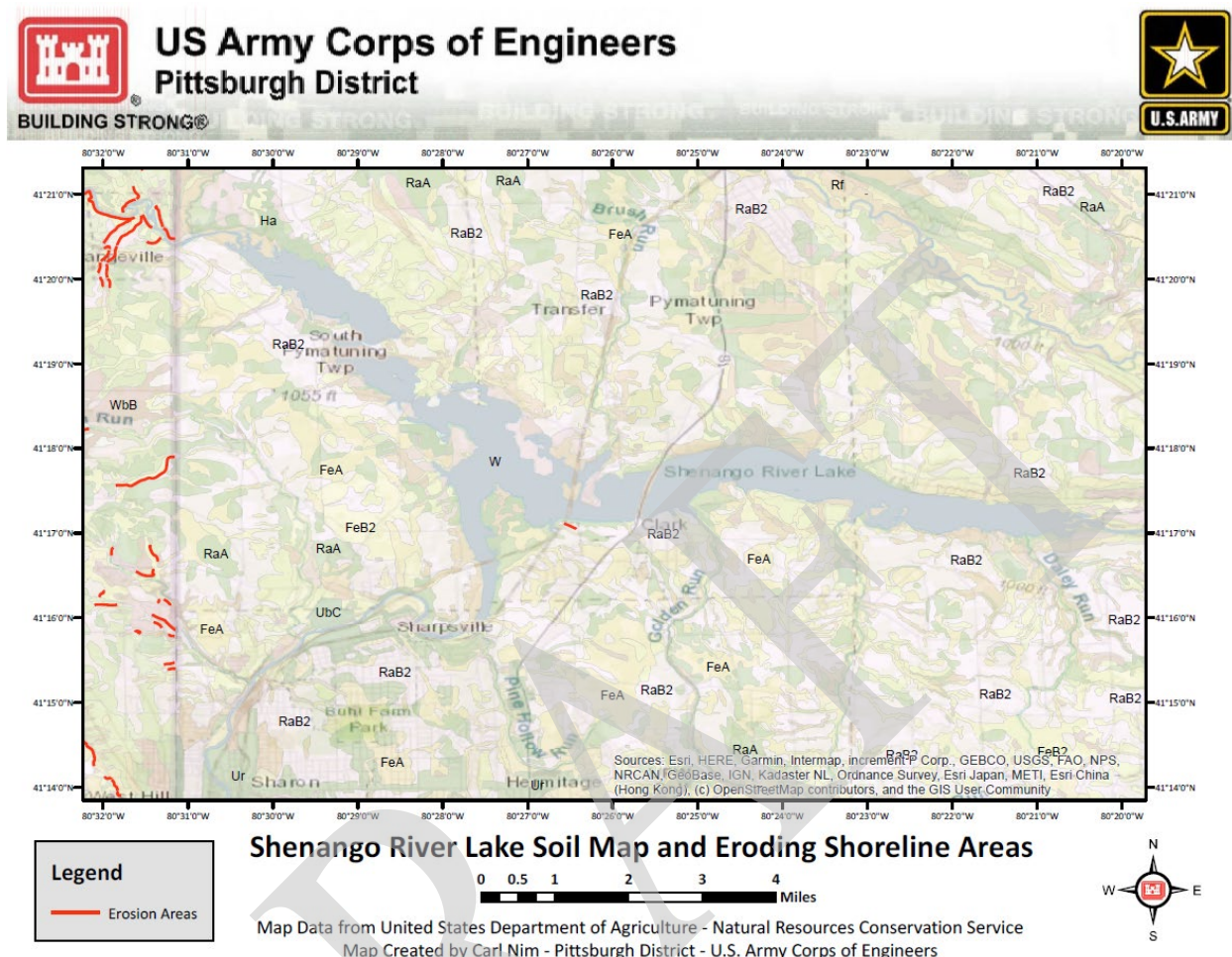
release of hypoxic waters from the bottom of the reservoir, reaeration is provided by outlets equipped with tetrahedrals that result in the release of good quality waters that satisfy the congressionally authorized operating purposes of water quality and low flow augmentation in the Shenango and Beaver Rivers.

The Project hosts numerous opportunities for aquatic recreation and is known throughout the region for boating, fishing and migratory bird watching opportunities. Invasive submerged aquatic vegetation is a concern for the Project since hydrilla has been found in Pymatuning Lake, which releases water into the Shenango River and then flows into the reservoir. Hydrilla poses a risk to native submerged aquatic vegetation because it outcompetes native submerged aquatic vegetation for habitat and reproduces rapidly (USGS, 2021). Pollution point sources, nutrient enrichment and eutrophic conditions are additional challenges in the watershed. Throughout the year, the Project has algae blooms that are comprised of various algae groups depending on the season, including blue-green algae, which are known to produce toxins and can be a human health concern. Algal growth in the reservoir is phosphorous limited and can be attributed to nutrient enrichment from a variety of point and non-point sources that discharge to the reservoir. Algae blooms have been widely documented with blue-green algae blooms occurring in the late summer (USACE, 1991; USEPA, 1975). Sedimentation and turbidity within the reservoir basin can be attributed to development, removal of riparian vegetation, and impervious surface runoff (Shenango River Watershed Community, 2005). Water-quality monitoring will continue as a critical part of a holistic, environmentally sound water-quality management strategy for the Project to continue to meet applicable federal and state environmental laws, criteria, and standards. For further information regarding water quality, the Project Water Control Manual can be found here: <https://water.usace.army.mil/a2w/f?p=100:1:0:::>

#### **2.1.8 Sedimentation**

Sedimentation surveys for the Project were completed in 1967 and 1985. The 1967 survey was a contour map survey and the 1985 survey was a range line/cross section survey. Based on the 1985 Shenango River Lake Sedimentation Report, the rate of sedimentation was estimated to be 145.5 acre-feet per year (USACE, 1991). Loss of reservoir storage capacity is a water management concern, which impacts the flood risk management mission of the reservoir. Water quality concerns include the deposition of nutrients and other possible contaminants in reservoir sediments, which can persist and affect a variety of lake processes and organisms (Shenango River Watershed Community, 2005). Although sedimentation surveys are in need, there is currently no sedimentation survey scheduled for the near future. Erosion from tributaries to the reservoir are a concern. Many tributaries to the reservoir are prone to erosion due to adjacent land use, in many cases agriculture, which removes forests that keep soils in place. When coupled with erosional forces from a variety of natural and anthropogenic forces, sedimentation of the reservoir occurs. Fortunately, not many reservoir shore areas are subject to erosion, which can be seen in Figure 2-1 below.

Figure 2-1. Shenango River Lake Soil Map and Eroding Shoreline Areas



Sediment buildup from tributary erosion, agricultural runoff, development, and other sources can adversely impact the storage capacity of the dam, the water recreational experience, and the ecological quality of aquatic habitat. One possible way the Project could address this issue is through the implementation of sustainable reservoir sediment-management plans, as recommended by the Advisory Committee on Water Information (ACWI 2019). The Advisory Committee on Water Information, Subcommittee on Sedimentation, approved a resolution in August 2014 that:

“...encourages all federal agencies to develop long-term reservoir sediment-management plans for the reservoirs that they own or manage by 2030. These management plans should include either the implementation of sustainable sediment-management practices or eventual retirement of the reservoir. Sustainable reservoir sediment-management practices are practices that enable continued reservoir function

by reducing reservoir sedimentation and/or removing sediments through mechanisms that are functionally, environmentally, and economically feasible. The costs for implementing either sustainable sediment-management practices or retirement plans are likely to be substantial, and sustainable methods to pay for these activities should also be identified. Federal agencies are encouraged to start developing sustainable reservoir sediment-management plans now for one or two reservoirs per year on a pilot basis. From this experience, interagency technical guidelines will be developed for preparing sustainable reservoir-sedimentation plans.”

For further information regarding sedimentation, the Project Water Control Manual can be found here: <https://water.usace.army.mil/a2w/f?p=100:1:0:::>

## **2.2 Cultural Resources**

### **2.2.1 General Background**

Cultural resources include archaeological or historical sites and objects, buildings, structures, and landscapes that are related to the history of past human land use. These activities include but are not limited to activities of Native American peoples as well as early historic European and American settlers, early industrial sites, like gristmills, and more modern engineering structures.

Cultural resources are protected under several federal laws and regulations including: Antiquities Act, National Historic Preservation Act (NHPA), Archaeological Resources Protection Act (ARPA), Federal Curation Regulations 36 CFR Part 79, Native American Graves Protection and Repatriation Act, and Executive Order 13007 - Indian Sacred Sites, among others. Furthermore, the Corps has established policies regarding the management of cultural resources under the Corps’ jurisdiction. These policies can be found in ER 1130-2-540 (15 Nov 1996) Environmental Stewardship Operations and Maintenance Policies; and Engineer Pamphlet (EP) 1130-2-540 (15 Nov 1996) Environmental Stewardship and Maintenance Guidance and Procedures. The Corps must comply with all these laws, regulations, and policies when performing any works either funded, regulated, or within Corps fee land or easements. These laws and regulations provide the Corps with processes for understanding how Corps projects affect cultural resources and how the Corps can avoid, minimize, or mitigate potential effects on these resources.

### **2.2.2 Previous Investigations**

The Project is one of rich cultural history. Project lands had been inhabited for thousands of years prior to the European settlement. A total of four archaeological reconnaissance surveys have been completed within the Project (approximately 0.39% of total lands at Shenango River Lake). The intent of some of these surveys was to identify cultural resources for their future management, while others were associated with specific projects and undertakings. Additional

research is still necessary in order to fully understand and manage cultural resources within the Project.

Archaeological research indicates that the area has been inhabited from Paleo-Indian Period (c.a. 14,000 B.C. – 8,500 B.C.) to the 20<sup>th</sup> century. A total of 83 archaeological sites, four historical areas and two historic structures have been identified at the Project. Seventy-two of the known archaeological sites have been identified as prehistoric, including one Paleoindian site. Two sites have been identified as multicomponent sites, which contain both prehistoric and historic artifacts and nine archaeological sites are considered historic. The Shenango River Lake Dam and the Damtenders' Dwelling are historic structures over 50 years of age and therefore considered cultural resources. The four historical districts consist of: Big Bend Historical Area, New Hamburg Historical Area, Kidd's Mill Historical Area and a section of the New York, Lake Erie and Western Railroad. All three of these historical areas have been listed in the National Register of Historic Places. The National Register of Historic Places is the official list of the Nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

### **2.2.3 Cultural Resources Management**

According to ER 1130-2-540, the District Commander shall ensure that a Cultural Resources Management Plan (CRMP), where appropriate, is developed for Corps projects. Currently, Shenango River Lake does not have a CRMP. However, the Corps is preparing a CRMP for the Project proposed to be completed in 2023. In the meantime, the Corps continues to follow all cultural resource management laws, regulations, and policies prior to conducting work or allowing others to conduct work at the Project site. ER 1130-2-540 directs that the District Commander shall implement a program, upon availability of funds, to accomplish an inventory of historic properties and site evaluation at each civil works water resource project under his/her jurisdiction and administration to comply with Section 110(a)(2) of the NHPA.

EP 1130-2-540 states that on lands held in fee by the federal government under the administration and jurisdiction of the Corps of Engineers, District Commanders shall ensure that historic properties are given full consideration in all management and construction activities. The District Commander has full responsibility within existing statutes, administrative guidelines, and policy to protect, preserve, manage, and/or mitigate damage to historic properties on Project lands. These responsibilities include but are not limited to the following actions: real estate grants and land disposals, recreational development, wildlife management, construction, and operation and maintenance. Based on these responsibilities the Corps would be required to identify and address impacts on cultural resources for all types of Corps undertakings.

## **2.3 Socio-Economics**

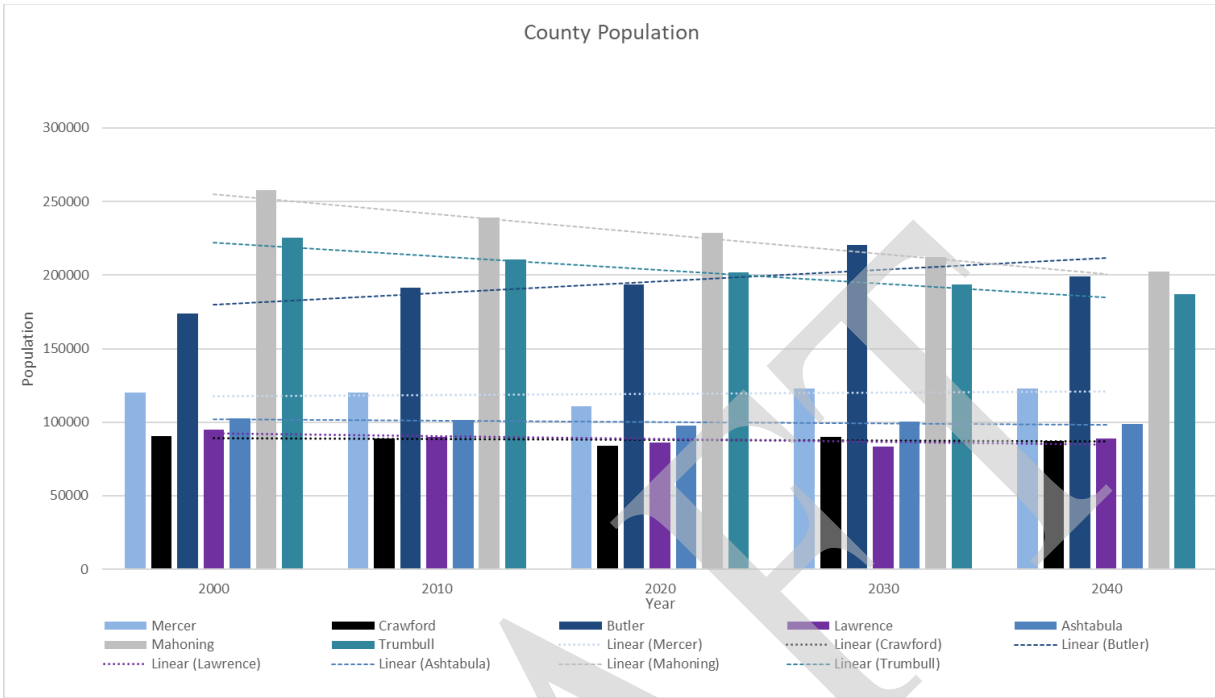
### **2.3.1 Market Area**

The Project was constructed on the Shenango River and is located in Hermitage in Mercer County, Pennsylvania, near Crawford, Butler, and Lawrence Counties in Pennsylvania and Ashtabula, Mahoning, and Trumbull Counties in Ohio. The Project receives visitors primarily from these neighboring counties and this trend is expected to continue into the future.

### **2.3.2 Population**

Census data and population projections for the adjacent counties from 2000 through 2040 were gathered to inform potential future visitation at the Project. Mercer County gains approximately 600 residents every ten years. Crawford County loses approximately 700 residents every ten years. Butler County gains approximately 6,200 residents every ten years. Lawrence County loses approximately 1,500 residents every ten years. Ashtabula County loses approximately 1,000 residents every ten years. Mahoning County loses approximately 13,800 residents every ten years. Trumbull County loses approximately 9,500 residents every ten years. The total population of these seven counties is expected to shrink by approximately 19,600 residents every 10 years through 2040 (The Center for Rural Pennsylvania, 2014; Ohio Department Services Agency, 2018; U.S. Census Bureau, 2020). Of the seven counties in the market area, Mercer County, Mahoning County, and Trumbull County all belong to the Youngstown–Warren–Boardman, OH–PA Metropolitan Statistical Area, also known as the Mahoning Valley, which had a total combined population of 541,243 according to the 2020 census. Crawford County belongs to the Meadville, PA Micropolitan Statistical Area, which had a total combined population of 83,938 according to the 2020 census. Butler County belongs to the Pittsburgh, PA Metropolitan Statistical Area, which had a total combined population of 2,370,930 according to the 2020 census. Lawrence County belongs to the New Castle, PA Micropolitan Statistical Area, which had a total combined population of 86,070 according to the 2020 census. Ashtabula County belongs to the Cleveland–Akron–Canton, OH Combined Statistical Area which had a total combined population of 2,088,251 according to the 2020 census. Section 2.4.1 (Zones of Influence) goes into more detail about statistical areas. Based on these population projections it can be assumed that with other variable factors held constant, recreation at the Project will likely decrease slightly as populations in these counties decrease. Graph 2-1 below shows the historic and projected populations for the counties in the market area.

**Graph 2-1. Population of Counties in the Market Area**



(United States Census Bureau, 2019a; United States Census Bureau, 2019b)

### 2.3.3 Income and Poverty Status

The median annual household income and poverty rate of each county in the market area were considered for the purpose of determining what choices the public might make when seeking recreation. 2020 census data for the seven counties in the market area was gathered for this update. Table 2-2 below shows the median annual household income and poverty rate (percentage of population that fall below the poverty line) for each county in the market area (United States Census Bureau, 2020a; United States Census Bureau, 2020b).

**Table 2-2. Median Household Income and Poverty Rate by County in the Market Area**

County	Mercer	Butler	Crawford	Lawrence	Ashtabula	Mahoning	Trumbull
Median Annual Household Income	\$50,529	\$72,642	\$51,919	\$50,080	\$47,925	\$47,092	\$47,799
Poverty Rate	14.4%	7.4%	12.5%	12.9%	19.2%	17.6%	17.3%

All of the counties in the market area except for Butler County fall below the median annual household income of the individual states they reside in (\$63,627 for Pennsylvania and \$58,116 for Ohio). Butler County is also the only county that has a lower percentage of population below the poverty line than the state it resides in (12.0% for Pennsylvania and 13.6% for Ohio). This data is discussed in greater detail below.

EO 14008 directed the CEQ to create the Climate and Economic Justice Screening Tool (CEJST), a geospatial database that identifies disadvantage communities that have been marginalized by society, overburdened by pollution, and underserved by infrastructure and other basic services (CEQ, 2023a). The CEQ directed federal agencies to use the CEJST when planning, analyzing, and implementing federal actions.

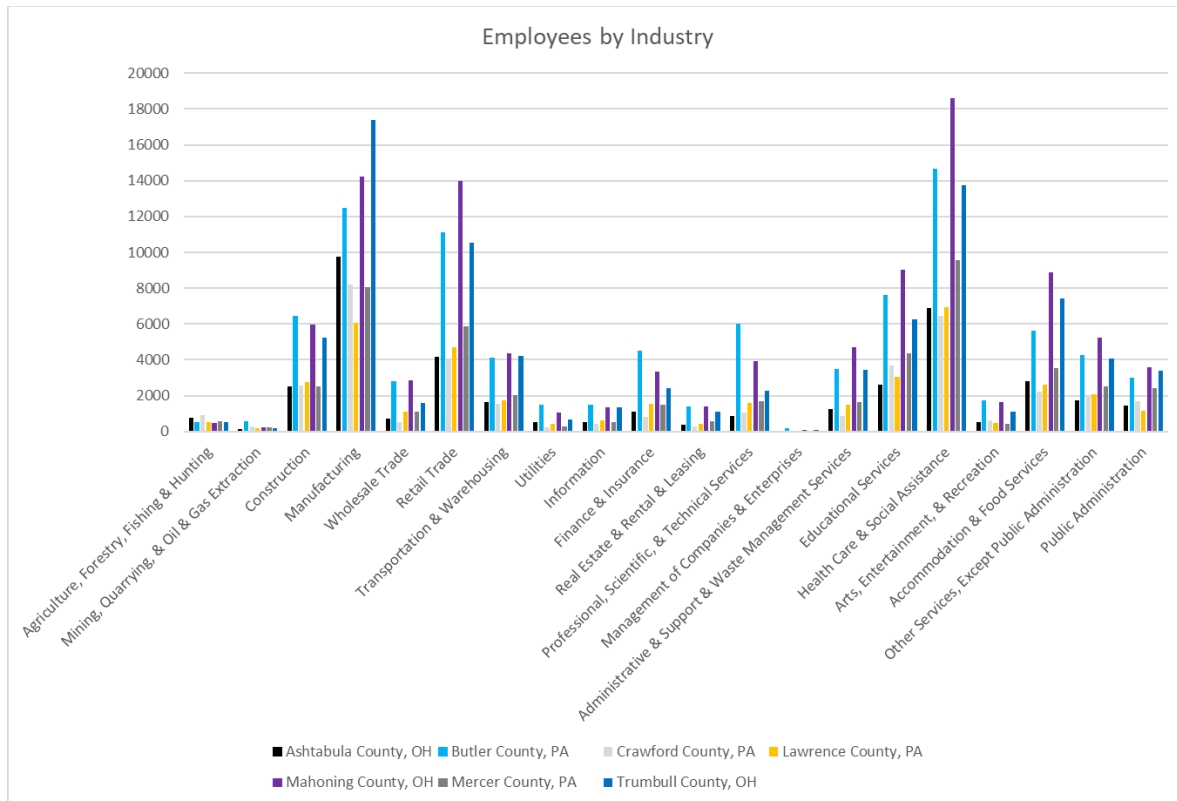
The CEJST indicates that a census tract in Trumbull County, OH is disadvantaged due to disproportionate burdens (heart disease and transportation barriers) and the associated socioeconomic threshold (low-income) (CEQ, 2023b). Approximately 4.77 square miles of the Project are within Trumbull County. Additionally, several other disadvantaged tracts are located within 20 miles of the Project, including the communities of Sharpsville, PA; Greenville, PA; New Castle, PA; Youngstown, OH; and Warren, OH (CEQ, 2023b).

#### **2.3.4 Area Industries**

Mercer, Butler, Crawford, Lawrence, Ashtabula, Mahoning, and Trumbull Counties are all very similar with regards to primary industries of employment, with all seven counties having the same industries with greatest employment: manufacturing, health care and social assistance, and retail trade. The three highest paying industries in Mercer County are mining, quarrying, & oil & gas extraction (median annual income: \$54,211); utilities (\$50,893); and public administration (\$50,171); In Butler County the three highest paying industries are utilities (\$88,000); mining, quarrying, & oil & gas extraction (\$75,739); and professional, scientific, & technical services (\$68,929). In Crawford County the three highest paying industries are mining, quarrying, & oil & gas extraction (\$56,322); utilities (\$54,583); and wholesale trade (\$48,036). In Lawrence County the three highest paying industries are utilities (\$81,979); mining, quarrying, & oil & gas extraction (\$60,750); and transportation & warehousing (\$53,280). In Ashtabula County the three highest paying industries are mining, quarrying, & oil & gas extraction (\$64,844); utilities (\$59,710); and transportation & warehousing (\$51,571). In Mahoning County the three highest paying industries are utilities (\$74,766); mining, quarrying, & oil & gas extraction (\$59,677); and transportation & warehousing (\$52,632). In Trumbull County the three highest paying industries are utilities (\$63,608); mining, quarrying, & oil & gas extraction (\$60,703); and transportation & warehousing (\$45,683) (Data USA, 2020). Most notably, the retail trade industry in Armstrong County is likely to benefit from the ongoing recreation mission at the Project. Graph 2-2 below shows the number of employees in each industry for each of the counties in the market area.



**Graph 2-2. Employment by Industry of Counties in the Market Area**



(United States Census Bureau, 2019a; United States Census Bureau, 2019b)

### 2.3.5 Economic Impact of Recreation Related Spending

The Corps provides water-based recreation opportunities throughout the country, which provide economic benefits to the local and regional communities in which Corps projects exist. To estimate the economic impact from the recreation-related spending at the Project, the Corps Institute for Water Resources, in collaboration with the Louis Berger Group and Michigan State University, have developed a regional economic impact modeling tool called Regional Economic System (RECONS). This modeling tool automates calculations and generates estimates of jobs and other economic measures, such as income and sales associated with the Corps American Recovery and Reinvestment Act (ARRA) and Civil Works program spending and secondary affects for Ports, Inland Water Way, Formerly Utilized Sites Remedial Action Program (FUSRAP), and Recreation. This is done by extracting multipliers and other economic measures from more than 1,500 regional economic models that were built specifically for Corps project locations (Chang, W.H, 2019). For 2019, RECONS shows an estimated 603,884 visits (person-trips) at the Project, which resulted in direct benefits to the region of \$18,145,808 in sales, \$6,321,082 in labor income, \$9,267,364 in economic value added, and 226 jobs supported in the region (USACE-IWR, 2020). Based on the population, income, and poverty factors presented in



the sections above, a sizable portion of the local population will likely use the Project as a vacation destination based on proximity and the relatively lower costs associated with recreating closer to home as opposed to incurring additional costs by choosing a site further away. By choosing to go to the Project for recreational needs, the populace will also contribute to the local economy of the area. There are other reservoirs and lakes with recreation facilities comparable to those of the Project within Erie County, located only slightly north of the market area, and the counties that surround it, as well as Lake Erie to the north of the Project. The presence of these alternative recreation facilities means that the Project may see fewer economic benefits from surrounding counties that have populations closer to these alternative sites and they could potentially divert recreators from outside of the market area as well. Recreation at the Project has seen a slight decline over the years with the most recent data showing a drop of approximately 133,700 visitors from 2016 to 2019, a roughly 18% decrease overall.

## **2.4 Recreation Facilities, Activities, and Needs**

### **2.4.1 Zones of Influence**

The zones of influence help to illustrate how the concentration and distribution of populations surrounding the Project significantly impact land classification and recreational development. The primary zone of influence encompasses portions of several statistical areas, including the Youngstown–Warren–Boardman, OH–PA Metropolitan Statistical Area; the Meadville, PA Micropolitan Statistical Area; the Pittsburgh, PA Metropolitan Statistical Area; the New Castle, PA Micropolitan Statistical Area; and the Cleveland-Akron-Canton, OH Combined Statistical Area. These areas serve as the foundation for summarizing the population associated with the Project.

The Youngstown–Warren–Boardman, OH–PA Metropolitan Statistical Area comprises four counties, three of which fall within the Project's market area (Mercer County, Mahoning County, and Trumbull County). These three counties collectively had a population of 541,243 (US Census Bureau, 2022).

The Meadville, PA Micropolitan Statistical Area consists of Crawford County alone, with a population of 83,938 (US Census Bureau, 2022).

The Pittsburgh, PA Metropolitan Statistical Area includes seven counties, among which only Butler County is within the Project's market area. Butler County had a population of 193,763 (US Census Bureau, 2022).

The New Castle, PA Micropolitan Statistical Area comprises only Lawrence County, which had a population of 86,070 (US Census Bureau, 2022).

The Cleveland-Akron-Canton, OH Combined Statistical Area consists of thirteen counties, with Ashtabula County being the only one within the Project's market area. Ashtabula County had a combined population of 97,574 (US Census Bureau, 2022).

The Project is situated in Hermitage, Pennsylvania, within western Mercer County, PA. Mercer County's population, as of the 2020 census, was 110,652, reflecting a 5.1% decrease (US Census Bureau, 2022)

Several disadvantaged communities are within the Project's market area. The CEJST indicates that a census tract in Trumbull County, OH is disadvantaged due to disproportionate burdens (heart disease and transportation barriers) and the associated socioeconomic threshold (low-income) (CEQ, 2023b). Approximately 4.77 square miles of the Project are within Trumbull County. Additionally, several disadvantaged tracts are located within 20 miles of the Project, including the communities of Sharpsville, PA; Greenville, PA; New Castle, PA; Youngstown, OH; and Warren, OH (CEQb, 2023).

#### **2.4.2 Visitation Profile**

Visitation is common at the campground and day-use areas as the Project is in close proximity to major interstates; Youngstown, OH; New Castle, PA; and Grove City, PA. The project also receives visitation from the Pittsburgh, PA; Cleveland, OH; and Erie areas. Peak recreation season is from May through September. Visitation is concentrated during the weekends and holidays in both peak and non-peak seasons. Popular recreational activities at the Project include angling, paddlecraft (e.g., canoes, kayaks), boating, camping, swimming, picnicking, hunting, bird watching, biking, disc golf, ATV riding and hiking.

#### **2.4.3 Recreation Analysis**

##### *Description of Facilities*

The Project had an average yearly visitation of approximately 706,228 from 2019 to 2020. The Project is a popular local attraction with a campground, boat launches, picnic areas, pavilions, a disc golf course, and plenty of hunting and fishing opportunities. Shenango Recreation Area Campground consists of approximately 330 campsites, a mixture of which are electric and non-electric. Other recreation opportunities include hunting areas managed by PAGC and ODNR. The Corps maintains the dam, Resource Manager's Office, two maintenance compounds, the ranger station, a disc golf course, multiple trail systems, a 200-acre ORV park, a swim beach, seven reservable picnic pavilions, six playgrounds, five concrete boat launches, and several unimproved water access points. Northstar Marina, which is outgranted, consists of dock slips, a concrete boat launch, fuel dock, office with store, mechanics shop, two storage buildings, a public restroom, two pavilions, and a playground.

## *Customer Satisfaction and Considerations*

Through the Master Plan scoping meetings, customer satisfaction surveys, and routine communication between staff and visitors, it has been identified that the areas that need the most improvement include management of algal blooms, modernizing facilities, more electric and full hook-up sites, roadway improvements, lifting the horsepower restriction on the west side of the reservoir and making it a no-wake zone, establishing a nature center, additional winter recreational opportunities, more dam tours and interpretive events, and developing Mercer Recreation Area. We have identified several the above requests in Chapters 1 and 7 of this Master Plan.

### **2.4.4 Recreational Carrying Capacity**

Carrying capacity, which includes both environmental (how much use the resource can support without being compromised) and social (how much use can occur before the quality of visitor experience is diminished) dimensions, is currently balanced at the Project. The Project experiences few fatalities or boating accidents, and Shenango Recreation Area Campground is occupied throughout the recreation season, especially on weekends and holidays. Future recreational developments will require plans and studies to account for water quality, erosion, and sedimentation changes, balancing recreational diversity, and accommodating new demands within a developed footprint in a manner that is environmentally and economically sustainable.

### **2.5 Related Recreational, Historical, and Cultural Areas**

Shenango River Lake is located within the Pennsylvania's Great Lakes Tourism Region. The Project offers a wide variety of outdoor recreation opportunities like boating, fishing, camping, picnicking, and hiking. The Project contains a number of historical sites, and Pennsylvania Historical Markers have been erected in the vicinity of the Project, including the Pymatuning Village Marker, which was a Delaware Indian village on opposite riverbank about 1764-1785. Name was once used for upper Shenango River, which flowed from Pymatuning Swamp, now Pymatuning Reservoir. Other historical and cultural areas nearby include the Raisch Log Cabin in Sharpsville, PA; the Frank H. Buhl Mansion in Sharon, PA; and Kidd's Mill Covered Bridge in Greenville, PA.

### **2.6 Real Estate and Acquisition Policy**

Real estate at the Project encompasses a total of 14,773.1 acres. The Corps owns 14,443.1 of those acres in fee, owns flowage easements over 294.7 acres, and owns roadway easements over 35.3 acres. There are approximately 80 active outgrants, with the majority of the land being outgranted to ODNr and PAGC. There are 30 mineral tracts at the Project.

The Non-Recreation Outgrant Policy (ER 1130-2-550, Chapter 17), which reflects nationwide guidance developed in 2009, will be used to evaluate requests for use of Corps lands and waters.

Future non-recreation outgrant requests may be granted if one of the following two conditions are met and as long as Project purposes are not compromised:

- There is no viable alternative to the activity or structure being located on Civil Works land or waters; or,
- There is a direct benefit to the government.

### **3. Land Allocation, Land Classification, Water Surface, and Project Easement Lands**

This Master Plan is intended to guide the comprehensive management and development of all Project recreational, natural, and cultural resources and articulate Corps' responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the Project lands, waters, and associated resources.

#### **3.1 Land Allocation**

In accordance with EP 1130-2-550 (Change 5, 30 Jan 13), land allocations are in accordance with the congressionally authorized purposes for which Corps lands were acquired. There are four categories of allocation:

##### **3.1.1 Operations**

Lands acquired for the congressionally authorized purpose of constructing and operating the Project.

##### **3.1.2 Recreation**

Lands acquired specifically for the congressionally authorized purpose of recreation. Lands in this allocation can only be given a land classification of "Recreation".

##### **3.1.3 Fish and Wildlife**

Lands acquired specifically for the congressionally authorized purpose of fish and wildlife management. Lands in this allocation can only be given a land classification of "Wildlife Management".

##### **3.1.4 Mitigation**

Lands acquired specifically for the congressionally authorized purpose of offsetting losses associated with development of the Project. Lands in this allocation can only be given a land classification of "Mitigation".

#### **3.2 Land Classification**

Land classifications are the primary use for which Project lands are managed. The previous Master Plan dated 1998, used a now obsolete classification scheme that has been updated in this

document to meet current standards. Current standards identify the below classification categories:

- Project Operations
- High Density Recreation
- Mitigation
- Environmentally Sensitive Areas
- Multiple Resource Managed Lands
- Water Surface

The classification process refines the land allocations to fully utilize Project lands and considers public desires, legislative authority, regional and Project specific resource requirements, and suitability. Land classification indicates the primary use for which Project lands are managed. The Project manages lands according to five of the above six classifications (sans Mitigation). The system for classification has been realigned to meet current standards (see Appendix B, Plate 6 for the Land Classification map).

### **3.2.1 Project Operations**

This classification includes lands required for the dam and associated structures, administrative offices, maintenance compound, and other areas that are used to operate and maintain the Project. Where compatible with operational requirements, Project Operations land may be used for wildlife habitat management and recreational use, as long as the proposed activities do not negatively impact Project operations. Likewise, licenses, permits, easements, or other outgrants are issued only for uses that do not conflict with operational requirements. Public access to these areas is often restricted. For example, mooring private vessels or modification of land and vegetation are prohibited without explicit permission. Requests for a permit for a compatible use within an area designated for Project operations will be evaluated on a case-by-case basis and a decision will be made as to whether or not the proposed activity will be permitted, based on the potential impact to operations.

### **3.2.2 High Density Recreation**

These lands are designated for intensive levels of recreational use to accommodate and support the recreational needs and desires of visitors. They include lands on which existing or planned major recreational facilities are located and allow for developed public recreation facilities, concession development, and high-density or high-impact recreational use. In general, any uses of these lands that interfere with public enjoyment of recreational opportunities are prohibited. Low density recreation and wildlife management activities compatible with intensive recreation use are acceptable, most usually on an interim basis. No agricultural uses are permitted on these lands, except on an interim basis for maintenance of scenic or open space values. Permits, licenses, and easements are not issued for non-compatible manmade intrusions such as pipelines,

overhead transmission lines, and non-Project roads, except where warranted by the public interest and no viable alternative area or route is available.

The facilities in these areas will accommodate the recreation needs of visitors in concentrated numbers, while also offering open space lands for the purpose of providing more complete and attractive recreation areas. The modernization of campsites and recreation facilities is anticipated to occur on a funds-available basis.

Requests for permits to conduct concessions, rentals, or any other business in these areas will be reviewed on a case-by-case basis and will involve real estate instruments and fee payment to the Corps.

Given the difficulty of maintaining current facilities, the development of more modern facilities demanded by recreational visitors will likely include partnering with stakeholders to share in the cost, operation, and maintenance of any such asset.

### **3.2.3 Environmentally Sensitive Areas**

This classification consists of areas where scientific, ecological, cultural, or aesthetic features have been identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the Endangered Species Act, the National Historic Preservation Act, or applicable state statutes. These areas must be identified and protected by management to ensure they are not adversely impacted. Typically, limited or no development of public use is allowed on these lands. No agricultural or grazing uses are permitted on these lands, unless necessary to implement a specific resource management benefit. These areas are typically distinct parcels located within another, larger land classification area.

Defining Environmentally Sensitive Areas as part of the Master Plan process assists in the protection of valuable resources. These sites are mapped and managed by the Corps.

Environmentally Sensitive Areas include locations of threatened and endangered species and cultural sites. Many factors contribute in identifying Environmentally Sensitive Areas. The degree of sensitivity varies by location and other contributing factors. An area may be available to construct a properly designed hiking trail or may be actively managed by forest practices such as timber stand improvement that do not negatively impact the site's sensitivity. Other sites can be very sensitive to human disturbance and need adequate protection from development.

Examples of this degree of sensitivity would involve eagle nests, osprey nests, and heron rookeries. These animals are threatened by human activities especially during active breeding seasons.

Areas designated as environmentally sensitive can change over time, and continuous monitoring through programs like Multiple Species Inventory and Monitoring (MSIM) provide valuable information to keep identified sensitive areas current. Using Geographic Information System

(GIS) databases maintained with separated layers, the dynamic nature of sensitivity can be managed in an up-to-date program. Some areas may be highly sensitive to change, while other areas may need prescribed management to remain viable. The goal of managing these areas is to protect and preserve known areas that contribute to the diversity and health of the Project.

### **3.2.4 Multiple Resource Management Lands**

These lands can be divided into the following four sub-classifications: Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. In the future, some of these areas may be converted to High Density Recreation. Conversion to High Density Recreation may occur based on future recreation needs within the Project. The Corps must continue to carefully evaluate land use requests in these areas to include road and utility easements, rights of way for pipelines, resource mining activities, and other potential ground disturbing activities and to ensure that these actions do not negatively impact the environment in a significant manner.

#### **3.2.4.1 Low Density Recreation**

These lands are designated for dispersed and/or low impact recreation use. Development of facilities on these lands is limited. Emphasis is on providing opportunities for non-motorized activities such as walking, fishing, hunting, or nature study. Site-specific, low-impact activities such as primitive camping and picnicking are allowed. Facilities may include boat ramps, boat docks, trails, parking areas and vehicle controls, vault toilets, picnic tables, and fire rings.

In these areas, natural conditions preclude intensive public use development because extensive alteration of natural systems would be required. Difficult access is also a factor indicating low density use as most appropriate for these lands.

Private or long-term exclusive group use of these lands will not be permitted. Management practices leading to habitat improvements for the benefit of wildlife are encouraged. No licenses, permits, or easements will be issued for non-compatible manmade intrusions, such as underground or exposed pipelines, cables, overhead transmission lines, or non-Project roads. Exceptions to this restriction may be made where necessary to serve a demonstrated public need only in those instances where no reasonable alternative is available. Agricultural uses are permitted on this land. The focus for areas under the Low Density Recreation classification is on a balance of low-impact recreational activities along with conservation of natural areas and native species. Management of invasive species is also a priority for these areas to prevent their spread throughout the Project. Hunting is permitted in most areas under this classification to promote healthy populations of game species.

Low density recreation areas have the potential to be converted to High Density Recreation through the development of new trail systems, campgrounds, boat launches, or other recreational features. These areas also have the potential to be used for utility lines, timber sales, or mining

activities if a third-party makes a request for such an activity. However, these actions would require additional study and would be approved on a case-by-case basis based on the anticipated impacts associated.

#### **3.2.4.2 Wildlife Management**

Proper management techniques will be applied wherever the opportunity exists to improve conditions for scenic value, timber stand improvement, wildfire prevention, pest control, and watershed protection. While all Project lands are managed for fish and wildlife habitat in conjunction with other land uses, Wildlife Management Area lands are designated specifically for wildlife management. They contain valuable wildlife habitat components that are managed, using guidance that includes the State Wildlife Action Plan (SWAP) yield habitat suitable for designated game and non-game species. This plan can be found by contacting the Ohio Department of Natural Resources or Pennsylvania Game Commission. Licenses, permits, and easements for such man-made intrusions such as pumping plants, pipelines, cables, transmission lines, and non-Project roads are usually not allowed on these lands; however, exceptions to this policy are allowable, if properly mitigated.

#### **3.2.4.3 Vegetative Management**

Vegetative management, including agricultural activities that do not greatly alter the natural character of the environment, are permitted for a variety of purposes, including erosion control, retention and improvement of scenic qualities, and wildlife management. Management activities focus on the protection and enhancement of forest resources and vegetative cover. Forests are managed as a multi-purpose resource for sustained yield when consistent with recreation and wildlife management objectives and approved land uses. Hunting and fishing are allowed pursuant to tribal or state fish and wildlife management regulations where these activities are not in conflict with the safety of visitors and Project personnel. Other activities are conducted under the guidance of the Project's forest management and wildlife management plans.

#### **3.2.4.4 Future or Inactive Recreation Areas**

These areas have site characteristics compatible either with future recreational development or recreation areas that are closed. Until there is an opportunity to develop or reopen these areas, they will be managed for multiple resources.

#### **3.2.5 Water Surface**

There are four possible sub-classifications.

##### **3.2.5.1 Restricted**

Water areas restricted for Project operations, safety, and security purposes.

##### **3.2.5.2 Designated No-Wake**

To protect environmentally sensitive shoreline and recreational water access areas from disturbance, and/or to protect public safety.



#### **3.2.5.3 Fish and Wildlife Sanctuary**

Annual or seasonal restrictions on areas to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning.

#### **3.2.5.4 Open Recreation**

Those waters available for year-round or seasonal water-based recreational use.

### **3.3 Easement Lands**

Project easement lands are those properties where the Corps has obtained an easement interest, but no fee title. Planned use and management of easement lands will be in strict accordance with the terms and conditions of the easement estate acquired for the Project. Easements were acquired for specific purposes and the Corps does not have the same rights or ownership as it does with fee owned land. There are three different types of easements – operations, flowage, and conservation.

#### **3.3.1 Operations Easement**

Operations easements are easements utilized for the purpose of conducting Project operations.

#### **3.3.2 Flowage Easement**

Flowage easements are easements utilized for the purpose of temporarily overflowing, flooding, and submerging private land. Generally, the purpose of these easements is to provide adequate storage for flood waters.

#### **3.3.3 Conservation Easement**

Conservation easements are easements utilized for the purpose of protecting wildlife, fisheries, recreation, cultural resources, environmental resources, or endangered species.

## **4. Resource Plan**

The resource plan describes, in broad terms, how Project lands will be managed according to the established land classifications. Each classification is discussed in terms of anticipated public use and resource stewardship needs.

### **4.1 Classification and Justification**

#### **4.1.1 Project Operations**

This classification includes lands required for the dam and outflow structures, Resource Manager's Office, and other areas used to operate and maintain the Project. There are 30.6 acres classified as Project Operations. Some picnic sites and a disc golf course are also identified in this classification; however, the primary purpose is Project Operations. The management plan (stated as "resource objectives") for these areas is to continue providing physical security necessary to ensure continued operations of the dam and related facilities.

#### **4.1.2 High Density Recreation**

Lands developed for intensive recreational activities for the public are considered as high-density recreation including day-use areas, campgrounds, and commercial concessions (marinas, restaurants, resorts, etc.). Future possibilities for development of these areas include expansion of trail systems utilizing emerging technologies such as Quick Reference (QR) codes and other electronic media outreach and expansion of additional park recreation features. There is a total of 803.8 acres classified as High-Density Recreation (see Appendix B, Plate 7 for the Recreation map).

##### *Shenango Recreation Area*

Shenango Recreation Area is federally owned and operated, located in Transfer, PA on West Lake Road. The area consists of a day use area with a boat launch and picnic pavilion. In addition, The Shenango Campground is located within and provides 330 camp sites, which 111 have electricity available. It also has three playgrounds, two volleyball courts, 4 shower houses, and 7 restroom facilities.

##### *Mahaney Recreation Area*

Mahaney Recreation Area is located in South Pymatuning Township off Kelly Road near the dam. It has a boat ramp with courtesy dock, three restroom facilities, an 18-hole disc golf course, two dam overlook areas, three small trails, four picnic pavilions, soccer fields, two playgrounds, and an American Chestnut tree orchard.

##### *Clark Recreation Area*

Clark Recreation Area is located in the Borough of Clark on Lake Road (SR258). It has a boat ramp with courtesy dock, ADA accessible fishing pier, fish cleaning station, a restroom facility, and a picnic pavilion.

##### *Northstar Marina*

Northstar Marina is located in the Borough of Clark on Lake Road (SR258). This area is federally-owned land that is leased to a privately owned business which provides dock slips for rent, a boat launch with courtesy dock, a fuel dock, a public restroom facility, two picnic pavilions, and a store.

##### *Chestnut Run Swim Beach*

Chestnut Run Swim Beach is on Saranac Drive (SR846) in Transfer. The beach provides some amenities including a picnic pavilion, swim beach area, and portable toilets are available.

##### *Bayview ORV Area*

Bayview ORV area consists of ATV/UTV trails throughout 200 acres, a parking lot, and portable toilets. This area is maintained in cooperation with the non-profit group ATV Traction.

***Best Management Practices for High-Density Recreation Lands:***

- Provide access for and use by the elderly and people with disabilities
- No ground-disturbing activities in high density recreation areas, unless authorized by the Corps
- Interpret cultural resources to benefit visitors
- Protect the viewshed in order to maintain current aesthetic values
- Prescribed fire should be considered as a management method for this land classification in appropriate locations

**4.1.3 Environmentally Sensitive Areas**

This classification consists of areas where scientific, ecological, cultural, or aesthetic features have been identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the Clean Water Act, Endangered Species Act, the National Historic Preservation Act, Archeological Resources Protection Act, or applicable state statutes. These areas must be identified and protected by management to ensure they are not adversely impacted. Typically, limited or no development of public use is allowed on these lands.

Environmentally Sensitive Areas include locations of threatened and endangered species and cultural sites. Some areas may be highly sensitive to change, while other areas may need prescribed management to remain viable. The goal of managing these areas is to protect and preserve known areas that contribute to the diversity and health of the Project. There is a total of 4,614.1 acres classified as Environmentally Sensitive Areas.

The following types of landscape may be classified as an Environmentally Sensitive Area:

- Known or discovered cultural sites/archaeological sites
- Large tract woodlands
- Mature woodlands
- Reforestations
- Wetlands identified in the National Wetlands Inventory
- Lands possessing unique wildlife value by diversity or threatened or endangered species
- Steep slopes, often with outcrops or talus slopes
- Areas of aesthetic quality
- Corridors between habitats that protect connectivity (e.g., riverine woodlands)

***Wetlands and Aquatic Habitats***

There are 151.7 acres of riverine habitat, 3,338.0 acres of lake habitat, 2,712.0 acres of freshwater forested/shrub wetlands, 511.6 acres of freshwater emergent wetlands, and 62.5 acres of freshwater pond habitat.

Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For the purposes of this classification, wetlands must have one or more of the following three attributes: 1) at least periodically, the land supports predominantly hydrophytes; 2) the substrate is predominantly undrained hydric soil; and 3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year (Cowardin et al., 1979). Wetlands provide many benefits such as habitat for fish and wildlife, natural water quality improvement, flood storage, and shoreline erosion protection. There are multiple acres of wetlands that are not classified as Environmentally Sensitive Areas but rather under the Water Surface classification.

***Best Management Practices for Environmentally Sensitive Areas:***

- Control noxious weeds and other pests in a manner that avoids damage to existing desirable vegetation and sensitive areas (wetlands and streams)
- Preserve and protect existing wetlands and other sensitive or unique habitats that support threatened and endangered species along with other wildlife
- Proponents of surface disturbing activities shall identify important, sensitive, or unique habitats in the vicinity of the Project and design the proposed project to avoid, minimize, or mitigate impacts to these resources
- Riparian areas are maintained and improved for the protection and enhancement of fisheries
- As a standard practice, ephemeral, perennial, and intermittent drainages, and wetland/riparian areas will be avoided as locations for oil and gas related facilities, including drilling locations, production facilities, roads, and pipelines. Whenever possible, facilities will be confined to existing alignments or locations, minimizing width requirements, and maximizing multiple occupancy
- Surface disturbance will not be allowed within 660 feet of the source of a spring or seep, or within downstream riparian areas created by flows from the source or resulting from riparian area management
- Proponents of surface disturbing activities shall conduct surveys for federally and state-protected species and other species of concern within action areas and design the project to avoid, minimize, or mitigate impacts to these resources
- The Corps will prohibit the disturbance of any population of federally or state listed and special status plant species

- No motorized use, unless previously authorized, will be allowed within Environmentally Sensitive Area boundaries; other trails (i.e., foot trails, mountain bike trails, cross country skiing trails, etc.) will be analyzed on a case-by-case basis. Trail design, construction, and maintenance will ensure all criteria in which the Environmentally Sensitive Area was established will remain protected
- Prescribed fire should be considered as a management method for this land classification

#### **4.1.4 Multiple Resource Managed Lands**

This classification includes areas where the predominant use is for game and wildlife management or dispersed recreation. However, there are other compatible uses that may occur on these lands without impacting the predominant use.

##### **4.1.4.1 Low Density Recreation**

Low density refers to lands with minimal development or infrastructure that support passive public recreational use (e.g., primitive camping, fishing, hunting, trails, wildlife viewing). There are 158.6 acres at the Project that fall under this category. Many of these lands are undeveloped and used for wildlife purposes.

##### *Hartford Access Area*

Road with parking lot and undeveloped boat ramp.

##### *Parker's Landing Access Area*

Road with parking lot and a boat ramp.

##### *Old Carlisle Road Access Area*

Road with a parking lot and water access.

##### *846 Access Area*

Road with a parking lot and water access.

##### *Beaver Pond Road Access Area*

Road with a parking lot and water access.

##### *RT18 Access Area*

Road with a parking lot, water access, pollinator plots, and osprey nesting platform.

##### *Mercer Recreation Area*

Undeveloped area with water access.

*East Lake Road Access Area*

Parking area with water access.

*Golden Run Wildlife Area*

Wildlife area with roads, parking lots, water access, and a boat ramp.

*Old Boy Scout Camp*

Parking area with pit toilet, campfire ring, and water access.

*Hopper Road Access Area*

Parking lot with water access.

*Big Bend Access Area*

Road with parking lot, an undeveloped boat ramp, and a kayak launch.

*New Hamburg Access Area*

Road with a parking lot, water access, and trail access.

*Kidd's Mill Park*

Road with a parking lot, kayak launch, pit toilet, trail access, picnic areas, and a covered bridge.

*Shenango Trail*

9+ mile trail system between Big Bend Access Area and Kidds Mill Park.

*Trout Island Trail*

Operated by the Mercer County Trails Association.

*Orangeville Community Park*

Operated by the City of Orangeville, OH. Has a road, parking lots, an undeveloped boat ramp, pavilion, playgrounds, a basketball court, and a dry hydrant.

*Kinsman Park*

Roads with parking lots, soccer and football fields, and a pavilion.

### ***Best Management Practices for Low Density Recreation Lands:***

- Provide access for and use by the elderly and people with disabilities
- No ground disturbing activities in low density recreation areas unless authorized by the Corps
- Interpret cultural resources to benefit visitors
- Protect the viewshed in order to maintain current aesthetic values
- Prescribed fire should be considered as a management method for this land classification in appropriate locations

#### **4.1.4.2 Wildlife Management Areas**

Wildlife lands are available for sightseeing, wildlife viewing, nature study, hunting, and hiking. There are 5,393.1 acres classified as Wildlife Management Areas (WMAs). Taking of wildlife, including hunting, fishing, and trapping, may be allowed when compatible with the wildlife objectives for a given area and within federal and state fish and wildlife management regulations as established in ER 1130-2-540.

Wildlife management activities include upland small game and deer management through natural succession control, brush pile construction, and orchard improvement. Waterfowl, small game, and large game hunting is also permitted around the Project.

#### ***PA Game Commission Game Lands***

The PGC leases and maintains land for wildlife habitat and hunting opportunities in Mercer County, Pennsylvania. There are several access areas are available throughout the project and areas are managed for white-tailed deer, small game, owls, raptors, migratory birds, and waterfowl.

#### ***Shenango Wildlife Area, ODNR Division of Wildlife***

ODNR leases and maintains land for wildlife habitat and hunting opportunities in Trumbull County, Ohio. There are several access areas throughout the wildlife area. The Pymatuning Creek is designated as a wild and scenic waterway.

### ***Best Management Practices for Wildlife Management Areas:***

- Surface disturbance will not be allowed within 660 feet (or if there are any more stringent state species-specific buffers) of active raptor nests on natural habitat features, such as trees, large brush, and cliff faces

- The Master Memorandum of Agreement (MOA) between the Corps and the U.S. Department of Agriculture will guide nuisance species damage control. For more information, the referenced MOA can be found here:  
<https://corpslakes.erdcdren.mil/employees/cecwon/mou-archive.cfm>
- Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 45 decibels measured at 30 feet from the source of the noise
- Manage forest resources and other vegetation for balanced uses of recreation, wildlife, and fisheries
- Monitor forest conditions to document health and identify pests
- A habitat restoration plan shall be developed to avoid, minimize, or mitigate negative impacts on vulnerable wildlife while maintaining or enhancing habitat values for other species. The plan shall identify revegetation, soil stabilization, and erosion reduction measures that shall be implemented to ensure that all temporary use areas are restored. The plan shall require that restoration occur as soon as possible after completion of activities to reduce the amount of habitat converted at any one time and to shorten the length of recovery time to natural habitats
- Recovery plans for species state and federally-listed as threatened or endangered will be implemented under the authority of the Endangered Species Act, including the reintroduction or relocation of native special status species in areas on public land in coordination and cooperation with local governments
- Increased intensity of research and monitoring will be needed to evaluate changes in habitat condition, land use threats to the species, species use and distribution, reclamation efforts, propagation, and other projects that may help in enlarging the knowledge base of these species
- All land use management prescriptions will be maintained as currently established to ensure aesthetics, habitat quality, and overland water flow. All existing utilities and their operations and maintenance will not be impacted by this designation
- No motorized use, unless previously authorized, will be allowed within Wildlife Management Area boundaries; other trails (i.e., foot trails, mountain bike trails, cross country skiing trails, etc.) will be analyzed on a case-by-case basis
- Prescribed fire should be considered as a management method for this land classification

#### **4.1.4.3 Future or Inactive Recreation Areas**

There are 93.8 acres of lands classified as Future Recreation Areas or as Inactive Recreation Areas.

#### **4.1.5 Water Surface**

There are four Water Surface categories within the boundaries of the Project: Restricted, Open Recreation, Fish and Wildlife Sanctuary, and Designated No-Wake. These areas make up



3,560.9 acres that are within the reservoir's conservation pool. See Appendix B, Plate 7 for Recreation map which shows the Water Surface categories.

#### **4.1.5.1 Restricted**

Restricted areas include those portions of the reservoir pool where public access is prohibited due to Project operations, security concerns, or to promote public safety. This includes the areas between the outlet structure and the upstream portion of the dam and the area immediately downstream of the dam. There is a total of 9 acres at the Project that fall under this category.

#### **4.1.5.2 Designated No-Wake**

Designated no-wake zones are marked with buoys to protect environmentally sensitive shoreline areas, recreational areas (such as boat ramps and docks), and for public safety. Boats are required to slow down in these areas to prevent waves from impacting the shoreline. There are 548 acres, and 537.8 acres (20 HP limit) at the Project that fall under this category.

#### **4.1.5.3 Open Recreation**

Open recreation areas are waters that are available year-round or seasonally for water-based recreational use. There are 2,466.1 acres at the Project that fall under this category.

#### **4.1.5.4 Fish and Wildlife Sanctuary**

Fish and wildlife sanctuary zones have annual or seasonal restrictions on areas to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning. There are no acres that fall into this category.

### ***Best Management Practices for Water Surface Areas:***

- Maintain and, if possible, improve water quality and fisheries habitat structure to support a productive sport fishery and maintain healthy populations of native fish species
- Water quality monitoring at established stations should continue throughout the Project property and watershed, as the data gathered aids in conservation of the Projects aquatic resources
- Fish and macroinvertebrate surveys at established stations should continue throughout the Project property, watershed, and its tributaries, as the data gathered aids in conservation of the Projects aquatic resources
- Continue coordinating monitoring activities at the Project with state and federal resource agencies
- Considerations shall be made to eliminate the horsepower restriction on the west-end of the reservoir and designate it as a no wake zone.

## **4.2 Easement Lands**

There are 330 total acres of easement lands at the Project.

#### **4.2.1 Operations Easement**

The Corps has 35.3 acres of operations (roadway) easement lands at the Project.

#### **4.2.2 Flowage Easement**

The Corps has 294.7 acres of flowage easement lands at the Project.

#### **4.2.3 Conservation Easement**

The Corps has no acres of conservation easement lands at the Project.

#### ***Best Management Practices for Easement Lands:***

- Monitor any activities occurring on easement lands to ensure that Corps rights, according to terms and conditions of the legal easement, remain unimpeded
- Promote an understanding of Corps boundary and mission by both the public and the owners of underlying private property
- Restrict development on easement lands and discharges of treated wastewater and other pollutants into the reservoir

### **5. Special Considerations Affecting Natural Resources**

During the development of this Master Plan, several issues were identified that could affect or are affecting the stewardship and management potential of the lands and waters at the Project.

#### **5.1 Coal Mines**

Currently, there are no active or abandoned coal mines on Project property. However, adjacent abandoned mines could impact water quality. Mineral rights underlying the Project may be owned outright by the federal government, owned by a third party, or a combination thereof. There may be subordination agreements or surface restrictions in place. It is also possible for the Bureau of Land Management (BLM) to lease federally-owned mineral interests beneath the surface of Project land. It is necessary to review and consider the specific ownership documentation of each tract in order to determine the rights and controls that the Corps has on said tracts.

Historical coal mining activities in the area may result in negative environmental impacts such as abandoned mine drainage. Abandoned mine drainage is water that is polluted from contact with mining activity, and normally associated with coal mining. It is a common form of water pollution in areas where mining took place in the past. There are several issues with abandoned mines that impact water quality:

- Acid mine drainage (the most prevalent; see below)
- Alkaline mine drainage (this typically occurs when calcite or dolomite is present)

- Metal mine drainage (high levels of lead or other metals that drain from these abandoned mines)

Acid mine drainage is the formation and movement of highly acidic water rich in heavy metals. This acidic water forms through the chemical reaction of surface water (rainwater, snowmelt, pond water) and shallow subsurface water with rocks that contain sulfur-bearing minerals, resulting in sulfuric acid. Heavy metals can be leached from rocks that come in contact with the acid, a process that may be substantially enhanced by bacterial action. The resulting fluids may be highly toxic and, when mixed with groundwater, surface water, and soil, may have harmful effects on humans, animals, and plants (USEPA, 2018). Coal mine locations will be managed for water quality concerns, overland water flow, erosion control, and environmental impacts. Surface occupancy will be avoided for coal mines.

## **5.2 Oil and Gas Development**

Currently, there are no proposals for new oil and gas related activities on Project lands. There are ten inactive wells, 14 abandoned wells, and six active wells on Corps fee owned property. Mineral rights underlying the Project may be owned outright by the federal government, owned by a third party, or a combination thereof. There may be subordination agreements or surface restrictions in place. It is also possible for the BLM to lease federally-owned mineral interests beneath the surface of Project land. It is necessary to review and consider the specific ownership documentation of each tract in order to determine the rights and controls that the Corps has on said tracts. Oil and gas well locations will be managed for surface disturbance such as invasive species, water quality, overland water flow, and erosion control. Potential impacts of mineral extraction activities include the footprint of the extraction site and construction and operation of access roads. Mineral extraction within the Project boundary could infringe on general recreational areas or fish and wildlife related recreation, either directly or from pollutants that are a result of extraction operations. Surface occupancy will be avoided for oil and gas development.

## **5.3 Federally-Owned Minerals**

Under the multiple-use principle, federal minerals beneath the surface of Corps lands may be made available for mineral exploration and extraction, consistent with Project activities. The General Mining Act of 1872 (30 U.S.C. 22-42) authorizes and governs prospecting and mining for economic minerals. The Mineral Leasing Act of 1920 (30 U.S.C. 181 et. seq.), authorizes and governs leasing of public lands for developing deposits of coal, petroleum, natural gas, and other hydrocarbons. The Materials Act of 1947 (30 U.S.C. 601-604) authorizes BLM to dispose of mineral materials on federal lands provided that the disposal is not otherwise expressly authorized or prohibited by law and is not detrimental to the public interest. While the Mineral Leasing Act authorizes the BLM to issue oil and gas and coal leases, it does not require that leases be issued (Darin & Stills, 2002). The BLM must obtain the Army's approval and the

Army, through the Engineering District, can place limitations in the lease regarding the extractions of these minerals (See AR 405-30; *see, e.g.*, 43 CFR § 3503.20). If a developer approaches the BLM for access to a certain parcel or mineral interest, the BLM notifies the Corps and requests title information for the parcel and any use stipulations the Corps might require. The Real Estate Office for the Corps provides the BLM with title information and any stipulations (AR 405-30). The BLM would, in turn, inform the party interested in leasing the federal minerals of all associated stipulations. If the developer is still interested, the BLM follows its procedures to make the minerals available. The Corps has the final say in whether minerals will be made available, and the Assistant Secretary of the Army (ASA) has final approval on any non-availability determination.

#### **5.4 Owners of Private and State Minerals**

Owners of private and state oil, gas, and coal rights have a property right to develop their interests, which generally includes reasonable use of the surface to the extent necessary to accomplish such development. However, this does not mean their operations are free from limitation or reasonable regulation that might originate under state and/or federal law, whether pursuant to property law concepts or other legal authorities. Under applicable state and federal laws and regulations, the mineral owner, whether it is private or state, and/or the lessee must coordinate with the Project to use the federally-controlled surface. For all types of mineral leases where surface occupancy is approved under a lease, the lessees must obtain prior approval for any surface activities on Corps-managed lands (Title 43 – Public Lands: Interior Code of Federal Regulations [CFR] Part 3160). It is the Project's responsibility to protect Project purposes when allowing surface use. Moreover, while owners of oil, gas, and coal interests generally have the right to reasonable use of the surface to the extent necessary for private oil, gas, and coal exploration and development, they are not exempt from possible liability to the surface owner for damages stemming from such exploration and development.

#### **5.5 State or Privately-Owned Minerals Accessed from State or Privately-Owned Land**

When the Corps does not own the necessary estates in real property to control development within close proximity of dams and other Project structures, effective control of mineral extraction activities requires close coordination among the Project staff and the District Office, especially Operations, Real Estate, Engineering-Construction, and Office of Counsel. Operations personnel are often the first Corps employees to become aware of new or proposed mineral extraction activities near the Project. Mineral extraction activities may include exploration operations, mining operations, drilling operations, production operations, reworking operations (including hydraulic fracturing), and high-pressure pipeline operations. Real Estate personnel must investigate the location of activities and determine the federal real property interests in the location. Engineering-Construction personnel must evaluate any new or proposed activities in order to decide whether the proposed activity is compatible with the structural

integrity of the dam and other major structures. The Corps' ability to regulate and dictate private mineral extraction on adjacent private lands is minimal; however, federal agencies have a duty to protect federal resources for authorized purposes. EC 1165-2-220 provides policy and procedural guidance for processing requests by private, public, tribal, or other federal entities to make alterations to, or temporarily or permanently occupy or use, any Corps Project under Section 408. Proposed alterations must not be injurious to the public interest or impair the usefulness of the Project.

### **5.6 Indiana Bat and Northern Long-Eared Bat**

Currently listed as federally endangered, the Indiana bat is a small, dark brown to black colored bat that hibernates in caves and abandoned mines during winter months (starting mid-September into November) and roosts under peeling tree bark, under bridges, and sometimes in buildings during warmer months (starting mid-April into May). The total body length of an adult Indiana bat averages between 2-3 inches, with a wingspan of 9-11 inches. Populations have been declining since the 1960's, largely due to disturbance of winter cave hibernacula (USFWS, 2019). The northern long-eared bat, currently listed as federally threatened, is a medium-sized bat with a total body length of 3.0-3.7 inches, and a wingspan of 9-10 inches. Their fur color can be medium to dark brown on the back and pale brown on the underside, primarily distinguishable by its long ears (USFWS, 2020). The northern long-eared bat and Indiana bat are similar with respect to their behavior, habitat use, and range, as well as the anthropogenic activities threatening existing populations.

There is considerable suitable summer roosting habitat present in and amongst the forested components of the Project. At present, there is no current Corps management or survey plan in effect; however, the U.S. Fish and Wildlife Service (USFWS) has adopted regional, seasonal cutting/disturbance restrictions. Generally, tree-cutting activities should be carried out from mid-November through the end of March during which time bats are hibernating in non-forest habitats. If any tree-cutting is necessary from the beginning of April to mid-November, trees greater than or equal to three inches in diameter at breast height should not be cut or physically disturbed in order to avoid potentially killing or injuring roosting bats. Special considerations should be given to trees with the following characteristics indicative of suitable roosting habitat: 1) dead or dying trees and snags (with exfoliating bark); 2) live trees with exfoliating or defoliating bark in the trunk or branches (e.g., shagbark and shellbark hickory); and 3) trees or snags that have characteristics typical of roost sites for bats (i.e., have exfoliating or defoliating bark, or contain cracks, crevices, or holes).

Currently, no known occurrence of these bats has been confirmed at the Project; however, future surveys will need to be conducted to confirm their presence. Regardless, Project staff adhere to the aforementioned cutting/disturbance restrictions. Corps staff at the Project will continue to work with USFWS and partner with other state and federal resource agencies to ensure that

potential detrimental effects to managed resources are minimized on public lands entrusted to the Corps.

### **5.7 Bald Eagle**

The bald eagle is protected by the Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act (MBTA). The MBTA and the Eagle Act protect bald eagles from a variety of harmful actions and impacts. The USFWS established the National Bald Eagle Management Guidelines to advise landowners, land managers, and others who share public and private lands with bald eagles of protective provisions that apply to human activities. A variety of human activities can potentially interfere with bald eagles, affecting their ability to forage, nest, roost, breed, or raise young. The guidelines are intended to help minimize impacts to bald eagles, particularly where they may constitute disturbance, which is prohibited by the Eagle Act (USFWS, 2007).

### **5.8 Invasive Aquatic and Terrestrial Species**

The most common invasive terrestrial plant species occurring at the Project are: Japanese honeysuckle, Japanese knotweed, autumn-olive, buckthorn, purple loosestrife, common reed or phragmites, reed canary grass, garlic mustard, multiflora rose, giant hogweed, and bush honeysuckles. The most common aquatic invasive species are the hydrilla and the zebra mussel (Ohio Invasive Plants Council, 2018). The Asian clam and common carp have been observed within or immediately adjacent to the Project. The most common invasive insects are: spotted lanternfly, Asian long-horned beetle, emerald ash borer (EAB), spongy moth, and the hemlock woolly adelgid (HWA).

While no management plan is currently in effect for invasive species, terrestrial or aquatic, on Corps managed property, considerations are taken when performing tasks on the Project to prevent the spread or introduction of invasive species. Efforts to educate the public on preventing the spread and introduction of invasive species is made through signage (e.g., Don't Move Firewood! signs), ranger led interpretive programs, and information on displays and pamphlets around the Project. Similar precautions are taken on leased lands, as well as practicing forest and wildlife management initiatives.

### **5.9 Unmanned Aircraft**

Title 36, Parks, Forest and Public Property, Chapter 111, Part 327.4 states “The operation of “aircraft” on Project lands at locations other than those designated by the District Commander is prohibited. This provision shall not be applicable to aircraft engaged in official business of federal, state, or local governments or law enforcement agencies, aircraft used in emergency rescue in accordance with the direction of the District Commander or aircraft forced to land due to circumstances beyond the control of the operator.” The use of unmanned aircrafts for recreational purposes is currently prohibited under this regulation. Considerations shall be made

to designate the old soccer fields at the Upper Mahaney Recreation Area for a model airplane and drone field in the future.

### **5.10 Climate Change**

Long-term changes in climate (i.e., altered air temperature and/or precipitation rates) will affect habitats and species. Intolerant flora and fauna, as well as species currently existing on the edge of their range, are at greatest risk of local extirpation as a result of altered environmental conditions under climate change. Climate change was predicted using models and climate data. Given predictions, it may result in water management and water quality difficulties such as not being able to make summer pool in time for the recreation season or not having enough water in the late summer to meet downstream flow targets. Increased storm runoff due to climate change also has the potential to result in greater inputs of pollution which in turn can affect water quality of the reservoir and downstream of the Project. Similarly, increased runoff may alter rates of sedimentation within the reservoir. Ecosystems and associated species impacted by pre-existing anthropogenic stressors are also at greater risk. Thus, preserving and promoting healthy and connected habitats will be critical to ensuring long-term persistence of all species under climate change (NOAA, 2021).

### **5.11 Important Bird and Biodiversity Area**

The Project is designated as an Important Bird and Biodiversity Area (IBA). An IBA is identified using an internationally agreed set of criteria that is globally important for the conservation of bird populations. Currently, there are 13,000 IBAs worldwide. In the United States, this program is administered by the National Audubon Society. To be listed as an IBA, a site must satisfy one of the following criteria: 1) Globally Threatened Species – this site is known or thought to regularly hold a significant number of globally threatened species; 2) Restricted-range Species – this site is known or thought to hold a significant population of at least two range-restricted species; 3) Biome-restricted Species – this site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one biome-realm; or 4) Congregations – this site is known or thought to hold congregations of equal to or greater than one percent of the global population of one or more species on a regular or predictable basis (Bird Life International, 2021).

Water drawdowns in late summer and autumn provide many acres of shallow mudflats, making the Project one of the most productive migratory stopovers for shorebirds in western Pennsylvania. As many as 30 species of shorebirds occur from July through October, and numbers peak in early to mid-August at up to 2,000. Great egrets (*Ardea alba*) gather in the fall and bald eagle and osprey are regularly spotted. The Project is a regionally important area for waterfowl in migration and winter. Large flocks of American pipit (*Anthus rubescens*) are also seen.

## **6. Agency and Public Coordination**

Throughout the Master Plan update process, the Corps involved the public, engaged with partners and stakeholders representing interests at the local, regional, state, and federal levels, and coordinated with sovereign (recognized) tribal nations.

Comments from the scoping period were received on a variety of topics, including but not limited to:

### **1. Preferred qualities, characteristics, and components of the Project:**

- The Project's potential for growth, but steadfast focus on environmental conservation; A maintained balance between the two will be key to maintaining the preferred qualities of the Project
- The provision of fishing opportunities and trail systems
- The Project's offering of low-density recreation experiences in certain Project areas, coupled with the potential for more commercial and high-density recreation offerings in ways that could draw new visitors
- The ability of visitors to come and relax without having to travel significant distances

### **2. Potential Threats and Concerns:**

- Increase in trash and debris near recreation areas
- Natural debris floating on the reservoir causing concern to boaters
- Disrepair of roadways
- Lack of enforcement of Project rules (such a quiet hours)
- Crime potential at the boat launches with unmonitored vehicles
- Changing water quality conditions
- Growth of invasive species
- Climate change and its immediate, secondary, and tertiary impacts related to flood risk, water quality, erosion, etc.

### **3. Regional Needs/Opportunities:**

Below are the identified regional needs/opportunities that the Project could potentially undertake:

- Expanding and maintaining hiking and biking trail system; with strategic placement to existing systems and recreation sites
- Adding additional swim access options within the Project limits, where feasible
- Updating existing campground facilities, with particular attention to adding electric sites and removal of old site posts
- Expanding and updating the playground facilities



- Changing docks and other boat/kayak launch sites to allow for easier use
- Bringing in other commercial recreation attractions such as a water-front restaurant, a water park, food trucks, etc.
- Introducing more education and activity-based programming for different age groups
- Connecting visitors to not only the natural but historical and cultural significance of the area

All comments made during the Scoping and Draft Release comment periods were considered during the development of the current Master Plan. See Appendix C for a summary of the comments collected during the public comment period held for the public review of the updated drafts of the Master Plan and Environmental Assessment.

### **6.1 Draft Release Meetings**

A public comment period was held in winter 2023 with the purpose of unveiling the proposed recommendations and land use classifications and eliciting feedback on the proposed updates to the Master Plan and accompanying Environmental Assessment.

### **6.2 Outreach Efforts**

The following outreach efforts were conducted to notify the public, stakeholders, and partners of the opportunities for involvement and to solicit input into the Master Plan update process:

- **Fact Sheet:** A Master Plan update fact sheet was developed to inform partners, stakeholders, and the public about the purpose and scope of the Master Plan update. This fact sheet was posted on the Master Plan website and around the Project to notify the public of the upcoming effort.
- **Partner and Stakeholder Email Invitations:** Invitations for the scoping meeting were sent out via email to all partners and key stakeholders, inviting them to attend a scoping meeting specifically for partners and stakeholders.
- **Public Facebook Posts:** Facebook posts were made on the Shenango River Lake Facebook page and U.S. Army Corps of Engineers Pittsburgh District page advertising the Master Plan update, promoting the meetings themselves, and instructing the public on how to provide input. Facebook events were also created to provide information on attending the meetings.
- **On-Site Promotion:** Master Plan update fact sheets and comment cards were placed at kiosks located at the Shenango Recreation Area and Mahaney Recreation Area notifying people of the effort and instructing the public on how to provide input.

- **Press Release:** A press release was posted to the Corps website and sent to local media before the public meeting in an effort to notify the public of the upcoming meetings and opportunities to comment: Corps to host virtual public scoping meeting on Shenango River Lake master plan revision > Pittsburgh District > News Releases (army.mil)
- **Indian Nation Coordination Letters:** Letters were sent directly to Indian Nations in recognition of the Corps' Federal Tribal Trust responsibilities. Letters will be sent during the public comment phase for the proposed update asking for comments on the proposed revisions.
- **Notice of Availability:** Pittsburgh District sent a Notice of Availability (NOA), required for the National Environmental Policy Act compliance, to partners and stakeholders indicating the 30-day comment period for the Master Plan and Environmental Assessment, along with the web address to access the documents.

See Appendix C for the compilation of the outreach efforts utilized during this Master Plan update.

### **6.3 Scoping Meetings**

Scoping efforts began on June 28, 2022, with a meeting between Corps staff and Project partners and key stakeholders representing Pennsylvania Department of Conservation and Natural Resources, Shenango River Watchers, and Mercer County Conservation District. Partners unable to attend the meeting were approached following the meeting to provide input. A virtual public meeting was held on June 29, 2022. The objectives of these scoping meetings were to 1) communicate the Corp's intent and need to revise the Master Plan; 2) establish the scope of the Master Plan update; and 3) learn about the needs, opportunities, and concerns of partners, stakeholders, and the public. For anyone unable to attend the scheduled meetings, the Pittsburgh District posted the recording of the public meeting along with a copy of the current Master Plan on the Project website. Interested parties could submit their input through multiple avenues including the use of an online public comment tool, comment boxes located around the Project, submitting comments via Facebook message to the Shenango River Lake staff, as well as sending their input via mail or email to the Pittsburgh District.

## **7. Summary of Recommendations**

This Master Plan conceptually establishes and guides the orderly development, administration, maintenance, conservation, enhancement, and management of all natural, cultural, and recreational resources at the Project. This section summarizes the proposed changes that can be

found within this Master Plan and provides specific recommendations to be considered that will help guide the direction of Project management into the future.

Derived through correspondences, comments, scoping meetings (described in further detail below) by local citizens, stakeholders, and current and potential Project partners, along with Corps staff knowledge of the Project, the recommendations below address the regional needs, threats, and opportunities identified throughout the planning process.

These management recommendations are non-regulatory and available for use by any citizen, group, or agency. They have been analyzed in the Environmental Assessment associated with this Master Plan in order to identify potential impacts and any additional analysis and coordination that may be necessary.

### **7.1 Coordination and Partnerships**

The modest size of the staff at the Project creates a prime opportunity for partners and volunteers to augment and advance the operations and management of the Project.

Therefore, an overarching recommendation for the Project is to create partnerships to leverage fiscal resources and continue to involve local communities and stakeholders in achieving the resource objectives set forth in Section 1.6. This recommendation includes working with federal and state agencies to leverage resources for complimentary natural resources management, with recreation service providers to improve user experiences, with environmental groups to improve habitat, and with educational and community groups to encourage volunteer activities that are mutually beneficial.

To optimize the resources and opportunities within the area and communities surrounding the Project, the Corps should endeavor to keep abreast of the existing plans reviewed during the update of this Master Plan as well as any future plans that are developed for the area and surrounding communities.

The Corps should also seek to regularly stay engaged and further coordination efforts. To encourage coordination and partnership, the Project staff should engage with external partners including but not limited to:

- Pennsylvania Fish and Boat Commission
- Pennsylvania Department of Conservation and Natural Resources
- Pennsylvania Game Commission
- Pennsylvania State Historic Preservation Office
- Ohio Department of Natural Resources
- Shenango River Watchers

- ATV Traction
- Mercer County Conservation District
- Mercer County Trails Association
- Mercer County Beekeepers Association
- Mercer County Disc Golf Association
- Northstar Marina
- VisitMercerCountyPA
- Pennsylvania State University
- Cities of Sharon, Farrell, Hermitage, and Pymatuning
- Buhl Birders

Opportunities ripe for partnerships include: identification of eligible cultural resource artifacts and sites, establishment of floating islands, management of Chestnut Run Swim Beach, establishment of educational, safety, and wildlife improvement projects and practices, utilization of Project facilities for biological stations, program development and administrative duties, maintenance of Bayview ORV Area, amenity expansion and creation of opportunities for hunting and fishing, the creation of a Friends of Shenango River Lake group, boating safety courses, and vessel inspections.

## **7.2 Facility Modernization**

The Corps will continue to modernize current facilities at the Project. Modernization activities will occur within existing footprints of recreation areas and prioritize actions that improve visitor safety and experience where funding is available and in accordance with Engineer Manual (EM) 1110-1-400, Engineering and Design – Recreation Facility and Customer Service Standards, 1 Nov 2004. Potential improvements are described in detail in Section 1.6 of this Master Plan and were developed using information gathered during the public input process and expert knowledge of the Project staff. Examples of potential improvement projects are provided below.

Specific potential improvements for safety if resourcing and/or a successful partnership becomes available at the Project should include:

- Installment of informational and directional signs around the Project and trails;
- Demarcation of property lines (fee and flowage);
- Improvements to roads leading to, and surrounding, the Project; and
- Modernize facilities and ensure ADA accessibility.

Specific potential improvements for improved visitor experience if resourcing and/or a successful partnership becomes available at the Project should include:

- Identification of Project Site Areas (PSAs) with low use and degraded facilities/amenities; divest or improve when appropriate.
- Development of a Project app to act as a real time comment card for Corps' facilities and activities such as fishing tournaments; include trail and park maps.
- Identification or establishment of a Project Information/Nature Center.
- Expand and improve existing trail systems; establish new multipurpose trail systems.
- Establishment of observation platform for wildlife viewing at East Lake Road Access Area
- Establish a dog park at Mahaney Recreation area and Shenango Recreation Area.
- Improve Mercer Recreation Area to allow for primitive camping.
- Improvements to Shenango Recreation Area to include replacing fire rings, picnic tables, site posts, erosion control, playground upgrades, addition of more electric full hook up sites, and longer operating dates as some examples.
- Develop 846 Access area to include kayak launch and mountain bike trail.
- Designation old soccer fields at the upper Mahaney Recreation Area for model airplane and drone use.

### 7.3 Land Classification Changes

The land use classification changes discussed in this document and evaluated in the accompanying Environmental Assessment represent the changes in land use, management strategies, and guidance concerning naming conventions that have occurred since the 1998 Master Plan was approved. Specifically, the previous Land Classification of Recreation is now considered High Density Recreation in this revised Master Plan. Additionally, No Boating is now considered Restricted in this revised Master Plan.

Updating and highlighting naming conventions and/or classifications as part of the Master Plan will ensure the conservation of valuable resources continues uninhibited (See Tables 7-1 and 7-2, below).

**Table 7-1. Conversion of Land and Water Classifications**

<b>Original</b>	<b>Proposed</b>
Wildlife Management, General	Wildlife Management
Environmentally Sensitive Areas	Environmentally Sensitive Areas
Vegetative Management	Vegetative Management
Recreation	High Density Recreation
Recreation-Low Density	Low Density Recreation
Inactive and/or Future Recreation Areas	Future or Inactive Recreation
Project Operations	Project Operations
Mitigation	Mitigation
Open Boating	Open Recreation

No Wake No Boating 20 Horsepower Limit n/a	Designated No-Wake Restricted Designated No- Wake Fish and Wildlife Sanctuary
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This table reflects a change in terminology classifications of land and water.

Table 7-2. Summary of Land Class Changes

Existing Land Use Class	Existing Land Use Acres	Proposed Land Use Class	Proposed Land Use Acres
Wildlife Management, General	8,748	Wildlife Management	5,393.1
Environmentally Sensitive Areas	1,114	Environmentally Sensitive Areas	4,614.1
Vegetative Management	n/a	Vegetative Management	n/a
Recreation	912	High Density Recreation	803.8
Recreation-Low Density	141	Low Density Recreation	158.6
Inactive and/or Future Recreation Areas	64	Future or Inactive Recreation	93.8
Project Operations	43	Project Operations	30.6
Mitigation	n/a	Mitigation	n/a
Unclassified	72	n/a	n/a
Open Boating	2,141.9	Open Recreation	2,466.1
No Wake	883.2	Designated No-Wake	548.0
No Boating	n/a	Restricted	9.0
20 Horsepower Limit	537.8	Designated No-Wake (20 HP Limit)	537.8
n/a	n/a	Fish and Wildlife Sanctuary	0.0

Acreeage numbers for historical land use classifications were calculated in GIS software by scanning, georeferencing, and digitizing the 1998 Land Use Classification map. Due to the scale and other limitations of the original map, acreages should be considered very approximate.

Additionally, approximately 3,500 acres of Project land will change from “Wildlife Management, General” in the 1998 MP to “Environmentally Sensitive Areas” in the 2023 MP. These reclassifications are due to updated mapping of aquatic resources, primarily wetlands, within the Project area; aquatic resources included in the USFWS NWI Maps are designated as Environmentally Sensitive Areas in the 2023 MP

The description and permitted uses of land classifications are designated in EP 1130-2-550, change 5 and Section 3.2. Best management practices for these areas are listed in Sections 4.1.3 and 4.1.4.2, respectively. As the description, permitted uses, and best management practices of Wildlife Management and Environmentally Sensitive Areas are similar, no significant changes to the management or use of these 3,500 acres are anticipated. If development actions are proposed within Environmentally Sensitive Areas, effected areas will be surveyed to verify the extent of the resource and determine if the proposed action can occur without negative impacts. USACE

will continue to coordinate with resource agency partners to successfully manage these lands for the use and enjoyment of our visitors and the conservation of our valuable natural resources.

While these land use classifications may be updated in the future, those described in this document, dated 2023, represent the most current and relevant uses of various Project lands. Additional details of the uses and management goals for individual Project site areas will be provided in a forthcoming OMP for the Project.

#### **7.4 Development Requests**

Some development requests include modernizing facilities and amenities and ensuring they are ADA compliant, identifying an existing space or establishing a new space for a Project Information/Nature Center, establishment of observation platform for wildlife viewing at East Lake Road Access Area, expanding, and improving existing trail systems, and establishing new multipurpose trail systems. There is interest in developing the Bayview ORV Area, or a mountain bike trail at the 846 Access Area.

There is also interest in replacing a trail bridge on the Shenango Trail located in the Big Bend Recreation Area and replacing a trail bridge at New Hamburg. The previous suspended cable bridge spanning an unnamed tributary of the Shenango River has collapsed. The bridge replacement could consist of poured concrete footers on opposite banks of the tributary. The potential for streambank stabilization exists to prevent erosion and scour.

Local entities have expressed interest in developing a kayak/canoe access at Mahaney Outflow Recreation Area to access the lower Shenango River.

Additional objectives include dog parks at Shenango Recreation Area and Mahaney Recreation Area, concrete disc golf tees at Mahaney, an entertainment amphitheater at Upper Mahaney, and the development of Mercer Recreation Area to possibly include dispersed camping, 3D archery course, boat ramp, and/or picnic areas.

#### **7.5 Wildlife Management and Environmentally Sensitive Areas**

The Corps land at the Project represents a significantly sized riparian corridor consisting of valuable wildlife lands. These lands are vulnerable to change by human disturbance. Therefore, large portions of these lands are outgranted to other agencies with the primary focus being wildlife management. At the Project there are large portions of land acreage remaining in an undeveloped natural state (i.e., heavily forested and rich in riverine habitat and wetlands). The

Corps will continue to coordinate with resource agency partners to successfully manage these lands for the use and enjoyment of our visitors and the conservation of our valuable natural resources. In the future, the Corps should develop survey methods to identify sensitive habitats, possibly using MSIM, and use the results to designate additional Environmentally Sensitive Areas. These lands should be protected from human disturbance and development activities to the extent possible in compliance with all applicable laws and regulations. If development activities are proposed for these areas, the Corps will work with partners to minimize the disturbance or mitigate the impacts. The Corps will also consider proactive steps to enhance natural areas for sensitive species and to restore sensitive habitats through native vegetation plantings, removal of invasive species, and/or other efforts targeted at non-game species habitat. In addition, the Corps will continue to protect cultural resources and promote education related to these resources.

#### **7.6 Threatened and Endangered Species**

Federally listed threatened and endangered plant and animal species will be managed according to USFWS Recovery Plans. State listed species will be protected through partnerships and agreements with state agencies. Best Management Practices, which are to be used to manage threatened and endangered species at the Project, have been outlined in Sections 4 and 5.



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## APPENDIX A

### APPLICABLE PUBLIC LAWS, FEDERAL STATUTES, AND EXECUTIVE ORDERS

The following public laws, federal statutes, and executive orders are applicable to the Project.

**A.1 PL59-209, Antiquities Act of 1906:** The first federal law established to protect what are now known as "cultural resources" on public lands. It provides a permit procedure for investigating "antiquities" and consists of two parts: An act for the Preservation of American Antiquities, and Uniform Rules and Regulations.

**A.2 PL74-292, Historic Sites Act of 1935:** Declares it to be a national policy to preserve for (in contrast to protecting from) the public, historic (including prehistoric) sites, buildings, and objects of national significance. This act provides both authorization and a directive for the Secretary of the Interior, through the National Park Service, to assume a position of national leadership in the area of protecting, recovering, and interpreting national archeological historic resources. It also establishes an "Advisory Board on National Parks; Historic Sites, Buildings, and Monuments, a committee of eleven experts appointed by the Secretary to recommend policies to the Department of the Interior".

**A.3 PL74-409, Rivers and Harbors Act of 1935:** This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes.

**A.4 PL74-738, Flood Control Act of 1936:** This act authorizes the construction of certain public works on rivers and harbors for flood control, and for other purposes.

**A.5 PL75-761, Flood Control Act of 1938:** This act authorizes the construction of certain public works on rivers and harbors for flood control, and for other purposes.

**A.6 PL78-534, Flood Control Act of 1944:** Section 4 of the act, as amended, authorizes the Corps to construct, maintain, and operate public parks and recreational facilities in reservoir areas and to grant leases and licenses for lands, including facilities, preferably to federal, state or local governmental agencies.

**A.7 PL85-500, Rivers and Harbors Act of 1958:** This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.

**A.8 PL85-624, Fish and Wildlife Coordination Act 1934:** This act, as amended, sets down the general policy that fish and wildlife conservation shall receive equal consideration with other Project purposes and be coordinated with other features of water resource development programs. Opportunities for improving fish and wildlife resources and adverse

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effects on these resources shall be examined along with other purposes which might be served by water resources development.

**A.9 PL86-645, Rivers and Harbors Act of 1960:** This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.

**A.10 PL86-717, Forest Conservation:** This act provides for the protection of forest cover for reservoir areas under this jurisdiction of the Secretary of the Army and the Chief of Engineers.

**A.11 PL88-578, Land and Water Conservation Fund Act of 1965:** This act established a fund from which Congress can make appropriations for outdoor recreation. Section 2(2) makes entrance and user fees at reservoirs possible by deleting the words "without charge" from Section 4 of the 1944 Flood Control Act, as amended.

**A.12 PL89-72, Federal Water Project Recreation Act of 1965:** This act requires that not less than one-half the separable costs of developing recreational facilities and all operation and maintenance costs at federal reservoir projects shall be borne by a non-federal public body. An OCE/OMB implementation policy made these provisions applicable to projects completed prior to 1965.

**A.13 PL89-90, Water Resources Planning Act (1965):** This act established the Water Resources Council and gives it the responsibility to encourage the development, conservation, and use of the Nation's water and related land resources on a coordinated and comprehensive basis.

**A.14 PL89-272, Solid Waste Disposal Act, as amended:** This act authorized a research and development program with respect to solid-waste disposal. It proposes (1) to promote a national research and development program for new and improved methods of proper and economic solid-waste disposal, including studies directed toward the conservation of national resources by reducing the amount of waste and unsalvageable materials and by recovery and utilization of potential resources in solid waste; and (2) to provide technical and financial assistance to state and local governments and interstate agencies in the planning, development, and conduct of solid-waste disposal programs.

**A.15 PL89-665, National Historic Preservation Act of 1966:** This act provides for: (1) an expanded National Register of significant sites and objects; (2) matching grants to states undertaking historic and archeological resource inventories; and (3) a program of grants-in aid to the National Trust for Historic Preservation; and (4) the establishment of an Advisory Council on Historic Preservation. Section 106 requires that the President's Advisory Council on Historic Preservation have an opportunity to comment on any undertaking which adversely affects properties listed, nominated, or considered important enough to be included on the National Register of Historic Places.

**A.16 PL90-483, Rivers and Harbors and Flood Control Act of 1968, Mitigation of Shore Damages:** Section 210 restricted collection of entrance fee at Corps lakes and reservoirs to users of highly developed facilities requiring continuous presence of personnel.

**A.17 PL91-190, National Environmental Policy Act of 1969 (NEPA):** NEPA declared it a national policy to encourage productive and enjoyable harmony between man and his environment, and for other purposes. Specifically, it declared a “continuing policy of the federal government...to use all practicable means and measures...to foster and promote the general welfare, to create conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.” Section 102 authorized and directed that, to the fullest extent possible, the policies, regulations and public law of the United States shall be interpreted and administered in accordance with the policies of the Act.

**A.18 PL91-611, Rivers and Harbors and Flood Control Act of 1970:** Section 234 provides that persons designated by the Chief of Engineers shall have authority to issue a citation for violations of regulations and rules of the Secretary of the Army, published in the Code of Federal Regulations.

**A.19 PL92-463, Federal Advisory Committee Act:** The Federal Advisory Committee Act, as amended, is the legal foundation defining how federal advisory committees operate. The law has special emphasis on open meetings, chartering, public involvement, and reporting.

**A.20 PL92-500, Federal Water Pollution Control Act Amendments of 1972:** The Federal Water Pollution Control Act of 1948 (PL 845, 80th Congress), as amended in 1956, 1961, 1965 and 1970 (PL 91- 224), established the basic tenet of uniform State standards for water quality. PL92-500 strongly affirms the federal interest in this area. “The objective of this act is to restore and maintain the chemical, physical and biological integrity of the Nation’s waters.”

**A.21 PL92-516, Federal Environmental Pesticide Control Act of 1972:** This act completely revises the Federal Insecticide, Fungicide and Rodenticide Act. It provides for complete regulation of pesticides to include regulation, restrictions on use, actions within a single State, and strengthened enforcement.

**A.22 PL93-81, Collection of Fees for Use of Certain Outdoor Recreation Facilities:** This act amends Section 4 of the Land and Water Conservation Act of 1965, as amended to require each federal agency to collect special recreation use fees for the use of sites, facilities, equipment, or services furnished at federal expense.

**A.23 PL93-251, Water Resources Development Act of 1974:** Section 107 of this law establishes a broad federal policy which makes it possible to participate with local governmental entities in the costs of sewage treatment plan installations.

**A.24 PL93-291, Archaeological Conservation Act of 1974:** The Secretary of the Interior shall coordinate all federal survey and recovery activities authorized under this expansion of the 1960 act. The Federal Construction Agency may transfer up to one percent of project funds to the Secretary with such transferred funds considered non-reimbursable project costs.

**A.25 PL93-303, Recreation Use Fees:** This act amends Section 4 of the Land and Water Conservation Act of 1965, as amended, to establish less restricted criteria under which federal agencies may charge fees for the use of campgrounds developed and operated at federal areas under their control.

**A.26 PL93-523, Safe Drinking Water Act:** The act assures that water supply systems serving the public meet minimum national standards for protection of public health. The act (1) authorizes the Environmental Protection Agency to establish federal standards for protection from all harmful contaminants, which standards would be applicable to all public water systems, and (2) establishes a joint federal-state system for assuring compliance with these standards and for protecting underground sources of drinking water.

**A.27 PL94-422, Amendment of the Land and Water Conservation Fund Act of 1965:** Expands the role of the Advisory Council. Title 2 - Section 102a amends Section 106 of the Historical Preservation Act of 1966 to say that the Council can comment on activities which will have an adverse effect on sites either included in or eligible for inclusion in the National Register of Historic Places.

**A.28 PL98-63, Supplemental Appropriations Act of 1983:** The act authorized the Corps of Engineers Volunteer Program. The United States Army Chief of Engineers may accept the services of volunteers and provide for their incidental expenses to carry out any activity of the Army Corps of Engineers except policy making or law or regulatory enforcement.

**A.29 PL99-662, The Water Resources Development Act of 1986:** Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.

**A.30 PL101-640, Water Resource Development Act of 1990:** Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.

**A.31 PL101-646, Coastal Wetlands Planning, Protection, & Restoration Act of 1990:** Provides authorization to carry out projects for the protection, restoration, or enhancement of aquatic and associated ecosystems, including projects for the protection, restoration, or creation of wetlands and coastal ecosystems.

**A.32 PL100-676, Water Resource Development Act of 1988:** Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.



**A.33 PL102-580, Water Resource Development Act of 1992:** Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.

**A.34 PL104-303, Water Resource Development Act of 1996:** Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.

**A.35 PL106-53, Water Resource Development Act of 1999:** Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.

**A.36 PL106-541, Water Resource Development Act of 2000:** Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.

**A.37 PL110-114, Water Resource Development Act of 2007:** Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.

**A.38 PL113-121, The Water Resources Reform and Development Act of 2014:** This act authorizes the U.S. Army Corps of Engineers to carry out missions to develop, maintain, and support the nation's vital ports and waterways infrastructure needs and support effective and targeted flood protection and restoration needs.

**A.39 30 U.S.C. 22-42, General Mining Act of 1872:** Authorizes and governs prospecting and mining for economic minerals, such as gold, platinum, and silver, on federal public lands.

**A.40 30 U.S.C. 181, Mineral Leasing Act of 1920, as amended by the Federal Onshore Oil and Gas Leasing Reform Act of 1987:** Authorizes and governs leasing of public lands for developing deposits of coal, petroleum, natural gas, and other hydrocarbons, in addition to phosphates, sodium, sulfur, and potassium.

**A.41 30 U.S.C. 226, Lease of Oil and Gas Lands:** Authorizes the use of public lands for oil and gas exploration and development.

**A.42 30 U.S.C. 601-604, Materials Act of 1947:** Authorizes the BLM to dispose of mineral materials on federal lands provided that the disposal is not otherwise expressly authorized or prohibited by law, and is not detrimental to the public interest.

**A.43 16 U.S.C. 661-664, Fish and Wildlife Coordination Act of 1934, as amended by PL85-624:** Provides the basic authority of the U.S. Fish and Wildlife Service to become involved in the evaluation of impacts to fish and wildlife from proposed water resource development projects or when federal actions result in the control or modification of a natural stream or body of water.

**A.44 16 U.S.C. 668-668d, Bald and Golden Eagle Protection Act of 1940, as amended:** Prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles (*Haliaeetus leucocephalus*) or golden eagles (*Aquila chrysaetos*), including their nests or eggs.

**A.45 16 U.S.C. 1531-1544, Endangered Species Act of 1973:** Provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend.

**A.46 16 U.S.C. 703-712, Migratory Bird Treaty Act of 1918:** Makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to federal regulations.

**A.47 AR 405-30, Mineral Exploration and Extraction of (15 July 1984):** Governs exploration and extraction of minerals on Department of Army property.

**A.48 43 CFR § 3503.20, Available Areas Managed by Others:** The Bureau of Land Management will consult with the surface management agency before issuing a permit or lease for public domain lands where the surface is administered by another federal agency.

**A.49 43 CFR Part 3160, Onshore Oil and Gas Operations:** Gives the Bureau of Land Management authority to issue permits or leases on public lands for the purposes of exploration, extraction, or removal of oil or gas.

**A.50 CFR, Title 36, Parks, Forests and Public Property, Chapter III:** Principle set of rules and regulations issued by the U.S. Army Corps of Engineers regarding public use of water resource development projects.

**A.51 Executive Order (EO) 13112, Invasive Species (FR: 03 Feb 1999), as amended by EO 13751, Safeguarding the Nation From the Impacts of Invasive Species (FR: 08 Dec 2016):** Executive order to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

## **APPENDIX B**

### **MAP PLATES**

Maps are for graphical purposes only. They do not represent a legal survey. While every effort has been made to ensure that this data is accurate and reliable within the limits of the current state of the art technology, the Corps cannot assume liability for any damages caused by any errors or omissions in the data, nor as a result of the failure of the data to function on a particular system. The Corps makes no warranty, expressed or implied, nor does the fact of distribution constitute such a warranty.

**APPENDIX C**  
**SUMMARY OF PUBLIC COMMENTS**

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## **APPENDIX D**

### **ENGINEER REGULATIONS, PAMPHLETS, MANUALS, AND CIRCULARS**

- D.1** ER 200-1-5, Environmental Quality – Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers Environmental Operating Principles and Doctrine, 30 Oct 2003
- D.2** ER 1130-2-540, Environmental Stewardship Operations and Maintenance Policies, 15 Nov 1996 (with changes 4 Nov 2002, 31 Jul 2005, and 11 Aug 2008)
- D.3** ER 1130-2-550, Project Operations – Recreation Operations and Maintenance Guidance and Procedures, 15 Nov 1996 (with changes 1 Oct 1999, 1 Mar 2002, 15 Aug 2002, 30 Aug 2008, 30 Mar 2009, 30 Jan 2013, and 30 Sep 2013)
- D.4** ER 405-1-12, Chapter 8, Real Property Management, 30 Sep 1994
- D.5** EP 1130-2-550, Project Operations – Recreation Operations and Maintenance Guidance and Procedures, 15 Nov 1996 (with changes 1 Oct 1999, 1 Mar 2002, 15 Aug 2002, 30 Aug 2008, and 30 Jan 2013)
- D.6** EM 1110-1-400, Engineering and Design – Recreation Facility and Customer Service Standards, 1 Nov 2004
- D.7** EC 1165-2-220, Water Resource Policies and Authorities – Policy and Procedural Guidance for Processing Requests to Alter U.S. Army Corps of Engineers Civil Works Projects Pursuant to 33 U.S.C. 408, 10 Sep 2018